







Facilitator Guide







Sector

Electronics

Sub-Sector

Solar Electronics

Occupation

Installation

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NSFQ Level: 4

Solar Panel Installation Technician

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Skilling is building a better India.

If we have to move India towards development then Skill Development should be our mission.

,

Shri Narendra Modi Prime Minister of India



Acknowledgements —

The need for having a standard curriculum for the Job Role based Qualification Packs under the National Skills Qualification Framework was felt necessary for achieving a uniform skill based training manual in the form of a Facilitator Guide.

I would like to take the opportunity to thank everyone who contributed in developing this Guide for the QP Solar Panel Installation Technician.

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CEO

Electronics Sector Skills Council of India

About this Book

This Facilitator Guide is designed to enable training for the specific Qualification Pack (QP). Each National Occupational (NOS) is covered across Unit/s.

Key Learning Objectives for the specific NOS mark the beginning of the Unit/s for that NOS. The symbols used in this book are described below.

Symbols Used











Objectives







Explain



Elaborate



Field Visit



Practical







Exercise







Facilitation Notes Learning Outcomes













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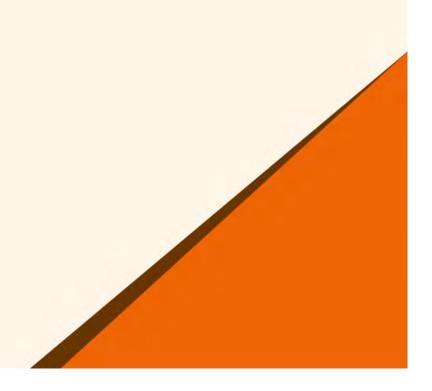




1. Basics of Electricity and Solar Energy

- Unit 1.1 Basics of Electricity and Power Generation System
- Unit 1.2 Renewable Energy and Solar Energy System
- Unit 1.3 Solar Cells
- Unit 1.4 Photovoltaic Solar Panels
- Unit 1.5 Electrical Power System





Key Learning Outcomes 💆



At the end of this module, you will be able to:

- Measure voltage, current and power of solar photovoltaic modules
- Identify the components of solar photovoltaic system
- Identify types of solar photovoltaic systems
- Define solar cell parameters
- List the types of connections of solar photovoltaic panels
- Explain the main factors affecting the output of solar photovoltaic modules

UNIT 1.1: Basics of Electricity and Power Generation System

Unit Objectives 6



At the end of this unit, participants will be able to:

- Measure voltage, current, power and energy
- Define Ohm's law
- Explain the difference between alternating current (AC) and direct current (DC)
- Identify the use of multimeter
- Explain the power generation system

Resources to be Used



- Objects such as a duster, pen, notebook and so on
- Analog and Digital multimeter

- Ask



- Ask the participants what comes to their mind when they think of electricity.
- Ask them if they can tell some terms that we usually associate with electricity.

Notes for Facilitation



- Tell them why it is important for them to know about electricity, after the participants share what they think of electricity.
- Explain the various terms associated with electricity such as current, voltage, power, energy; after the participants come up with different terms.

Example



- Give an example of water falling from a high level to a low level. Ask them if they have observed that higher the difference of the levels, greater is the flow of water.
- Give an example that when we were kids, we were given the total work done and the total time taken. We were then asked to calculate the rate of doing work.

Explain



Explain Ohm's Law. Relate the example of flow of water to flow of current.

Notes for Facilitation



- Explain that now that we know about flow of current, let's see how we can calculate the rate of flow of current or the rate at which electric energy is transferred.
- Explain that we can calculate electric power in the same way to find out how much electric energy has been generated in a given period of time.
- Explain that the electric power calculated can be measured using electric meter. This way a customer comes to know how much power he has consumed.
- Explain the example as:
 - Denote current by ' I_{dc} ', voltage by ' V_{dc} ' and power by ' P_{dc} '.
 - Give the values of I_{dc} as 3A and of V_{dc} as '24V' and find out the value of P_{dc} .
 - Power (P_{dc}) is the product of current (I_{dc}) and voltage (V_{dc}).
 - Putting in values, we get P_{dc} equals 3 multiplied with 24 which equals 72.
 - So, the power consumed by the fan is 72 watts.



- Ask them if they have heard of the terms, AC and DC circuit.
- Ask them if they know what these terms stand for.
- Ask them if they know the difference between DC and AC power.
- Ask them if they can tell whether our home devices run on AC or DC.

Explain 🖺



- Explain electric circuit, AC and DC circuit, series and parallel circuit.
- Explain series and parallel circuit with the help of diagrams.

Notes for Facilitation



Explain that in a series circuit, the load which is depicted by lamps is connected one after another and in parallel circuit, both the lamps are connected to the source, parallel to each other.

Demonstrate



- Show the two types of multimeter, analog and digital, and ask them if they know what these instruments are and what they are used for.
- Explain the features and uses of multimeter.
- Demonstrate the way to measure AC and DC Voltage using a multimeter.
- Demonstrate the way to measure AC and DC Current using a multimeter.
- Demonstrate the way to measure resistance using a multimet er

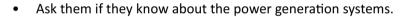
- Field Visit 🖟

- Take them out to show electric meter installed in the premises.
- Explain to them how the electric meter works.

Notes for Facilitation



- Ensure that you have the multimeter with you before starting.
- Check that it is functioning properly.
- Explain to them that they should take all the safety precautions while using the multimeter such as:
 - Never touch the bare probe tips together as this can lead to short circuit.
 - The red lead should always be put into the voltage socket. Putting it into the current socket can lead to a short circuit.
 - Connect the multimeter in series for current measurement and in parallel for voltage measurement.
 - Set the right current range before measuring the higher current as it can blow the multimeter fuse.
 - Never try to measure the current in household AC mains.
 - Switch off the power before measuring the resistance.





- Mention various processes of generating electricity.
- Tell them how electricity is generated and supplied to the customers illustrating the figure.
- **Activity Handling Strategy**
 - Activity 1.
 - Ask each participant to solve the table.
 - Give 10 minutes to solve.
 - Tell the answers after the time is over.
 - Answers:
 - 30W
 - 30V
 - 24.24V
 - 10.416A
 - 20.72A

o Activity 2.

- Call the participants one by one.
- Ask him/her to fill one blank.
- Ask others if the answer is right.
- Tell the correct answer.
- Answers:
 - 160Wh
 - 10h
 - 720Wh
 - 0.36kWh
 - 300Wh
 - 2kWh
 - 200W
 - 4h
 - 15kWh
 - 5h
 - 50W
 - 2000W

o Problems:

- Divide the number of participants in to 4 groups.
- Ask one group to solve one problem on paper and give 2 minutes.
- Ask one member from each group to solve the problem on the whiteboard.
- Ask others to tell if the answer is correct.

UNIT 1.2: Renewable Energy and Solar Energy System

Unit Objectives 6

At the end of this unit, participants will be able to:

- Define the fundamentals of solar energy
- Identify renewable energy sources
- Explain the basic working of a solar energy system
- List the advantages and disadvantages of solar energy system

Resources to be Used



- Available objects such as a duster, pen, notebook and so on
- Solar panel

Ask



- Ask the participants if they can tell the various sources of energy.
- Ask them if they have heard of generating energy through renewable sources such as solar, wind and biomass.

Explain



- Explain why these sources are called renewable sources of energy.
- Introduce solar energy and explain how the energy from the solar radiations gets converted into various forms of renewable energy.
- Explain the different power units and their equivalent unit.
- Introduce solar energy system and explain why it is a viable source of energy for India.



- Tell them how the solar power system works.
- Tell them about the PV cells and PV system.
- Give an exact idea of how a solar PV module works, arrange for a visit to the nearest solar panel installation.
- Explain the parts of a solar panel.
- Give an exact idea of how a solar PV module works, arrange for a visit to the n earest solar panel installation.
- Explain the parts of a PV system.

Field Visit

- Take them out to show a solar panel installation.
- Explain to them how the system works.

Do

Draw the following diagram on the whiteboard.

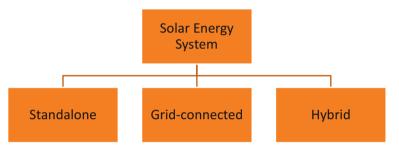


Fig 1.2.1: Solar energy system

Elaborate



- Elaborate on the Standalone Solar PV system with the help of figure.
- Elaborate on the Grid-connected Solar PV system with the help of figure.
- Elaborate on the Hybrid Solar PV system with the help of figure.

Team Activity 🍱



- Divide into two groups, Group A and Group B.
- Tell Group A to list down all the advantages of solar energy/system.
- Tell Group B to list down all the disadvantages of solar energy/system.



- Set 5 minutes as the time for completing the activity
- Ensure that the activity finishes in time.



- Start the discussion on types of Solar PV systems by telling that depending on the way energy is utilized, there are three different types of solar PV systems.
- After the end of the team activity, ask one member of Group A to tell the advantages.
- Write the points on the whiteboard.

- Ask one member of Group B to tell the disadvantages and write the points on the whiteboard.
- Add any point missed by the participants.
- Activity Handling Strategy
 - o Ask one participant to tell one source, ask other to tell one and so on.
 - Ask the participants one by one to tell one demerit.
 - Ask one student to come to the whiteboard and draw the block diagram. Correct if there is any mistake.
 - o Renewable Energy Sources: Solar Energy, Wind Energy, Biomass Energy
 - o Demerits:
 - Solar power cannot be obtained in night time.
 - Solar cells (or) solar panels are very expensive.
 - Energy has to be stored in batteries.
 - Air pollution and weather can affect the production of electricity.
 - o Diagram:

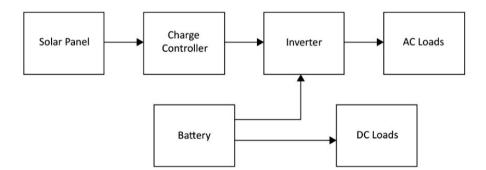


Fig 1.2.2: Block diagram of solar PV system

UNIT 1.3: Solar Cells

Unit Objectives

At the end of this unit, participants will be able to:

- Describe how solar cells generate electricity
- List the parameters of solar cells
- Explain solar cell technologies
- Identify the factors affecting electricity generated by a solar cell

Resources to be Used



- Available objects such as a duster, pen, notebook and so on
- A photovoltaic or solar cell

Notes for Facilitation



- Give the participants a brief overview of what all will be covered in the program.
- Start the discussion by inviting the participants to participate.
- Brief them about solar cell.

Demonstrate 🛱



Show a solar photovoltaic (PV) cell to the participants and ask if they know what it is.

Explain



- Explain solar cell and how the factors affecting the electricity generation.
- Explain the parameters of solar cell.
- Tell them that it is important to know the parameters as they impact the effectiveness to the solar cell.

Elaborate



- Elaborate with the help of figure on the parameters of solar cell such as:
 - Short circuit current (Isc)
 - Open circuit voltage (Voc)
 - Maximum power point (P_m)
 - Current at maximum power point (I_m)

- Voltage at maximum power point (V_m)
- Fill factor (FF)
- Efficiency (ŋ)

- Ask



• Ask them if they have heard about any solar cell technology.

Explain



- Explain various solar cell technologies available in the market.
- Explain different types of solar cell such as:
 - Monocrystalline
 - Polycrystalline
 - Amorphous cells



- Introduce various solar cell technologies available in the market with the help of the two tables.
- Explain different types of solar cell such as:
 - Monocrystalline
 - o Polycrystalline
 - Amorphous cells
- Tell them how a monocrystalline cell is different from the polycrystalline one.
- Tell them that monocrystalline cells are highly effective and more expensive than the other two.
- **Activity Handling Strategy**
 - Divide the number of participants in four groups.
 - Ask one group to solve one problem.
 - Answers:
 - 3500mA
 - Pm=1.55W and efficiency= 0.73 (when input power is 2.1 W)
 - Efficiency= 300, 240, 190, 160 and 120 respectively
 - Polycrystalline solar panels are of rectangular shape without having any rounded edges.

UNIT 1.4: Photovoltaic Solar Panels

Unit Objectives 6



At the end of this unit, participants will be able to:

- Identify the working process of PV panels
- Describe the solar panel array configurations
- Identify the factors affecting generation of electricity of a solar PV module
- Describe the function of blocking diode and bypass diode

Resources to be Used



- Available objects such as a duster, pen, notebook and so on
- A diode

Show the image in Fig. 1.4.1 and ask the participants if they can identify what it is and what its purpose is.

Explain



- Tell them that the image is of cross section of a photovoltaic panel.
- Explain the working principle of a photovoltaic panel.
- Explain to them how a panel construction takes place.



Ask the participants what they should do if they need more power than a single polar PV panel can provide.

Explain



- Explain how panels are connected in an array.
- Explain series-connected and parallel panel with the help of figure.
- Explain panels with different characteristics are connected.
- Explain to them the hybrid connections that is series-parallel connections.

- Explain that in situations when more:
 - Voltage is needed more than a single panel can provide, the panels are connected in
 - Power is needed more than a single panel can provide, the panels are connected in parallel.

- Ask

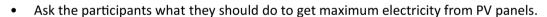
- Ask the participants if they know what a diode is.
- Ask them to list the factors that affect electricity output of PV modules.

Notes for Facilitation



- Explain the function of diodes.
- Show them what diodes look like.
- Explain blocking and bypass diodes and how they work.
- Explain that since a PV module is made up of cells connected together, the parameters of a PV module are similar to solar cell parameters.
- Write the factors affecting the output of PV panels that are pointed out by the participants on the whiteboard.
- Explain the factors such as panel area, sun's brightness, panel direction, heat and panel mounting that affect the output.
- Explain if any incorrect factors are mentioned by the participants.

Ask





- Discuss the first point which the participants mention about the ways to get maximum electricity from a PV panel.
- Ask them to come up with another point. In the end, add any point not covered in the discussion.
- Ensure that you cover all the three points:
 - o Make sure that the brightest sunlight falls on the panel
 - Make sure that the panel faces the sun
 - Keep the panel as cool as possible

- Activity Handling Strategy
 - O Divide the number of participants in two groups.
 - Ask each group to solve one problem.
 - o Connect 5 string with 400V in series and output voltage will be 2000V and current 8A.
 - o Connect 1 string with 460V and 100A, the output voltage and current remains same.

UNIT 1.5: Electrical Power System

Unit Objectives 6



At the end of this unit, participants will be able to:

- Explain an electric grid
- Identify the components of electrical power system
- List the type of power system

Resources to be Used



Available objects such as a duster, pen, notebook and so on

Ask ask



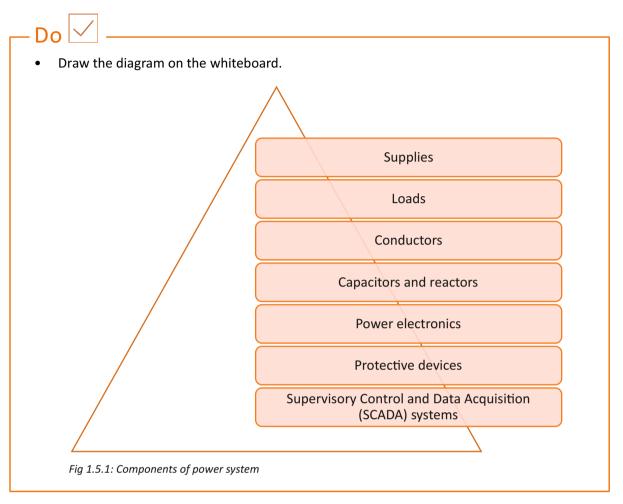
Ask the participants what they know about the electrical power system and different sections of it.



- Explain the electrical power systems and different sections of it.
- Write the sections pointed out by the participants on the whiteboard.
- Explain each section.
- Tell them power is generated at the power station and transmitted through transmission lines to the substations and then supplied to the consumers through distributed lines.



- Ask them if they know about the components of a power system.
- Ask the participants about the types of power systems





- Explain the electrical power systems are comprised of supplies, loads, conductors, capacitors and reactors, power electronics, protective devices, Supervisory Control and Data Acquisition (SCADA) systems.
- Explain the components one by one.
- Tell them about the residential and commercial power systems.









2. Components for Solar PV System

Unit 2.1 - Solar PV Modules

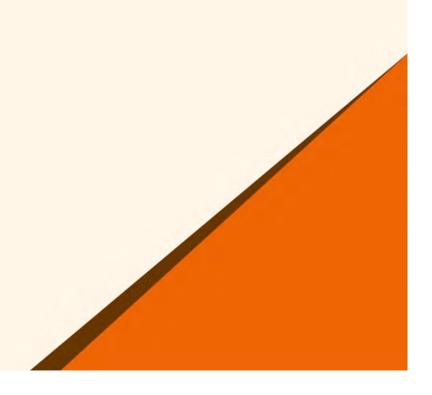
Unit 2.2 - Batteries in a PV System

Unit 2.3 - Charge Controllers

Unit 2.4 - Inverters

Unit 2.5 - Mounting Structures





Key Learning Outcomes 💆



At the end of this module, you will be able to:

- List the types of PV modules and their characteristics
- Identify the batteries used in PV system
- Describe standard parameter of battery
- Recognize functions of a charge controller
- List the types of charge controllers
- List the types of inverters
- Explain mounting structures

UNIT 2.1: Solar PV Modules

Unit Objectives 6

At the end of this unit, participants will be able to:

- Identify the characteristics of PV modules
- Evaluate the rating of a PV module

Resources to be Used



Available objects such as a duster, pen, notebook and so on

Do



- Revise the learning of the previous sessions.
- Ask them for any doubts.



- Ask the participants if they recall the components of a solar power system.
- Ask them what they understand about PV modules.

Explain



- Explain the working of PV modules.
- Explain the characteristics of PV modules.
- Explain how PV modules are rated.



- Write components of a solar energy system on the whiteboard and say PV modules are the main component of a solar photovoltaic system.
- Tell them PV modules are named after the type of solar cells used such as Mono-crystalline silicon solar PV module, silicon solar PV module, cadmium telluride solar PV module, amorphous silicon solar PV module.
- Tell the participants about the efficiency of different solar PV modules.
- Tell them that PV modules are characterized by Wp rating that is the maximum power rating.
- Explain the Current-Voltage relationship and Power-Voltage relationship in different temperature and irradiance showing the I-V and P-V characteristics graph.

- Tell them about the standard test conditions (STC) for the PV modules. Temperature, irradiance and sunlight spectrum are considered for standard test conditions.
- Explain how PV modules are rated and tell them the International Electrotechnical Commission (IEC) standards for the PV module ratings.
- Activity Handling Strategy:
 - o Ask the participants one by one to fill the blanks.
 - O Problem 1:

0	Problem 1:				
	V_{oc}	V_{m}	I_{sc}	I_{m}	P_{m}
	21	17.85	5.0	4.65	83.00
	15.88	13.5	2.0	1.86	25.11
	19	16.15	1.61	1.5	24.22
	16.70	14.2	3.44	3.2	45.44
	12.75	15	5.7	5.30	79.515
0	Problem 2:				
	V		I	Р	
	0		0.58	0	
0.01		01	0.58	0.0058	

V	I	Р
0	0.58	0
0.01	0.58	0.0058
0.39	0.56	0.22
0.79	0.57	0.45
1.19	0.56	0.66
1.6	0.55	0.88
1.99	0.54	1.07
2.39	0.53	1.266
2.79	0.52	1.47
3.19	0.51	1.626
3.58	0.46	1.65

UNIT 2.2: Batteries in a PV System

Unit Objectives

At the end of this unit, participants will be able to:

- Define function of batteries in a PV module
- List the types of batteries
- Perform the installation of a battery
- Explain battery maintenance

Resources to be Used



Available objects such as a duster, pen, notebook and so on

Revise the learning of the previous sessions and ask them if they have any doubts.



- Ask the participants if they know about the way to store the energy produced by a solar panel for later use.
- Ask them about the components of the batteries.
- Ask the participants the kind of battery used in solar PV systems.
- Ask the participants about deep discharge battery and starting battery.

Explain



- Tell that the energy produced by a solar panel is stored in a battery. Appliances can be run using the batteries during the non-sunshine hours.
- Tell them about the components of the batteries such as anode, cathode, electrolyte and salt bridge and briefly explain about the components.
- Explain the types of batteries on the basis of different characteristics such as chemicals used, presence of cap and the output.



- Give the participants a brief overview of what all will be covered in the program.
- Start the discussion by inviting the participants to participate.
- Explain the components of a battery showing the image of the battery.

Tell them battery can be classified as:

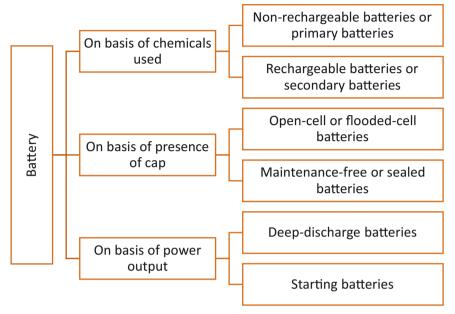


Fig 2.2.1: Classification of battery

- Give examples for the rechargeable and no-rechargeable batteries.
- Tell them about open cell, maintenance free, starting and deep discharge batteries.
- Tell the participants about the differences between open -cell and sealed battery with the help of the following table.

Open-Cell Battery	Sealed Battery
Removable caps on the top	Smooth top and no filler caps
Less expensive	More expensive
Lasts longer	Does not last as long
Requires correct liquid levels to be maintained	Requires the case to be kept clean
Need to add pure water when water level is low	Need to keep connections clean and tight

Fig 2.2.2: Difference between open cell and sealed battery

Explain 🗓



- Explain them different parameters of the batteries.
- Tell them about the batteries that are mainly used in PV system.
- Explain how batteries are connected in a PV system.
- Tell them how batteries should be maintained.

Notes for Facilitation



- Tell them that the selection of the battery depends on the parameters such as terminal voltage, battery storage capacity, state of charge, depth of discharge, self -discharge rate and efficiency of the battery. Explain each term to them.
- Tell them that cycle life of a battery can be utilized for the comparing the batteries under
 controlled conditions. However, under real operating situations it may not give the correct
 idea of battery life. Cells are rarely used under continuous cycles of charge discharge.
 They usually undergo partial discharges of different depths before getting completely
 recharged. These partial discharges involve less quantity of energy and thus enable the
 battery to put up with more shallow cycles. Cycle life is also affected by operating and
 storage temperatures.
- Tell them why lead acid battery is a good choice for PV applications.
- Explain that when a voltage required is higher than individual battery voltage, the batteries are connected in series. And, when higher current is required, the batteries are connected in parallel.
- Explain further that when both current and voltage required is higher, then the batteries are connected in combination of series and parallel.
- Tell them how important it is that we take proper care of the batteries.
- Tell them that for maintenance of the battery, they s hould:
 - Keep the battery clean.
 - Test the battery with hydrometer.
 - o Keep the battery cells full of electrolyte.

Team Activity



- Divide the participants into two groups, Group A and Group B.
- Tell Group A to list down all the safety do's for batteries.
- Tell Group B to list down all the safety don'ts for batteries.

Time



- Set 5 minutes as the time for completing the activity.
- Ensure that the activity finishes in time.

Tips

- Tell them that they should take care to fill the battery very slowly as the battery can get too hot and dangerous if filled quickly.
- Ensure that the acid in each cell covers the plate but is below the bottom fill opening.
- Do not connect appliances to the battery until it has been fully charged by the solar panel.

Explain Do's and Don'ts for the batteries with the help of the following table:

Do's	Don'ts
Store charged batteries in cool location	Mix the battery types
Maintain the record of watering and maintenance of battery	Mix old batteries with new ones
Vent the battery in open space	Ignite fire near batteries
Clean outside contacts to avoid corrosion	Touch terminals with bare hands
Use different colours of wires for different terminals	Refill water before equalizing
Check the specific gravity of the cell before first use	

Fig 2.2.3: Do's and don'ts for battery



- Ask one member of Group A to tell the safety do's, after the end of the team activity.
- Write the points on the whiteboard.
- Ask one member of Group B to tell the safety don'ts and write the points on the whiteboard.
- Add any point missed by the participants.
- Explain the safety measures that should be taken while dealing with a battery.
- Tell them to wear proper clothes while handling the batteries.
- Also tell them that:
 - Acid in the eyes can cause damage and sometimes blindness. They should not look straight down into the fill hole while acid or water is being added.
 - After handling, filling or testing a battery, one should not to touch eyes before washing the hands.
 - Sometimes, the battery produces a gas that may explode if a flame is nearby. Tell them that they should never smoke, or use an open flame lantern near the battery, while checking or filling the cells.
- Explain that they may face three types of situations when you are installing a battery:
 - Battery has electrolyte:
 - Ensure that the electrolyte level is correct in all the cells
 - Connect the battery
 - Allow it to charge for two sunny days
 - Battery has low electrolyte levels:
 - Add acid to the battery
 - Connect the battery
 - Allow it to charge for two sunny days

- o Battery has no electrolyte:
 - Fill acid into each cell of the battery
 - Connect the battery
 - Allow it to charge for two sunny days
- Also, tell them that certain safeguards should be taken while installing battery:
 - o Install the battery in plastic box.
 - o Install the battery on a hard, level surface.
 - o Attach the wires using bolts and not clips.
- Explain that in order to accurately check the charge in a battery, both hydrometer and voltmeter should be used.
- Activity Handling Strategy
 - o Ask the participants to solve the table on their copies.
 - o Tell the correct answers.

1.

Capacity	Duration	Current
50Ah	10h	5A
120Ah	30h	4A
250Ah	20h	12500mA
360Ah	12h	30A
450Ah	15h	30A
1200mAh	0.12h	10A

2. 600W

UNIT 2.3: Charge Controllers

Unit Objectives

At the end of this unit, participants will be able to:

- List the functions of charge controller
- Identify the types of charge controller
- Explain different charge controller technologies
- Explain the maintenance of a charge controller

Resources to be Used



Available objects such as a duster, pen, notebook and so on

Example

- Give an example of an overflowing water tank.
- Ask them if they have seen people using a valve to prevent the water from overflowing.

Explain



- Relate the example of a valve to a charge controller.
- Explain about a charge controller and its functions with the help of figure.

Draw the following diagram on the whiteboard and explain the various types of charge controllers categorized according to their use.

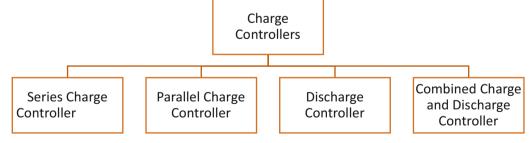


Fig 2.3.1: Type of charge controllers

Explain 🖫



- Explain about series and parallel charge controller.
- Explain about the discharge controller and the combined charge and discharge control.
- Explain about the technologies used in charge controllers such as:
 - Pulse Width Modulation (PWM)
 - Maximum Power Point Tracking (MPPT)



- Give the participants a brief overview of what all will be covered in the program.
- Start the discussion by inviting the participants to participate.
- Explain that a charge controller is used to prevent the battery from overcharging; a discharge controller is used to prevent the battery from over discharging.
- List the various features of a charge controller and then explain them one by one.
- Illustrate the difference between the charge and discharge controllers in a tabular form on the whiteboard.

- Write the following terminologies related to a charge controller on the whiteboard.
 - Nominal System Voltage
 - Nominal Load Current
 - Nominal PV Array Current
 - **Charge Regulator Set Points**
 - Voltage regulation set point (VR)
 - Voltage regulation hysteresis (VHR)
 - Low voltage disconnect (LVD)
 - Low voltage disconnect hysteresis (LVDH)



- Explain various terminologies with the help of fig. 2.3.7.
- Explain the set points of a PWM controller with typical rating of 12V, 6A using the following table:

Features	Typical Rating
Nominal System Voltage	12V
Nominal Load Current	6A
Nominal PV Array Current	6A
Regulation Voltage	14V
Low voltage disconnect (LVD)	11V
Low voltage disconnect hysteresis (LVDH)	13V
Type of charging	Series PWM
Temperature	-20'C to 55'C
Self-consumption	10mA maximum

Fig 2.3.2: Set points of a PWM controller

- Explain the features of a charge controller.
- Tell the participants how switching and control are performed by the controllers.
- Explain the steps that should be taken for the maintenance of a controller.
- Also, tell them that correct wiring and installation of earthing system are important to ensure proper working of a controller.
- **Activity Handling Strategy:**
 - Answers

83.33V	104A	36V,104A
133.33V	166A	48,166A

UNIT 2.4: Inverters

- Unit Objectives 🏻 🎯

At the end of this unit, participants will be able to:

- List the basic functions of inverters
- Identify the types of inverters
- Evaluate the efficiency of inverters

Resources to be Used



Available objects such as a duster, pen, notebook and so on.

-Ask



- Ask the participants the purpose of an inverter in a PV system.
- Ask the participants if they know the types of inverters used in PV systems.

Explain



- Explain the inverter process with the help of Fig. 2.4.1.
- Discuss the functions of an inverter in a PV system.
- Tell them that the inverters should have good reliability and efficiency to be used for PV applications.



Draw the following diagram on the whiteboard and explain the various types of inverters

Solar Inverters Standalone Inverters Grid Tie Inverters Battery Backup Grid-tie Inverters

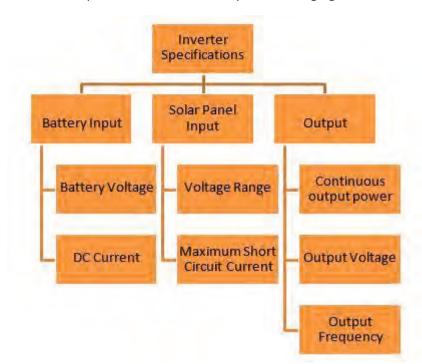
Fig 2.4.1: Type of inverters

Explain 🖫

- Explain the types of inverters with the help of Fig.2.3.2.
- Explain the inverter specifications.
- Explain the efficiency of different types of inverter



- Give the participants a brief overview of what all will be covered in the program.
- Start the discussion by inviting the participants to participate.



• Explain the inverter specifications with the help of following figure:

Fig 2.4.2: Inverter specifications

- Tell them that manufacturers specify the range of input voltages for an inverter. The specifications also indicate the maximum DC current that the inverter can handle.
- Tell them that inverter specifications may be done on the basis of output power (generally at particular temperature) for a long period, AC output voltage (either 230 V or 400 V) and output frequency (in India, it is 50 Hz).
- Activity Handling Strategy
 - o Problem 1

-	-	-	-	O/P Current	-		Efficiency
50	3	150	40	3	120	30	80%
100	3	300	76.6	3	230	70	76.6%

o **Problem 2:** 291W

UNIT 2.5: Mounting Structures

Unit Objectives 6

At the end of this unit, participants will be able to:

- Identify the need of mounting structures
- List different types of mounting systems

Resources to be Used



Available objects such as a duster, pen, notebook and so on.



Ask the participants if they can tell why the mounting structures are needed for photovoltaic systems.

Explain



- Explain the purpose of mounting systems.
- Explain that the PV arrays can be mounted on the ground, rooftops and other structures.
- Explain the types of mounting structures.



Draw the following diagram on the whiteboard to explain the common types of PV array mounting systems.

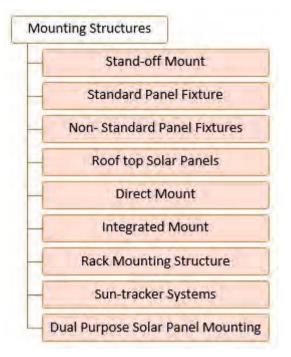


Fig 2.5.1: Type of PV array mounting structure



- Tell the participants why strong mounting structures are required for the solar panels.
- Also, tell them that some special structures are used as PV modules as well as they serve as building elements.
- Tell the participants that the basic mounting structures are:
 - Ground
 - Roof
 - **Shade Structure**
 - Building Integrated PV (BIPV)
- Briefly explain various structures used for PV modules.

• Compare the features of rooftop and ground-mounted arrays in a tabular form, as shown below:

Rooftop array	Ground-mounted array
Better physical protection	Used for larger systems
Limited access to array for safety	More susceptible to damage
Better sun exposure	Less location or orientation constraints
Leaves ground space free for other uses	Helps avoid shading concerns

Fig 2.5.2: Features of rooftop and ground-mounted arrays

- Tell them that elevating arrays in ground mounting provides physical protection and helps to avoid shading concerns that may exist at lower heights.
- Tell them that pole-mounted panels are required to be placed in a distance from the battery alike the panels mounted on the roof. Therefore, they need larger wires to reduce power loss through the wiring.
- Tell them that the poles must be tall enough to prevent people from touching the panels. The panels need to be attached using stainless-steel bolts or screws, not nails, which can loosen over time.
- Tell them that a ground mounted solar system can also act as a shade in case of farming and provide them ideal growing conditions.
- Activity Handling Strategy
 - o Ask two participants to answer
 - o 1. a
- 2. b









3. Role of a Solar Panel Installation Technician

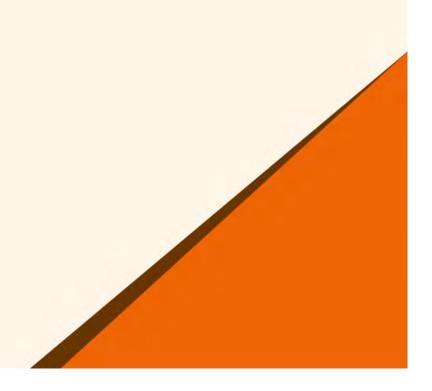
Unit 3.1 - Responsibilities of a Solar Panel Installation Technician

Unit 3.2 - Prerequisites for Solar Panel Installation

Unit 3.3 - Site Analysis

Unit 3.4 - Installation and Maintenance of Solar Panel





Key Learning Outcomes 👰



At the end of this module, you will be able to:

- Recognize the roles of a solar panel installation technician
- Identify prerequisites for installing a solar PV system
- Construct the design of the solar PV system
- Analyse the size and calculation of the components
- Evaluate the location for installation
- Analyse the customer's requirements
- Identify the suitable mounting structures
- Assemble and fix the mounting structure
- Execute setting up connection between different components of the PV system
- Perform troubleshooting of PV system

UNIT 3.1: Responsibilities of a Solar Panel Installation Technician

Unit Objectives 6

At the end of this unit, participants will be able to:

- Identify the attributes needed to work as a solar panel installation technician
- Recognize the roles of a solar panel installation technician
- Identify the technical responsibilities of a solar panel installation technician

Resources to be Used



Available objects such as a duster, pen, notebook and so on.

- Ask



Ask the participants if they can tell the responsibilities of a solar panel installation technician.



- Start the discussion by inviting the participants to participate.
- Tell the them that to be a good solar panel installer they:
 - Must have willingness to work in outdoor settings.
 - Should be strong enough to deal with the weight of PV modules.
 - Need to stand for a long duration to install the panels.
- Write the points mentioned by the participants on the white board.
- Tell them that they should have deep knowledge of the requirements for solar panel installation.
- Briefly explain their overall responsibilities in installation.
- Also, explain the technical responsibilities they need to perform.

UNIT 3.2: Prerequisites for Solar Panel Installation

Unit Objectives 6

At the end of this unit, participants will be able to:

- Identify the attributes needed to work as a solar panel installation technician
- Recognize the roles of a solar panel installation technician
- Identify the technical responsibilities of a solar panel installation technician

Resources to be Used



• Available objects such as a duster, pen, notebook and so on.

- Ask



• Ask the participants if they can tell what all are required for installing solar panels.

Draw the following diagram on the whiteboard to explain pre-requisites:

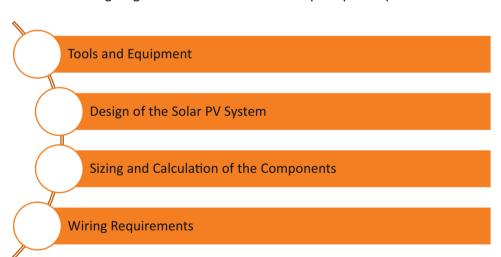


Fig 3.2.1: Pre requisite for installing solar panel

Notes for Facilitation



- Give the participants a brief overview of what all will be covered in the program.
- Start the discussion by inviting the participants to participate.
- Write the points mentioned by the participants on the whiteboard.
- Add points if they missed any.



Ask the participants if they can tell any tools and equipment required in any type of electrical installation.

Explain



Name the tools and equipment and briefly explain the uses of them.

Notes for Facilitation



- Tell the participants that different tools are needed for site analysis, installing the battery and solar panel installation.
- Tell them that tools required for site analysis are:



Fig 3.2.2: Tools required for site analysis

Also tell them that tools used for battery installation and maintenance are:



Fig 3.2.3: Tools used for battery installation and maintenance

- Tell them about various tools and equipment needed for installation with the help of the
- Tell them that stud finders are used to locate framing studs behind the final walling surface. Stud is an upright timber in the building's wall to which the plasterboard and laths are nailed.
- Also tell them while using C clamp, if the clamp is tightened, the objects are secured satisfactorily between the flat end of the screw and that of the frame. If the clamp is loosened, the secured objects can be moved.

Draw the following diagram on the whiteboard to explain the meaning of a PV system

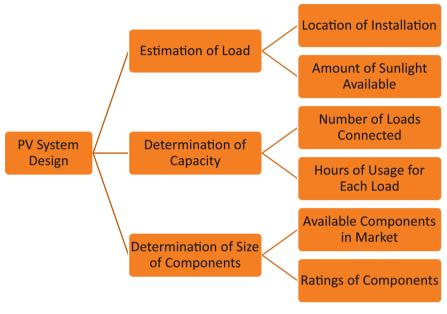


Fig 3.2.4: PV system design

Explain 🕎



- Explain the meaning of a PV system design.
- Explain that a PV system design can be of two types:
 - Approximate design for loads within few kW range or smaller
 - Precise design-- for loads withinseveral 10s of kW or 100s of kW



- Give the participants a brief overview of what all will be covered in the program.
- Start the discussion by inviting the participants to participate.
- Tell them that the design of a PV system proceeds in the reverse direction of the energy
- Explain the steps of the design.
- Tell them that the steps are:
 - 1. Estimating load.
 - 2. Selection of electronics components such as an Inverter, DC-DC converter and MPPT/charge controllers.
 - 3. Selection of a solar charge controller.
 - 4. Calculating the size of the battery.
 - 5. Determining the PV module size.
 - 6. Selecting fuses, wires and junction boxes.

- Ask the participants to calculate the estimated energy required for the loads:
 - 3 fans of 70 watts each running 4 hours a day
 - 3 tube lights of 35 watts each running for 8 hours a day and
 - a refrigerator of 250 watts running for 6 hours a day

Team Activity



- Divide into three groups, Group A, Group B and Group C.
- Tell Group A to calculate the load of 3 fans of 70 watts each running for 4 hours a day.
- Tell Group B to calculate the load of 3 fans of 35 watts each running for 8 hours a day.
- Tell Group C to calculate the load of 1 refrigerator of 250 watts running for 6 hours a day.

Time 🖾



- Set 5 minutes as the time for completing the activity
- Ensure that the activity finishes in time.

Do

- Write down the energy load for each appliance on the whiteboard.
- Add all the three to arrive at the total load requirement.

Explain



- Explain how to calculate the size and capacity of PV system components.
- Explain inverter capacity selection and how to calculate the required capacity of an inverter with the help of the table for inverter capacity selection.
- Explain solar charge controller selection.
- Explain how to calculate the required size of a controller.

- Calculate the battery capacity in ampere-hours on the whiteboard taking DoD as 50%.
- Summarize the battery size calculations in steps.

Explain



Explain the steps of calculating the battery size.



- Always install a deep-discharge battery large enough to operate the appliances for at least five days without recharging.
- If you have to use a starting battery in place of a deep-discharge one, then its capacity should be two times that of a deep-discharge battery.
- Always use the cloudiest season to calculate the Panel Generation Factor of a PV module.
- Always recalculate the correct panel and battery sizes whenever a new appliance is added.
- To improve the reliability of the system and the life of the battery, try to increase the panel size by 20% to 30% over the minimum.

- Calculate energy required from SPV module on the whiteboard taking battery efficiency as 95%.
- Calculate the estimated SPV module wattage.
- Summarize the peak watt-hours capacity needed in a system in steps.
- Explain how to adjust the generation factor for different climates with the help of the following table:

	Climate	Panel Generation Factor
Class 1	Sunnier than the tropical coastal	3.86
Class 2	Tropical coastal	3.43
Class 3	Cloudy periods of five to seven days	3.0
Class 4	Cloudy periods of ten or more days	2.47

Fig 3.2.5: Climate class and its generation factor

Explain



- Explain the Daily Solar Radiation in terms of equivalent Sunshine Hours.
- Explain Panel Generation Factor.
- Explain that the main parameter of choosing fuses, wires and junction boxes is the current.
- Explain the importance of choosing the correct type of wires for a PV system.
- Explain the reason behind using copper wires.
- Explain the reason behind coating wires with insulating material.
- Explain the potential risk and hazards behind improper use of wires.

Example

To explain the importance of using a correct wire, give an additional example. Tell them that in our houses, if we plug-in a power device such as a geyser or a heater on a low amperage socket such as 5 A, the MC fuse will blow. The internal wire may also get burnt leading to short-circuit.

Explain



- Explain the reason behind voltage drop in wires.
- Explain the wiring rules.
- Explain different types of wires and solar cable and connectors used in PV applications.
- Explain the relation of wire size and length to power loss.

Draw the following diagrams to explain the selection of a wire to connect one and multiple appliances with the battery.

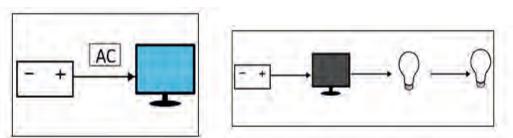


Fig 3.2.6: Selection of wire

Explain



- Explain how to find the correct size of a wire for connecting one appliance to a battery.
- Explain how to find the correct size of a wire for connecting multiple appliances to a battery.



- Tell them that mostly lead-acid batteries are used in PV systems but, in locations with extreme climate conditions, nickel-cadmium batteries are used.
- Take a piece of cable wire used in PV systems. Peel back approximately one inch of the insulation to show the cross-section of the wire containing copper wires and insulating material.
- Tell them that as an installation technician, it is critical that they understand what a voltage drop is and its cause. This will help them to know the appropriate wire size and wire length to be used.

- Tell them that just to minimize the costs; they should not comprom ise on the appropriate length of the wire. The wire should not be stretched so tightly that it might weaken around the bends and break later on.
- While explaining connections in a PV system, tell them that there are three things they have to take care of:
 - Size and length of wires connecting solar panels to batteries.
 - o Battery and panel connections should always be of a screw type.
 - Clean and tighten the panel connections at least once a year.
- Tell them how to find out correct size of wire to connect an appliance with battery:
 - First find the ampere or watt rating of the appliance on the label or on specification sheets packed with the appliance.
 - o Measure or estimate the distance between the battery and the appliance.
 - Tell them that they should keep wire larger than the estimated length to allow the wire to switches, and to go around doors, windows or to make other detours.
 - Tell them that they should use a standard table for measuring wire length, diameter and amperage or wattage.
- Tell them how to find out correct size of wire to connect more than one appliance with battery.
 - o Suppose you have three appliances connected to one wire.

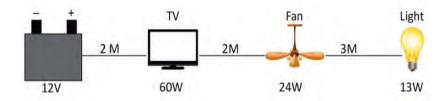


Fig 3.2.7: Size of wire to connect appliances

- o Tell them that the:
 - First section (battery to television) carries not only the power for the television but also electricity that will flow on to the fan and light.
 - Second section (television to fan) does not carry power to the television but does carry the power for both the fan and the light.
 - Third section (fan to light) carries no power to either the television or the fan, only power for the light.
- The largest wire of three different sizes is used to connect the three appliances.
- Activity Handling Strategy
 - o Ask the participants for answer.
 - Hint: Peak voltage= 12V, and the consumption of loads are 170 W

The strings are in parallel connection, so total peak current produced is 5 A.

Peak wattage = 60W

If 60Wh is to be handled, controller capacity should be more than 5A

UNIT 3.3: Site Analysis

Unit Objectives 6

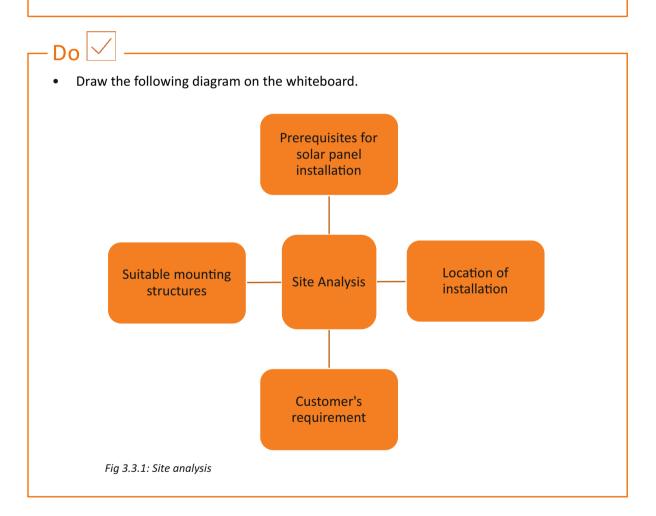
At the end of this unit, participants will be able to:

- Recognize the key tasks involved in site analysis
- Evaluate the location for installation
- Analyse the customer's requirements
- Identify the suitable mounting structures

-Resources to be Used



Available objects such as a duster, pen, notebook and so on.



Explain 🗓



- Introduce the topic of site analysis.
- Explain the key tasks involved in the site analysis.
- Explain to them the key items to be evaluate during a site survey for ground -mounted and roof-mounted PV arrays.



- Give the participants a brief overview of what all will be covered in the program.
- Start the discussion by inviting the participants to participate.
- Tell them that the first step in installing a solar panel is to do site survey of the location. This will enable them to decide how the panel arrays will be mounted.
- Tell them that once they have done the site analysis, they are ready to install the system. Explain the tasks one by one.
- Explain to them what the information are needed for the solar panel installation such as:
 - Roof orientation and slope
 - Roof material
 - Shading
 - o Local building rules and regulations and so on.
- Tell them that they should be able to assess the location of installation with respect to amount and direction of sunlight, sunshine hours and any obstructions like trees and bird droppings.
- Tell them that they should ask the customers about their purposes and preferences over the solar panel installation.
- Also, tell them that they need to tell the customer if any special construction needed for the installation and the documents needed from the local authority.
- **Activity Handling Strategy:**
 - **Solution:** Create a checklist for prerequisites of panel installation.

Items to be checked	Checked (Y/N)	Remarks
Check the quantity of the required components		
Check required tools and equipment		
Ensure the received components are damage free		
Check the required documents like manual instructions, storage and handling procedures, list of deviations		

Items to be checked	Checked (Y/N)	Remarks
QC inspection reports		
Check the received accessories for mounting panels are compatible with the structures		
Check the regulatory certificate required as from the local authority		
Angle of the panel		
Availability of sunlight		
Shading of trees		
Design of the PV system		

Fig 3.3.2: Checklist for prerequisites of panel installation

Solution: Look at the devices on the table. Note their wattage ratings labelled on them.
 Calculate the energy consumed if they run for 8 hrs.

Components:

CFL (20W)

Phone charger (4W)

Laptop (50W)

Lamp (60W)

Solution: Total energy consumed= (20+4+50+60) *8 = 1072 Watt-hour

UNIT 3.4: Installation and Maintenance of Solar Panel

Unit Objectives 6



At the end of this unit, participants will be able to:

- Identify the steps of solar panel installation
- Assemble and fix the mounting structure
- Execute setting up connection between different components of the PV system
- Perform the troubleshooting of a PV system

Resources to be Used



Available objects such as a duster, pen, notebook and so on.

- Ask



Ask the participants if they remember the parameters of solar PV modules.

Explain



- Explain that the parameters must be tested before starting the installation process.
- Explain the steps involved in installation of solar panels.
- Explain the pre-installation requirements panel installation.



Ask the participants if they can tell some of the concerns that should be kept in mind while installing mounting structures.

Explain



- Explain the guidelines to be followed while doing installation.
- Explain the key concerns that should be kept in mind while installing mounting structures.
- Explain the precautions to be taken during assembling and fixing the mechanical structures.

Notes for Facilitation



- Start the discussion by inviting the participants to participate.
- Write the steps included in installation on the black board.
- Explain them one by one:
 - o Understand the pre-installation requirements
 - Assemble and fix the mounting structure
 - Mount the solar modules on the structure
 - Install different components
 - Connect the system
 - Check for functioning of the modules
 - o Earthing of the PV system
- Tell them that they should ensure availability of defect free materials prior to installation.
- Also tell them that they need to take measures for corrosion resistance and fire resistance during the installation process.
- Tell them that while installing mechanical structure, they should consider the facts listed in Fig. 3.4.3. They must take care that:
 - o It should be able to withstand wind speed up to 150 kmph.
 - o Galvanized iron or aluminum steel of about 80 to 100 micron thick should be used.
 - o It should accurately point to the South direction.
 - o Stainless steel bolts should be used.
 - All the connections should be tightly made.
 - o Do not install different rated PV modules together in a series and paral lel combination.

Do 🗸

 Draw the following diagram on the whiteboard to explain Installation of PV System components:

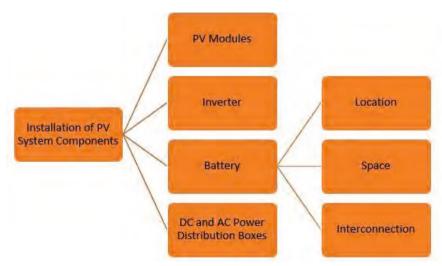


Fig 3.4.1: Installation of PV system components

Elaborate |



- Elaborate on battery installation:
 - Location of battery installation
 - Space for battery installation
 - Interconnection of batteries

Explain



- Explain the precautions to be taken while installing the PV modules.
- Explain the concerns related to the installation of inverter.
- Explain the facts to be considered while installing the DC and AC power distribution boxes.
- Explain to them how various components are interconnected with cables.



- Explain the guidelines that must be followed for:
 - Installation of modules
 - Interconnection of modules, strings and combiner boxes
 - Layout and connection of AC and DC cables
 - Installation of DC and AC Power Distribution Boxes
 - **Grounding considerations**
- Tell them that they must abide by the rules for cabling listed in the Fig. 3.4.8 while interconnecting the components.
- Tell them that they should remember that different size of conductor for series and parallel connections and from junction box to the battery must be used to avoid the system's voltage from dropping.
- Also, tell them that they should ensure ease of access for interconnections and maintenance of string/array combiner boxes while installing the boxes.
- Explain them the precautions to be taken for connecting each and every component one by one.
- Also tell that modules with shrouded MC4 connectors are preferred as they are electrically safe to install and convenient to isolate from the string.

Do <

Draw the following diagram on the whiteboard and explain the steps of functional testing of a PV system

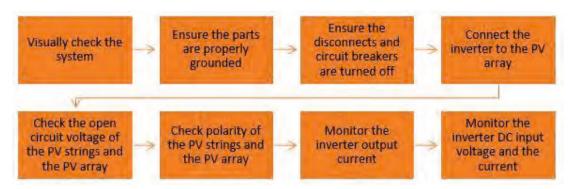


Fig 3.4.2: Steps of functional testing of a PV system

 Draw the following diagram on the whiteboard and explain the steps of electrical testing of an inverter.

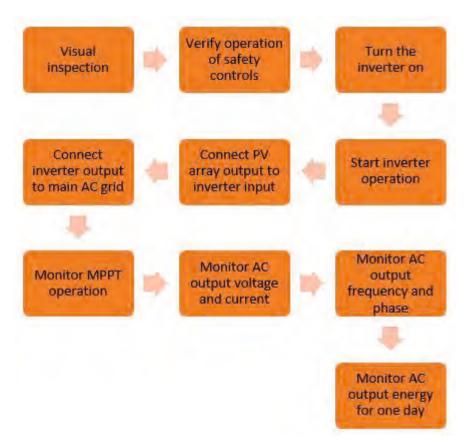


Fig 3.4.3: Steps of electrical testing of an inverter

• Draw the following diagram on the whiteboard and explain the steps of electrical testing of a PV array.

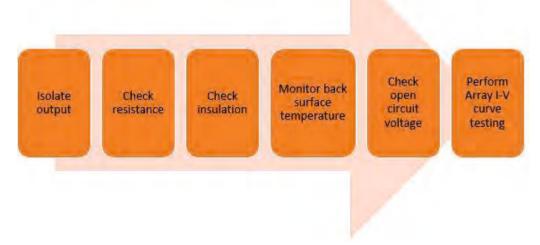


Fig 3.4.4: Steps of electrical testing of a PV array

Explain



- Explain electrical testing of a Solar PV Array and that of an inverter.
- Explain the checking of the functioning of the modules.
- Explain the earthing of PV systems.

Notes for Facilitation



- Go over the steps of functional testing of a PV system one by one.
- Tell them the steps of electrical testing of the PV array one by one.
- Explain the steps involved in electrical testing of an inverter.
- Tell them earthing of a PV system is required to protect the system from lightening.
- Explain the importance of earthing.
- Explain the rules for grounding the PV system.

Say



- Tell that maintenance is very important for the solar PV modules as the modules are installed outside.
- Also, say the importance of scheduled and unscheduled maintenance.
- Tell them to unplug tools and equipment before cleaning, adjusting, or repairing them.

Ask ask

- Ask the participants if they know what troubleshooting means and why it is required.
- Ask the participants if they can tell some conditions that can cause fault in a PV system.
- Ask the participants if they know which tool is used to check various PV system parameters such as voltage, current, continuity and polarity.

Explain



- Explain the meaning of troubleshooting and why it is required.
- Explain the conditions that cause fault in a PV system.

Notes for Facilitation



- Tell them that while troubleshooting PV components, they should first perform visual inspection of the components such as:
 - Fuses and the circuit breaker
 - Junction boxes, distribution boxes and wiring
 - o PV modules and batteries
 - System wiring
 - Meters
- Also tell the diagnosing steps for the problem where the PV power source is not available.
- Explain them that diagnosis of the power problem starts with testing the battery.
- Briefly explain the common faults in a PV system and the way to troubleshoot them.
- Also, tell them the steps that should be followed when using a multimeter for:
 - Measuring voltage
 - Measuring current
- Tell the participants that they can check polarity and continuity of a circuit using a multimeter.
 - Checking Polarity: Polarity of a circuit refers only DC current circuits. In any circuits, it
 is important to check for its correct polarity before giving supply to the circuit. There
 can be many disadvantages and hazard due to reverse polarity.
 - The DC motors may run backwards.
 - In many appliances, overheating may occur.
 - The appliances do not work at all.
 - The appliances may be destroyed.

Following are the steps for checking polarity in a circuit:

- Disconnect the circuit and verify if it is open by using a multimeter.
- On multimeter, select the type of voltage as DC.
- Plug the red lead in positive (+) jack V and plug the black lead in the common (-) jack of the multimeter.

- Connect the red lead to the positive (+) and black lead to the negative (-) in the circuit.
- o **Checking Continuity:** Checking continuity indicates whether a circuit is open or closed. This is useful when checking for broken wires, short circuits, fuse or switch operation. Following are the steps for checking continuity in a circuit.
 - Select the continuity mode in a multimeter.
 - Plug the red lead in positive (+) jack V, and plug the black lead in the common (-) jack of the multimeter.
 - Connect the leads of the multimeter to the two points in the circuit whose continuity is to be tested.
 - The multimeter simply gives a beep if continuity exists; otherwise, if continuity does not exist, then the multimeter will not give any beep sound.
- Activity Handling Strategy:
 - o Create a maintenance schedule checklist for PV system.
 - o Ask each participant to write on paper.
 - After the activity, as 3-4 participants one by one, what they have written.
 - Tell the correct answers.
 - Here is a sample checklist:

Maintenance Work	Frequency
Ivianice von	requeries
Inspect and clean PV modules	Weekly
Monitor power generation	Daily
Ensure connection	Half yearly
Check mechanical strength of mounting structure	Annually
Check output voltage and current and compare to the expected one	Annually
Check cabling for mechanical damage	Annually

Fig 3.4.5: Maintenance checklist for PV system



1. There is a sudden shut down and loss of energy in a PV system. Troubleshoot the problem.

To troubleshoot the PV system:

- Inspect the equipment and wiring carefully to check whether there is any burnt or melted
- Inspect the GFDI fuse to check whether it has blown.
 - If the fuse is not visible from outside, use multimeter to test the continuity. If, not check the display.
 - If the fuse is blown there will be infinity symbol on the multimeter which will indicate that there is no resistance in the circuit and the fuse is blown.
- Use the multi-meter with the current clamp to measure current at the inverter.
 - o If the GFDI fuse has blown there should be no current measured at this point.
 - o If there is, this is an indication of double fault.
- Record the voltage:
 - o positive to ground,
 - negative to ground,
 - o open circuit voltage (positive to negative).
- If the fault exists and the system has multiple strings,
 - Measure voltage at the string level for determining the location of the fault.
 - Record the measurements for each string.
- If the fuse was not blown, it might be that the fault is lower than the trip rating of the fuse. To test that,
 - Remove the fuse and measure positive to ground and then negative to ground.
 - If a fault is not present, both readings should be approximately half of the system's Voc rating.
 - If the voltages on the positive and negative conductors are quite different, the fault can be located easily. For example, if the readings are like:

Positive to Negative = 432V

Positive to Ground = 324V

Negative to Ground = 108V and

Voc of the module is 36V under normal operating conditions.

If negative reading is divided by 36V, a result of 3 is obtained. The fault reading indicates that the third module, counting from the negative conductor side of the string, is where the fault has occurred.

- Inspect the module for any damage.
 - Look for cracks on the glass or cells below.
 - Check the module's backsheet for any gouges or scratches.
 - Check the PV wire for chaffing, severing or if the cable has been chewed on by wildlife.
 - Spot the damage that can lead to the fault and replace the faulty module if necessary then replace the GFDI fuse.

2. Measure current of the PV module with a clamp accessory

- Determine if the current to be measured is ac or dc.
- Determine the anticipated maximum current of the circuit by checking the label of a component or the rating of the breaker.
 - Determine if the range of the multimeter or clamp accessory is high enough to measure the current level.
- Set up DMM as follows to measure ac/dc current with a current output clamp
 - Turn the dial to mÃ/Ã.
 - o Plug the black test lead into the COM jack.
 - Plug the red test lead into the mÃ/Ã jack.
 - Follow steps 6-8 below.
- Set up DMM as follows to measure ac/dc current with a voltage output clamp,
 - o Turn the dial to mVac for ac current, or to mVdc for dc current.
 - o Plug the black test lead into the COM jack.
 - Plug the red test lead into the V jack. These clamps are designed to deliver 1 mV, 10 mV or 100 mV to the DMM for every 1 A of measured current.
- Open the jaws by pressing the tool's trigger.
- Enclose a conductor inside the jaws of the clamp accessories. Make certain the jaws are completely closed before taking readings.
- Record the reading.

3. Wire and install a 1-kilowatt stand-alone PV system.

- Bury conduit from the building which will receive the power to the location of the solar panel array.
 - With the conduit in place, build a platform consisting of concrete posts of 4x4 to support the solar array.
- Mount the panels to the platform using angle brackets
 - o Square and center the feet before they are secured into place.
 - o First mount the front feet.
 - Elevate and secure rear legs as per the angle required for the array.
- Wire the solar modules together.
 - Strip and wire in pairs
 - o Join them at a junction connector or fuse combiner box mounted at the platform.
 - Connect them to underground conduit output cables.
- Connect the solar breaker to a circuit breaker disconnect that will allow flow of current to the charge controller and then to a battery bank to be stored.
 - o Connect power inverter and charge controller to circuit breaker disconnect.
- Run the electrical cable from the solar panel array into the building through the underground conduit.
 - Connect the cables to nylon rope for easy threading
 - o Pull the cables through the conduit to inverter panels.

- Connect the cables at the fuse combiner box at the base of the solar array.
 - o Connect the green cables to the grounding strip.
 - o Connect red cables to the PV out positive terminal block
 - O Connect the black cables to the PV out negative terminal block.
- Tap a grounding rod into the earth near the array.
 - Run copper grounding wire from the rod and the solar panels to the fuse box.
- Make the proper electrical connections.
 - Run the cables from the array to the inverter panel disconnect.
 - Connect red wire to the positive terminal, green grounding wire to the grounding terminal and black wire to the negative terminal.
- Install battery in the area above the control panels.
 - o Run conduit through the ceiling into the inverter panel.
 - o Feed two heavy-duty battery cables into the panel disconnect.
 - o Connect the other ends of the cables to the battery.
- The battery system must be installed in a series -- alternating positive and negatives -- and secured into place.
- 4. The output of the PV system is low. Troubleshoot the problem.
- Check all the connections.
- Check the consumption of the loads to check whether the required voltage and current is within the range or not.
- Inspect the battery condition and the connection with battery.
- Check if there is any ground fault or blown fuse or voltage in lower than the trip rating of the fuse.
- Check the PV array:
 - o Check the output of the PV system at the metering system or at the inverter.
 - Check the inverter's input voltage and current level from the array.
 - If the entire PV system is down and not producing power it may be an inverter problem.
 - If the PV system is operating at a reduced power output the problem may be one of the arrays or modules.
 - Visually check the entire system for any damage or any disconnected wires.
 - Once the module or array that is not producing power is found, check all wiring, switches, fuses and circuit breakers.
 - Replace blown fuses and reset the breakers and switches.
 - Check for broken wires and loose or dirty connections.
 - Replace and clean as needed.
 - Check for wire nuts that are connecting modules together.
 - Inspect the concentrators. The concentrators can be a great place to troubleshoot the system because the individual wires from the modules are brought back there. Each module may have a fuse which should be checked with the 381 meter.

- Wiring problems and loose connections may also cause a module to produce too low a voltage.
 - Check all wiring connections. If a module output is low, it may mean that an individual section of cells is bad.
 - Trace out the faulty cell using the 381 meters at the junction boxes until the culprit is found.
- Any dirt on the modules, or modules in the shade, can cause a reduced output.
 Although the modules are usually designed to be maintenance free for years, they may need to be cleaned. Pollen can be a problem in some areas of the country.
 - Check the system with the 381 meters after any corrections are made.

5. Perform the maintenance activities of a PV system.

- Carry the battery outside when cleaning to avoid spilling of acid. Keep water nearby to rinse spills.
 - Disconnect the solar charge.
 - Disconnect the battery from the leads and remove the terminals from the posts.
 - Clean the top and outside of the battery with water
 - O Clean the terminals. If the terminals are corroded:
 - Clean them with a solution of baking powder.
 - If the terminals are badly corroded, replace them.
 - Replace the cleaned terminals and tighten the bolts.
 - Apply petroleum jelly or grease to the connected terminals.
 - Place wet cloth over it for 2-3 hours, if bolts are very tight, and open them.
 - Check the level of electrolyte. To check whether acid level is within two centimeters of the battery top.
 - Remove caps of each of the cells
 - Check the plates' condition
 - If the electrolyte level is down, add ionized distilled water.
- Reduce the number of loads connected if the battery is in the state of low charge and allow the battery to be charged.
- Clean the PV modules with water and if necessary a mild soap.
 - o Ensure there is no plant or a tree to shade the panel
- Inspect the junction box on the back of each panel to check the wiring is tight. Make sure that:
 - The wires have not been cut by rats.
 - o There are no insects in the junction boxes
- Check the wiring of the system especially in places where it might be damaged by animals, tampered with or accidently pulled.
 - Check the tightness of all connector strips.
 - o Make sure that no bare wire is visible
 - Check the switch. It should not spark while turning ON or OFF.

- Check whether other LED indicators are working. The solar charge comes ON when the sun is up. If it is not On, check to see if the batteries are being charged.
- o Check the grounding wires to make sure that they are all intact.

6. Battery state of charge (SOC) is constantly below 1.5 V. Troubleshoot the issue.

- Check and fix connection
- Add distilled water to cells
- Check for broken wire or loose contact
- Clean and tighten battery terminals
- Clean blown fuse section (if any)
- · Leave appliances off for a week to recharging
- · Find out age and history of battery
- Check voltage drop and replace cable wire if required
- Check operation of charge controller and repair if required

7. Perform a test for the earthing and lightning protection

- Use ohmmeter to check the continuity of the entire grounding system
- Make sure that all module frames, metal conduits, junction boxes, connectors and electric components are grounded.
- Use DC voltmeter to check the polarity of the system components and wiring
- Make sure that a grounding wire has been run through the conduit, if it is a plastic one, to provide continuous grounding.
 - o If the conduit is made of metal, it itself works as a ground conductor.

8. Set up cable connection for PV modules and other components in the PV system.

Solution:

- Connect the modules in series or parallel as required.
 - Cut the cable depending upon the location of the combiner box to to connect both side of the panel string.
- Lay down the cables up to DC combiner box
 - Carry the cables through cable trench or cable tray
- Insert cables in to DC combiner box
 - Open combiner box
 - o Break out the required number of knockouts for the cable conduits
 - Insert cable conduit into the holes
 - o Pull the conduits to tighten them
 - o Determine suitable fuse rating and connect string fuse
 - Connect equipment grounding
 - Strip the cable by 0.3 inches
 - Open the screw terminals using screwdriver and plug the stripped cable in that
 - Tighten the terminal

- Connect PV modules
- o Connect the negative and positive string in appropriate location
- o Connect the output wire and leave them for inverter connection
- Insert cables into DC connector switch.
 - When PV negative is ground,
 - Wire the PV positive wire conductors in to fuse holder terminals marked 'PV hot inputs'.
 - Wire the PV negative wire conductors into terminal block to the fuse holders marked 'Neutral Inputs'
 - When PV positive is ground,
 - Wire the PV negative wire conductors in to fuse holder terminals marked 'PV hot inputs'.
 - Wire the PV positive wire conductors into terminal block to the fuse holders marked 'Neutral Inputs'
- Connect cables to energy meter bringing them from DC disconnect switch.
- Connect inverter
 - Connect negative strings, positive strings of input and DC positive and negative output terminals
- Connect AC disconnect switch
 - o Place red wire at the bottom of the screws at the back of the breaker
 - o Place black wire at the bottom of the screw located behind the breaker
 - o Tighten the screws
 - o Attach the white wire to the neutral bar of the panel
 - Bare copper wire should be connected to the ground bar that holds copper and green ground wires
- Connect cables to AC combiner box. Connect:
 - Incoming
 - 3core/5core cable from solar inverter
 - Cable from AC circuit breaker, having 2 pole/4 pole connectors
 - AC surge protection device of class 2
 - Outgoing cable
 - to the building electrical distribution board
- 9. Install roof attachment for a flat roof mounting system.
- Place the rails over footings
- Place the purlins over rails/rafters
- Fix the purlins over rafters
- Fix the clamps
- Fix the purlins with clamps to make required elevation from the roof
- Fix the PV modules and level them over the elevated structures

10. Install roof attachment for a slope roof mounting system

- Install roof hooks
 - o Remove roof tiles from hook location
 - o Fasten the hook to the rafter using screws
 - o Put the tiles back on its position
- Drill wood structure and the covering
- Screw in hanger bolt
- Place the rubber seal, screw nut and tighten them
- Mount flange
- Install module support frame
- Level the array structure
- Apply corrosion protection on the cut surfaces
- Apply weather proof protection to avoid any penetration and seepage

11. Install a commercial grid-tied PV system as per the specification given in the diagram.

- Fix the Mounting structures
- Mount the solar panels
- Place the battery and inverter.
- Connect the components with wires.
- Connect the PV system with AC Mains.
- Connect loads.
- Check the functionality.











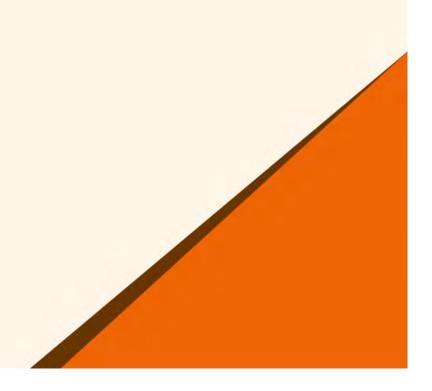
4. Work Ethics and Workplace Safety

Unit 4.1 - Work Ethics

Unit 4.2 - Workplace Safety

Unit 4.3 - Soft Skills





Key Learning Outcomes 👰



At the end of this module, you will be able to:

- Explain work ethics
- Interact with supervisor
- Interact with colleagues
- Evaluate the practices of working in a team
- Implement quality and safety procedure
- Recognize the potential sources of accidents
- List the general safety guidelines
- Recognize safety measures and precautions
- Explain communication skills
- Develop effective listening skills
- Manage a conflict

Explain the importance of personality development

UNIT 4.1: Work Ethics

Unit Objectives

At the end of this unit, participants will be able to:

- Describe work ethics
- List the factors for creating strong work ethics
- Interact with supervisor
- Interact with colleagues
- Evaluate the practices of working in a team
- Implement quality and safety procedure
- Execute work effectively

Resources to be Used 🧐



Available objects such as a duster, pen, notebook and so on.

- Ask



• Ask the participants if they know anything about work ethics.

Elaborate 🚇



Elaborate the term work ethics and explain the importance of it.

Role Play



- Ask the two participants to enact a role play.
- One of them is solar panel installer and the second one is his superior.
- The situation is that the installer has recently joined and has approached the superior to understand his work requirement.
- Ask them to enact the interaction between the two of them.

- Set five minutes as the time limit of the role play.
- Ensure that the role play finishes within time.

Activity



- Divide the participants in four groups.
- Group A Topic → Internal communication with colleagues
 - Situation \rightarrow You have to hand over an installation to your colleague in between. What information will you share with him?
- Group B Topic → Archiving information
 - Situation → Your superior has asked you to put all old case files in order. How will you do it?
- Group C Topic → Email and Internet
 - Situation → A new joinee does not know how to send email. What will you do?
- Group D Topic → Encouraging internal communication with colleagues
 - Situation \rightarrow What will you do to encourage colleagues to share information among them?



- Set five minutes as the time limit of the activity.
- Ensure that the activity finishes within time

Explain



- Explain the factors of work ethics one by one and relate them to the work environment of a solar panel installer.
- Explain the importance of maintaining right interaction with superior.
- Explain the reporting structure.
- Explain the importance of maintaining right interaction with colleagues.

Notes for Facilitation



- Tell them that should know the importance of work ethics and maintain that in their workplace.
- Briefly explain that why they need to interact with the supervisor and colleagues.
- Tell them they should maintain a good relationship with supervisors and colleagues to maintain a healthy work environment.
- At the end of the role play, have a discussion a proper interaction with superior.
- Explain in detail the two components of the interaction:
 - Understanding work requirement
 - Understanding standard operating procedures
- At the end of the activity, have a discussion on proper interaction with colleagues.

- Explain in detail the four components of the interaction:
 - o Internal communications
 - o Archiving information
 - o Email and internet
 - o How to encourage internal communication
- Write the terms on the white board and tell them that they need to understand the work requirements that include:

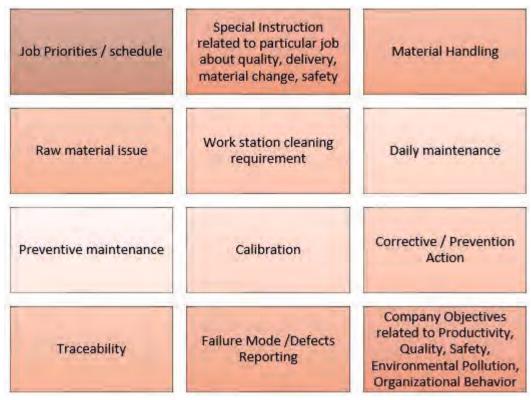


Fig 4.1.1: Work requirements

 Tell them that they must understand the work requirements and standard operating procedures of the organization to achieve quality and productivity. They need to understand the followings:

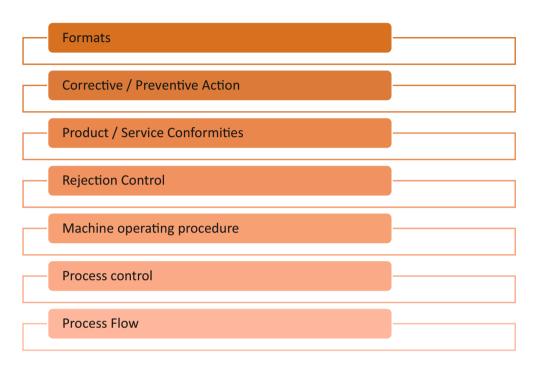


Fig 4.1.2: Standard operating procedures of the organization

- Tell them the importance of reporting structure and briefly explain the basic reporting structure of an organization. Tell that reporting structure depends on the business type and size used.
- Also tell them the advantages and disadvantages of functional structure:
 - Advantages
 - Specialisation each department focuses on its own work
 - Accountability someone is responsible for the section
 - Clarity know your and others' roles
 - Disadvantages
 - Closed communication could lead to lack of focus
 - Departments can become resistant to change
 - Coordination may take too long
 - Gap between top and bottom

Say 🚨

• Say that a panel installer should ensure the quality standards and follow the safety procedures to ensure workplace safety.

Explain 🗓



- Briefly explain quality standards and tell them what to do to ensure the quality standards.
- Explain the safety procedures to be followed.
- Explain the importance of completing the work effectively.

Write the following points on the whiteboard and explain the core skills of team work and multi-tasking:



Fig 4.1.3: Core skills of team work and multi-tasking

Explain



- Explain the importance of working as a team.
- Explain general work policies and processes of an organization.

Notes for Facilitation



- Take the points one by one and explain the concept with the help of day to day examples.
 - Be Liberal with Praise: People like others to recognize them for a job well done. Pay attention to what other people are doing and congratulate them on hard work and successes. Simple politeness goes a long way too. People appreciate smiling, saying please and thank you, and even saying hello and goodbye. These things are particularly important if you have people you manage. Employees expect politeness and praise from their boss or superior, and they'll like you a lot better for it.

- o **Pick Your Moments:** When you work in shared office space, it's important to recognize when people are available to talk. Be aware of what others are doing, and you'll avoid interjecting when they're trying to get something done. They won't than k you for interrupting them when they're rushing around, trying to meet a deadline. And be careful with what you say, as well as when you say it.
- Take an Interest Outside of Work: If you're looking to start hanging out with colleagues outside of work, first you should take an interest in their personal life at work. Ask about their families and hobbies, and discuss your weekends or evenings when you arrive in the morning. Pay attention to their moods while they're working and sympathize with them, whether they're happy or sad. Make sure you balance what you ask them to reveal and what you're willing to talk to them about. It's strange if one of you is doing all the talking.
- O Be Willing to Socialize on Your Breaks: When its lunchtime, or time to go home, don't rush off immediately. Doing so will make it look like you can't wait to get out of there and away from everyone else. Although sometimes it's perfectly acceptable to want time to yourself, make sure you don't go off on your own all the time. Especially if other people spend their breaks together, you'll look like the antisocial one if you don't want to join in.
- Treat Your Co-workers as You Would Want Them to Treat You: When you leave school, you hope that you have left bullying behind. But often that's not the case, and many people find themselves feeling victimized at work. It may seem like a no-brainer, but treating your colleagues as you want them to treat you will get you far. Even if you don't like them and they don't like you, take the higher ground a nd be polite for the sake of your working relationship.
- On't Gossip: One thing you probably don't want people to do is talk about you behind your back. It may be difficult not to join in, especially when you're dying to agree with someone about a colleague's behaviour. But there is always a risk that gossip will get back to the person it's about. If you do have a problem with someone, you can choose to keep silent or to confront them. Which one is most appropriate will depend on the situation, but if all you want to do is vent then wait until you get home. It's better that whoever you live with gets fed up with your work complaints than you create a bad atmosphere in the office.
- Face Problems Head On: Sometimes when there's just no chance of getting along with a colleague, you need to do something about it. In particular, if a colleague is doing something that makes you feel uncomfortable or upset, you should follow the company procedure for reporting it. You can also attempt to deal with problems informally, by approaching your colleague face-to-face. This may help to resolve the issue, but you should remain calm and prepare yourself for them to be unresponsive.
- On't Push Too Hard to Make Friends: Never put making friends over being a professional. Remember that you are there to do your job first of all. By being nice at work and during breaks, you can increase your chances of socializing with your colleagues outside of work. But people don't need to see everything of who you are while you're working. If you get on with your work you're unlikely to clash with anyone or make any enemies.

Offer Help When it is Needed: Make yourself stand out as the friendly and helpful one by offering help when others need it. Don't be so enthusiastic that it gets annoying, but be willing to lend a hand when someone asks. Even when no one's asking, you might want to volunteer to help someone occasionally if you have the time. But don't slack off on your own work to help others.

UNIT 4.2: Workplace Safety

Unit Objectives

At the end of this unit, participants will be able to:

- Recognize the potential sources of accidents
- Classify the safety policies
- Identify the responsibilities of managers and employees regarding safety
- List the general safety guidelines
- Recognize the safety measures and precautions

Resources to be Used



- Available objects such as a duster, pen, notebook and so on.
- Various personal protective equipment such as gloves, goggles, helmet and jacket.



- Workplace safety is important to ensure reduction of accidents and improvement of work performance.
- Say that they should know about the work area, equipment involved and usage of tools, forms of personal protection, safety hazards information.

Draw the following diagram on the whiteboard and explain the various types of hazards

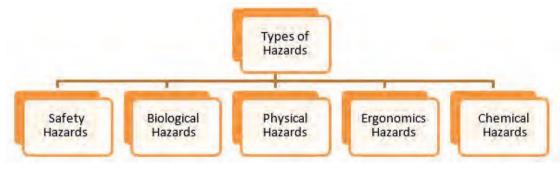


Fig 4.2.1: Type of hazards

Take the points one by one and explain the concept with the help of day to day examples.

Explain 🖫



- Explain sources of potential hazards and briefly explain each one of them.
- Explain the organization safety policies.
- Explain the responsibilities of the safety committee.
- Explain the responsibilities of the managers with regard to the employee health and safety

Notes for Facilitation



- Explain different types of hazards and their sources.
- Write on the white board and tell the participants that the policies followed in an organization are:
 - Environmental Management System (EMS)
 - Environment, Health and Safety (EHS)
 - Health and Safety (H & S)
- Briefly explain about the policies.
- Tell them that the safety committee, the employers and the employees have their own responsibilities towards organizational safety policies.
- Tell them that they should abide by the general safety guidelines to ensure workplace safety.

Draw the following diagram on the whiteboard and explain the various safety precautions that should be taken while working.



Fig 4.2.2: Safety measures

Take the points one by one and explain the concept in detail.

Explain 🖫



- Explain electrical safety measures.
- Explain fire safety measures and mechanical safety.
- Explain to them some jobsite safety measures that should be followed.

Elaborate



- Elaborate on the electrical safety measures that should be taken such as:
 - Handling PV modules exposed to sunlight
 - Handling batteries in a PV system
 - Maintain safe distance from exposed electrical conductors
 - Undertake proper work practice in wet or damp locations containing electricity
 - Proper lockout/tag-out procedures for electrical equipment and systems
- Elaborate key points of fire drill.



- Ask them if they can tell some safety precautions that should be taken while handling batteries.
- Ask them if they can tell some protective gear that they should use while working.

Explain



- Explain that a battery can pose a potential safety hazard as:
 - o It contains sulphuric acid that can cause burns.
 - It can generate explosive gas.
 - It can cause electrical shock.
- Explain the use of protective gears.

Notes for Facilitation



- Give the participants a brief overview of what all will be covered in the program.
- Start the discussion by inviting the participants to participate.
- Tell them that it is very important to follow safety guidelines and adhere to protocol while installing a solar PV system.
- Tell them that just as the employer is responsible for:
 - Assessing the workplace for hazards
 - Providing ppe
 - Determining when to use it
 - Providing training for the affected employees

- An employee's responsibilities include:
 - Using PPE in accordance with training received and other instructions
 - o Inspecting daily and maintaining the PPE in a clean and reliable condition.
- Tell them that on-site mechanical safety plan for PV installer includes:
 - Safe work area
 - Safe use of tools and equipment
 - Safe practices for personnel protection
 - o Awareness of safety hazards and how to avoid them
- Tell them that misuse and improper maintenance of hand and power tools can cause potential hazards.
- Also explain that power tools are extremely hazardous when used or maintained improperly. Workers using hand and power tools may be exposed to several hazards, including:
 - Objects that are abrasive, or splash
 - o Harmful dusts, fumes, mists, vapours, and gases
 - o Frayed or damaged electrical cords
 - o Hazardous connections and improper grounding.
- Also tell them that eye protection is usually always required. All hand and power tools and similar equipment, whether furnished by the employer or the employee, shall be maintained in a safe condition. All power tools must be fitted with factory guards and safety switches, and hand-held power tools must be equipped with a constant pressure switch or on-off switch.

Also tell them some additional guidelines for using hand and power tools:

 Follow manufacturers' instructions.

Use the proper PPE

Disconnect tools when not in use, for cleaning, and when changing accessories

Secure work with clamps or a vise, freeing both hands to operate the tool

Inspect tools regularly before use and maintain in sharp, clean condition

Do not wear loose clothing and jewellery that can get caught in moving parts

Do not use electric cords to carry, hoist or lower tools

Keep cords and hoses away from heat, oil, and sharp edges Remove damaged electric tools & tag them: "Do Not Use."

Fig 4.2.3: Guidelines for using hand and power tools

Tell them about various safety gears and the responsibilities of employees and employers

Explain

towards it.



- Explain that using PPE is important as it provides:
 - Skin protection
 - Eye Protection
 - Hearing Protection
 - Foot Protection
- Explain the meaning of the term 'incident reporting procedure'.
- Explain the types and the procedure of incident reporting.
- Further, explain that they must promptly inform their supervisor in case of any safety incident and follow the proper reporting procedure.
- Explain the importance of good housekeeping.

Notes for Facilitation



- Show the participants various protective equipment and explain their use.
- Ensure that you have the personal protective equipment with you before starting.
- Check that it is in a clean and reliable condition.
- Explain to them the various safety precautions they should take such as:
 - **Skin Protection**
 - Eye protection
 - Hearing protection
 - Foot protection
- Also tell them that for hand they should use:
 - o Durable gloves made of mesh, leather or high-performance materials to protect from cuts, burns and heat.
 - $\circ\quad$ Chemical-resistant rubber gloves to protect from burns and irritation .
 - Electrical insulating gloves for exposure to live voltages.

UNIT 4.3: Soft Skills

Unit Objectives

At the end of this unit, participants will be able to:

- Explain communication skills
- Develop effective listening skills
- List the barriers to listening
- Manage a conflict
- Explain the importance of personality development

Resources to be Used



- Available objects such as a duster, pen, notebook and so on.
- Papers and pens for the participants.

Do 🗸

• Welcome and greet the participants.

Activity



- Divide the participants in pairs and make them sit back to back.
- Give one participant a pen and paper and other a picture of a thing such as car, telephone and so on.
- Ask the participant holding the picture to describe it.
- Ask the other participant to draw the picture based in the description.

Time 🚇

- Set five minutes as the time limit of the activity.
- Ensure that the activity finishes within time.

Explain



- Introduce the topic of communication skill.
- Explain the importance of good communication skill.
- Explain the components of a message.
- Tell the participants how experiences shape communication style.

Draw the following diagram on the whiteboard to explain the steps to effective listening.



Fig 4.3.1: Steps to effective listening

Take the points one by one and explain the concept with the help of day to day examples.

Explain 🕎



- Explain the importance of active listening and the steps of effective listening.
- Explain barriers to effective listening.
- Explain non-verbal communication.
- Explain the correct way of communicating long and emotional messages.
- Explain the importance of managing personal emotions during communication.
- Explain the steps required to manage a conflict.
- Explain interpersonal skills and personality development.

Notes for Facilitation



- Give the participants a brief overview of what all will be covered in the program.
- Start the discussion by inviting the participants to participate.
- At the end of the 'Draw as I say' activity, show how the drawing matches the picture in hand.
- Explain that to be effective, their communication should include:
 - What they saw
 - What they heard
 - What they felt

- What they want
- What will be the result
- After explaining the steps of effective listening, explain the various barriers to active listening.
- After explaining the five components of communication, use examples from daily life to explain that emotional obstacles such as vulnerability, protecting, expectations and fear hinder effective communication.
- Explain that to be good listener, they should:
 - o Understand and use non-verbal communication
 - Listen and acknowledge
 - Reflect on what has been said
 - Explain what interpersonal skills are.
- Elaborate on the importance of body language such as:
 - Gestures
 - Facial expressions
 - Eye contact
 - o Posture
 - o Tone of voice
- Demonstrate the correct and incorrect body language
- Elaborate on the importance of using effective expressions while communicating.
- Introduce the topic of personality development.









5. Employability & Entrepreneurship Skills

Unit 5.1 - Personal Strengths & Value Systems

Unit 5.2 - Digital Literacy: A Recap

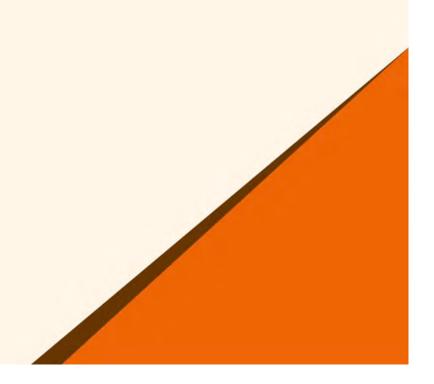
Unit 5.3 - Money Matters

Unit 5.4 - Preparing for Employment & Self-Employment

Unit 5.5 - Understanding Entrepreneurship

Unit 5.6 - Preparing to be an Entrepreneur





Introduction: Employability and Entrepreneurship Skills

This Facilitator's guide includes various activities which will help you as a facilitator to make the sessions participative and interactive.

Ice breaker

• You can begin the module with the following ice breaker:

Five of Anything Ice Breaker Steps:

- Divide the participants into groups of four or five by having them number off. (You do this because people generally begin a meeting by sitting with the people they already know best.)
- Tell the newly formed groups that their assignment is to share their five favourite movies of all time, their five favorite novels or their five least liked films. The topic can be five of anything most liked or disliked.
- This ice breaker helps the group explore shared interests more broadly and sparks lots of discussion about why each person likes or dislikes their selected five.
- Tell the groups that one person must take notes and be ready to share the highlights of their group discussion with the class upon completion of the assignment.

Expectation Mapping

During the first session and after ice breaker session, ask the participants to answer the following question: "What do I expect to learn from this training?"

- 1. Have one of the participants write their contributions on a flip chart sheet.
- 2. Write down your own list of covered material in the training on another flip chart sheet.
- 3. Compare the two sheets, commenting on what will and what will not be covered during the training.
- 4. Set some ground rules for the training sessions. Ask the participants to put these rules on a flipchart and display it in the class.
- 5. You may get back to those sheets once again at the end of the last session of the training.
- 6. Benefits of doing this activity:
 - o Participants feel better as their opinions are heard.
 - Participants get to know what they should expect from the training.
 - The facilitator gets to know which points to emphasize, which to leave out, and which to add during the training.
- 7. Expectations from the participants:
 - Must sign the attendance sheet when they arrive for class.
 - Conduct themselves in a positive manner
 - o Be punctual, attentive, and participative
- 8. Explain the contents that are going to get covered one by one and connect it with the expectation mapping done earlier.
- 9. By the end of this exercise, the participants should have a clear understanding of what to expect from the session and what are the areas that will not get covered.

Defining Objectives

- 1. Defining the objectives in the beginning of the units sets the mood for the unit.
- 2. To begin with the end in mind sets the expectations of the participants as what could be the important takeaways from the session.
- 3. It is also a way of making participants take responsibility of their own learning process.
- 4. For the facilitator, the objectives decide a designed path to progress on so that the learning stays aligned and on track.
- 5. Read the objectives slowly, one by one, and ask the participants to explain what they think it means.
- 6. At the end of the session, you could again revisit the objectives to find out from the participants about how many objectives have been achieved.

In order to effectively facilitate this workshop:

- 1. You must have thorough knowledge of the material in the Participant Handbook, and be prepared to answer questions about it.
- 2. You may also wish to read other material to enhance your knowledge of the subject.
- 3. There may be issues raised with which you are not able to deal, either because of lack of time or knowledge.
 - You can either state that you will obtain answers and get back to the participants with the information. In case the query can be turned to an assignment to the class, do so. You can work with the participants on the assignment.
- 4. You must have a very clear understanding of what the participants want to accomplish by the end of the workshop and the means to guide the participants.
- 5. As the facilitator, it is your responsibility to make sure that all logistical arrangements are made for the workshop. This may involve doing it yourself or confirming that someone else has made all necessary arrangements associated with the workshop. Assume nothing and check everything before the workshop begins.
- 6. To break the monotony and boredom during sessions, introduce mini breaks in the form of stretching exercises, jokes, some group songs or games.
- 7. Invite discussion from the participants.
- 8. Probe the participants further and lead them to come to affirmative conclusions.
- 9. Let the participants answer. No answer is incorrect.
- 10. Ask one participant to write all the points on the whiteboard.
- 11. Build the sessions from the answers provided by the class.
- 12. Prepare for the sessions in advance so that the resources like flipcharts, hand outs, blank sheets of paper, marker pens, etc. can be kept ready.
- 13. Ensure that resources like board, markers, duster etc. is available before your session starts.

General instructions for role playing:

- 1. You are not being asked to be an actor or to entertain. The purpose of the role play is to provide a situation in which you can practice certain skills.
- 2. When you read the brief, try to imagine yourself in the situation described and behave in a way you feel to be natural but be conscious of the fact that your role may require a different approach from that which you might normally use.
- 3. You (and others) may benefit from the change in approach and behavior. Therefore, try to use the approach you feel to be most appropriate for the circumstances described in your brief.
- 4. The brief is just the starting point. It simply sets the scene and the tone of session or activity. Try not to keep referring to the brief as this will affect the spontaneity of the meeting. Allow the role play to develop as you think it might in real life and change your reactions in line with the behavior and responses of others involved.
- 5. If you find that you have too little information to answer questions or to describe what has happened in the situation, do feel free to add your own thoughts and ideas. Try to keep these within the framework of the role you are taking and try to make your improvisations as realistic as possible.

UNIT 5.1: Personal Strengths & Value Systems

Key Learning Outcomes 🙄

At the end of this module, you will be able to:

- 1. Explain the meaning of health
- 2. List common health issues
- 3. Discuss tips to prevent common health issues
- 4. Explain the meaning of hygienes
- 5. Discuss the purpose of Swachh Bharat Abhiyan
- 6. Explain the meaning of habit
- 7. Discuss ways to set up a safe work environment
- 8. Discuss critical safety habits to be followed by employees
- 9. Explain the importance of self-analysis
- 10. Discuss motivation with the help of Maslow's Hierarchy of Needs
- 11. Discuss the meaning of achievement motivation
- 12. List the characteristics of entrepreneurs with achievement motivation
- 13. List the different factors that motivate you
- 14. Discuss the role of attitude in self-analysis
- 15. Discuss how to maintain a positive attitude
- 16. List your strengths and weaknesses
- 17. Discuss the qualities of honest people
- 18. Describe the importance of honesty in entrepreneurs
- 19. Discuss the elements of a strong work ethic
- 20. Discuss how to foster a good work ethic
- 21. List the characteristics of highly creative people
- 22. List the characteristics of highly innovative people
- 23. Discuss the benefits of time management
- 24. List the traits of effective time managers
- 25. Describe effective time management technique
- 26. Discuss the importance of anger management
- 27. Describe anger management strategies
- 28. Discuss tips for anger management
- 29. Discuss the causes of stress
- 30. Discuss the symptoms of stress
- 31. Discuss tips for stress management

UNIT 5.1.1: Health, Habits, Hygiene: What is Health?

- Unit Objectives



At the end of this unit, the participants will be able to:

- Explain the meaning of health
- List common health issues
- Discuss tips to prevent common health issues
- Explain the meaning of hygiene
- Discuss the purpose of Swachh Bharat Abhiyan
- Explain the meaning of habit

Resources to be Used



Participant Handbook



- What do you understand by the term "Health?"
- According to you, who is a healthy person?



Discuss the meaning of health and a healthy person as given in the Participant Handbook.

Ask ask



When did you visit the doctor last? Was it for you or for a family member?



- Discuss the common health issues like common cold, allergies etc. Refer to the Participant Handbook.
- Let us do a small activity. I will need some volunteers.

Role Play



Conduct a small skit with volunteers from the class. Consider one of the villagers has been appointed as a health representative of the village, what measures will you as a health representative suggest to the common villagers to prevent common health issues discussed.

- You will need at least 4 volunteers (Narrator, Health Representative, Head of the Village, Doctor).
- Explain the health concerns of the village to the Narrator. The Narrator will brief the class about the skit.
- Give the group of volunteers, 5 minutes to do discuss.
- At the end of 5 minutes, ask the group to present the skit to the class assuming them as the villagers.
- The class can ask questions to the group as a common villager.

Summarize



Through this activity we got some tips on how can we prevent these common health issues.



Let us now see how many of these health standards we follow in our daily life.

Activity



Health Standard Checklist from the Participant Handbook.

Ask ask



How many of you think that you are healthy? How many of you follow healthy habits?



- Let's do an exercise to find out how healthy you are.
- Open your Participant Handbook section 'Health, Habits, Hygiene: What is Health?', and read through the health standards given.
- Tick the points which you think are true for you.
- Try to be as honest as possible as this test is for your own learning.

Do



- Ensure that all the participants have opened the right page in the Participant Handbook.
- Read aloud the points for the participants and explain if required.
- Give them 5 minutes to do the exercise.
- At the end of 5 minutes, ask the participants to check how many ticks have they got.

Summarize



• Tell them that they need to follow all the tips given in this checklist regularly in order to remain healthy and fit.

Ask



Discuss:

- Is it necessary to practice personal hygiene every day? Why?
- How does a person feel when they do not practice good personal hygiene? Why?
- Can good personal hygiene help a person feel good about his/her self? How?

Say



Discuss the meaning of hygiene as given in the Participant Handbook.

Activity



• Health Standard Checklist: Hygiene

Sav



- Let's do an exercise to find out if we maintain good hygiene habits or not.
- Open the Participant Handbook and read through the Health Standard checklist given.
- Tick the points which you think are true for you.
- Try to be as honest as possible as this test is for your own learning.

Do



- Ensure that all the participants have opened the right page in the Participant Handbook.
- Read aloud the points for the participants and explain if required.
- Give them 5 minutes to do the exercise.
- At the end of 5 minutes, ask the participants to check how many ticks have they got.
- Ask them to calculate their score.
- Tell them what each score indicates by reading aloud what has been mentioned in the Participant Handbook.

Ask



- How many of you have heard about "Swachh Bharat Abhiyan"?
- Can you tell the class what it is about?

Summarize



• Tell them about Swachh Bharat Abhiyan as given in the Participant Handbook and request them to take a pledge to keep our country clean.

Ask



What is a habit?

Say



• Discuss some good habits which can become a way of life.

Summarize



• Tell them about good and bad habits and the reasons to make good habits a way of life.

UNIT 5.1.2: Safety

Unit Objectives



At the end of this unit, participants will be able to:

- Discuss ways to set up a safe work environment
- Discuss critical safety habits to be followed by employees

Resources to be Used



- Participant Handbook
- Safety signs and symbols
- Safety equipments
- Blank papers
- Pens

Say



- There are many common safety hazards present in most workplaces at one time or another. They include unsafe conditions that can cause injury, illness and death.
- Safety Hazards include:
 - Spills on floors or tripping hazards, such as blocked aisles or cords running across the floor. Working from heights, including ladders, scaffolds, roofs, or any raised work
 - Unguarded machinery and moving machinery parts; guards removed or moving parts that a worker can accidentally touch.
 - Electrical hazards like cords, missing ground pins, improper wiring.
 - Machinery-related hazards (lockout/tag out, boiler safety, forklifts, etc.)

Team Activity



Safety Hazards

- There are two parts to this activity.
- First part will cover the potential safety hazards at work place.
- Second part will cover a few safety signs, symbols and equipments at work place.
- Use this format for the first part of the activity.

PART 1		
Hazard	What could happen?	How could it be

Ask



• How could you or your employees get hurt at work?

Say



• Let's understand it better with the help of an activity. You will be given a handout within your groups. You have to think about the possible hazards of your workplace, what damage these hazards could cause and about the corrective action.

Do



- Divide the class into five to six groups of four participants each.
- Put the format on the board for the activity.
- Give blank papers and pens to each group.
- The group is expected to think and discuss the potential safety hazards in the workplace.
- Ask the group to discuss and fill the format using the blank sheet.
- Give the groups 5 minutes for the activity.
- For the second part of the activity, show the class some pictures of safety signs, symbols and equipments.
- Now they will put down a few safety symbols, signs or equipment against the safety hazards identified.
- Give them 5 to 10 minutes to discuss and draw/note it.
- At the end of 10 minutes the groups will present their answers to the class.

Say



- Now, let's discuss the answers with the class.
- All the groups will briefly present their answers.

Do



- Ask the audience to applaud for the group presentation.
- Ask de-brief questions to cull out the information from each group.
- Keep a check on time.
- Tell the group to wind up the discussion quickly if they go beyond the given time limit.

Δsk



De-briefing

- What did you learn from the exercise?
- As an entrepreneur, is it important to ensure the safety of your employees from possible hazards? Why?

Summarize



- Ask the participants what they have learnt so far.
- Ask if they have any questions related to what they have talked about so far.
- Close the discussion by summarizing the tips to design a safe workplace and nonnegotiable employee safety habits.

UNIT 5.1.3: Self-Analysis- Attitude, Achievement Motivation: What is Self-Analysis?

Unit Objectives



At the end of this unit, participants will be able to:

- Explain the importance of self- analysis
- Discuss motivation with the help of Maslow's Hierarchy of Needs
- Discuss the meaning of achievement motivation
- List the characteristics of entrepreneurs with achievement motivation
- List the different factors that motivate you
- · Discuss the role of attitude in self- analysis
- Discuss how to maintain a positive attitude.
- List your strengths and weaknesses

Resources to be Used



- Participant Handbook
- Old newspapers
- Blank papers
- Pencils/ pens

Activity



This is a paper pencil activity.

What are the three sentences that describe you the best?

What do you need to live happily?

What are your strengths and weaknesses?

Do



- Write the three questions on the board/ flipchart before the session begins.
- Give plain papers and pencils/ pens to each participant.
- Tell participants to write the answer for the three questions on the paper.
- Tell them the purpose of this activity is not to judge anyone but to understand more about self.

Say



Discuss the concept of Self-Analysis and motivation with reference to Maslow's Hierarchy
of Needs as discussed in the Participant Handbook.

Team Activity



Tower building

• Each group which will create tower using the old newspapers.

Do



- Divide the class into groups.
- Give them some old newspapers.
- The task is to create a tower out of the newspapers.
- The group which will create the highest tower standing on its own will be considered the winning group.
- Groups can use as many newspapers as they want to and in any way, they want.

Ask



- What did the winning group do differently?
- If you were given a chance, how would you have made the tower differently?
- How did you feel while making the tower?
- Did you feel motivated?

Say



• Discuss the concept of achievement motivation and characteristics of entrepreneurs with achievement motivation as discussed in the Participant Handbook.

Ask



• Is your attitude positive or negative?

Say



• Let me tell you a story:

It's Little Things that Make a Big Difference.

There was a man taking a morning walk at the beach. He saw that along with the morning tide came hundreds of starfish and when the tide receded, they were left behind and with the morning sun rays, they would die. The tide was fresh and the starfish were alive. The man took a few steps, picked one and threw it into the water. He did that repeatedly. Right behind him there was another person who couldn't understand what this man was doing. He caught up with him and asked, "What are you doing? There are hundreds of starfish. How many can you help? What difference does it make?" This man did not reply, took two more steps, picked up another one, threw it into the water, and said, "It makes a difference to this one." What difference are we making? Big or small, it does not matter. If everyone made a small difference, we'd end up with a big difference, wouldn't we?

Δsk



• What did you learn from this story?

Activity



What Motivates You?

- This is an individual activity.
- It is an exercise given in the Participant Handbook.

Do



- Ask the class to open their Participant Handbook and complete the exercise given in the section What Motivates You?
- Ensure that the participants have opened the correct page for the activity.
- Give the class 5 minutes to complete the activity.

Say



• Discuss the concept of attitude and how to cultivate a positive attitude as discussed in the Participant Handbook.

Summarize



• Close the discussion by summarizing how self-analysis, knowledge about what motivates you and your positive attitude can help in your business as well in life.

UNIT 5.1.4: Honesty & Work Ethics

Unit Objectives



At the end of this unit, participants will be able to:

- Discuss the qualities of honest people
- Describe the importance of honesty in entrepreneurs
- Discuss the elements of a strong work ethic
- Discuss how to foster a good work ethic

Resources to be Used



Participant Handbook

Ask ask



- What do you understand by honesty?
- Why is it important for entrepreneurs to be honest?
- Do you remember any incident where your honesty helped you in gaining confidence?
- Do you remember any incident where someone lost business due to dishonesty?



- Discussed in the Participant Handbook.
- "Let's understand it better with the help of some case scenarios. You will be given some cases within your groups. You have to analyse the case scenario that has been given to you and then find an appropriate solution to the problem.
- Keep your discussion focussed around the following:
 - What went wrong?
 - Who was at fault?
 - Whom did it impact- the customer or the businessman?
 - How would it impact the business immediately? What would be the long term impact?
 - What could be done?
 - What did you learn from the exercise?

Do



- Divide the class into four groups of maximum six participants depending on the batch
- Give one case study to each group.
- Instruct them to read the case carefully.

- Put down the de-brief questions on the board and ask the groups to focus their discussion around these questions.
- The group is expected to analyse and discuss the case amongst them and find a solution to the given problem.
- Give the class5-10 minutes to discuss the case and note down their solutions.
- At the end of 10 minutes the team should present their case solution to the class. The presentation can be a narration or a role play.
- Ask the group to select a group leader for their group. The group leader to discuss and assign roles to the group members for the presentation.

Team Activity



Case Study Analysis

Scenario 1

Aakash has a small mobile retail sales and repair shop in Allahabad. He has one of the most popular outlets and has great rapport with his customers. It's around 11 AM when a customer barges in to the shop and starts shouting at Aakash for giving her a faulty instrument. The screen of her mobile is cracked from one side. Aakash remembered thoroughly checking the handset before handing it over to the customer. The customer threatens to sue him and to go to Consumer Court for cheating her. Now, the problem occurred somewhere outside the shop but as other customers were listening to the conversation, it might impact his business. The situation needs to be managed very sensitively. What would you do if you were in Aakash's place?

Scenario 2

Rajni does beautiful Phulkari embroidery on suits and sarees. She has a small home-based business. She has a huge list of customers on Facebook and WhatsApp who give her orders regularly. Smita is one of her old and regular customers. As her sister-in-law's weddingwas around the corner, Smita wanted to buy few handcrafted Phulkari duppatta. She placed an order for three duppattas via WhatsApp and requested Rajni to send them as soon as possible. When the parcel reached Smita through courier she found that out of the three duppatas, only one was hand embroidered and the other two had machine embroidery on them. Even the length and the quality of the material was not as desired. Smita was heartbroken. It was a complete waste of money and moreover she couldn't wear what she had planned to during the wedding functions. She sent a message to Rajni on WhatsApp, expressing her anger and disappointment.

Smita has also sent a feedback and expressed her disappointment on the social media... this will directly affect Rajni's business. What would you do if you were in Rajni's place?

Scenario 3

Shankar is a tattoo artist who has a small tattoo showroom in a big, reputed mall in New Delhi. Mr Saksham had an appointment for today, at 11:00 am but he reached at 11:50 am. Meanwhile, Shankar had to reschedule his next appointment. After availing Shankar's services, Mr Saksham started yelling in an abusive language, refusing to pay the requisite amount, and finding faults in the services provided by him. Who was at fault in this case? What should Shankar do? Should he confront Saksham or give in to the demands of the client?

Scenario 4

Shailender is an online cloth reseller who does business through social networking sites such as Facebook and WhatsApp. Priyanka made online payment for a dress to Shailander. But she did not receive the dress for a month. When she asked for a cancellation, Shailander started misleading her. For almost 45 days, he kept promising her that he will pay the amount today, tomorrow, day after etc. Even after repeated calls and messages when she did not receive the payment or the dress, she decided to write a post against him on a popular social media platform. As a result, Shailender lost lots of customers and his flourishing business faced a major crisis. How could this situation have been managed?

Say 🔓



- Now, let's discuss the problem and solution with the larger group.
- The group will first briefly describe the case to the class.
- Then discuss the issue identified and the proposed solution.
- Once the presentation is over, the class can ask their questions.

Do



- Congratulate each group for the group presentation.
- Ask the audience to applaud for them.
- Ask de-brief questions to cull out the information from each group.
- Keep a check on time. Tell the group to wind up the discussion quickly if they go beyond the given time limit.

Summarize



- Ask the participants what they have learnt from the exercise/ activity.
- Ask if they have any questions related to what they have talked about so far.
- Close the discussion by summarizing the importance of honesty and work ethics for entrepreneurs.

UNIT 5.1.5: Creativity and Innovation

Unit Objectives



At the end of this unit, participants will be able to:

- List the characteristics of highly creative people
- List the characteristics of highly innovative people

Resources to be Used



- Participant Handbook
- Chart papers
- Marker pens

Ask ask



- You must be aware of the term 'Rags to riches' and heard stories related to the term.
- What do these stories tell us?
- What was so special about these people?



- Let's have a look at these stories.
- There are some inspiring stories about people which I would like to share with you.
- Narrate these stories to the class.

A.P.J. Abdul Kalam

Who has not heard of A.P.J. Abdul Kalam: Avul Pakir Jainulabdeen Abdul Kalam hailed from a very humble background. His father was a boat owner. To help his family, Kalam would work as a newspaper vendor. With limited resources, he graduated in Physics and studied aerospace engineering. He was instrumental in India's step towards nuclear energy. In 2002, he became the 11th President of India.

Water filter/purifier at source

Two young boys studying in classes 4 and 5, from Lingzya Junior High School, Sikkim designed a simple innovative low cost water purifier.

Inspiration behind the idea: Most people today prefer to use a water filter/purifier at their home. Both the children have given idea to have filter/purifier at the source of water so that everyone has access to clean water without having to make an investment in purchasing a filter/purifier.

Soring's idea is to have a centralized purification system at the point of distribution like water tank while Subash's idea is to have such purifiers attached to public taps.

Source: http://www.rediff.com/getahead/report/achievers-top-31-amazing-innovationsfrom-young-Indians/20151208.htm

Solar seeder

This is a story of a innovative solar seeder and developed by Subash Chandra Bose, a class 8, student from St Sebasthiyar Matriculation School, Pudukkottai, Tamil Nadu. Subash has developed a solar powered seed drill, which can undertake plantation for different size of seeds at variable depth and space between two seeds.

Source: http://www.rediff.com/getahead/report/achievers-top-31-amazing-innovationsfrom-young- Indians/20151208.htm

Looms for physically challenged

Now this is really inspiring of two sisters, Elakkiya a Class 6 student and Pavithra a Class 9 student of SRC Memorial Matriculation, Erode, Tamil Nadu.

The two sisters have come up with loom for lower limbed physically challenged. In their loom, they have replaced the pedal operated system with a motor and a gearbox attached to a pulley mechanism.

Source: http://www.rediff.com/getahead/report/achievers-top-31-amazing-innovationsfrom-young- Indians/20151208.htm

Ask



- If they can, why can't you?
- Discuss concepts related to 'Creativity and Innovation' with the participants as given in the Participant Handbook.



- Recall the stories on motivation.
- What is the inner drive that motivates people to succeed?
- Let's learn more about such creative and innovative entrepreneurs with the help of an activity.

Team Activity



- This is a group activity.
- Think of any one famous entrepreneur and write a few lines about him or her.

Activity De-brief

- Why did you choose this particular entrepreneur?
- What is his/her brand name?
- · What creativity does he/she possess?
- What was innovative about their ideas?

Do



- Instruct the participants that this is group work.
- Divide the class into small groups of 4 or 6 depending on the batch size.
- Give each group a chart paper.
- Tell the participants they have to write a few lines about any one famous entrepreneur.
- Give the participants 10 minutes to discuss and write.
- Keep a check on time. Tell the group to wind up quickly if they go beyond the given time limit
- Ask each group to read out what they have written.
- Ask the de-brief questions.

Summarize



- Summarize the unit by asking participants if they know of some people who are highly creative and innovative in their approach.
- Ask them to share some experiences about these people with the class.

Notes for Facilitation



• Source for stories on innovations:

 $\frac{http://www.rediff.com/getahead/report/achievers-top-31-amazing-innovations-from-young-lndians/20151208.htm}{\\$

UNIT 5.1.6: Time Management

Unit Objectives



At the end of this unit, participants will be able to:

- Discuss the benefits of time management
- List the traits of effective time managers
- Describe effective time management techniques

Resources to be Used



Participant Handbook

Ask ask



Does this sound like you?

- I can never get enough time to finish what I am doing in a day.
- I have so many things to do that I get confused.
- I want to go for a walk and exercise, but I just do not have the time.
- I had so much to do, so I could not deliver that order on time.
- I would love to start my dream business; but, I just do not have the time.

Example



• Let's look at these two examples:

Example 1:

Ankita works from home as a freelance writer. She says she can easily put in 8 hours of dedicated work in a day. Because she works from home, she saves money on travel and has a comfortable work routine. But there is a challenge and it is distraction. As she works from home, she can easily just get up and sit down on the sofa to watch TV, wasting valuable time. She may have chores to do, errands to run and bills to pay. She ends up working only two to three hours a day and the result is, her work gets piled up. She is unable to take on more work due to this. Even though her quality of work is appreciated her clients are not very happy about the delay in submission.

Example 2:

Javed has started a successful online selling company from home and makes a good living from his sales. He has set up a small office space in his living room. As both his parents are working full-time, he also has the role of taking care of his two younger siblings. He almost spends half of his day with the younger kids. He does not mind it but it means taking time away from the work. He is still able to manage his online business with these commitments. He wants to spend some more dedicated hours so as to increase his profits. He also wants to look into new business avenues. What should he be doing.

Ask



- Does this happen with you too?
- Do you find it difficult to prioritize your work?
- · Are you able to manage your time effectively?

Activity



- Conduct a group discussion based on the above examples.
- Direct the discussion on how to prioritize work and manage time effectively.

Say



- Time management is not only about how hard you work but also about how smart you work
- Discuss "What is Time Management" with the participants as given in the Participant Handbook.

Ask



- Why is it important to manage time? How does it help?
- What happens when you don't manage your time effectively?
- Do you find it difficult to prioritize your work?

Say



- Discuss the benefits of time management given in the Participant Handbook.
- Let's learn effective time management with the help of an activity.

Activity



Effective Time Management

• This activity has two parts:

Part 1 To Do List

- You have to make a to-do list.
- List all of the activities/ tasks that you have to do.
- Try to include everything that takes up your time, however unimportant it may be.
- If they are large tasks, break them into action steps, and write this down with the larger
- You can make one list for all your tasks or have separate to -do lists for personal and professional tasks.

PART 2 URGENT-IMPORTANT GRID

- You have to make a grid as shown on the board here.
- This grid has four boxes. As you can see, each box has a different heading.
- At the heart of the urgent-important grid, are these two questions:
 - o Is this task important?
 - o Is this task urgent?
- Now, you have to think about each activity that you have written in your to-do list and put it into one of the four categories.
- What do these categories depict?
- Category 1: Urgent/Important
 - o This category is for the highest priority tasks. They need to get done now.

• Category 2: Not Urgent/Important

- O This is where you want to spend most of your time.
- This category allows you to work on something important and have the time to do it properly.
- o This will help you produce high quality work in an efficient manner.
- The tasks in this category are probably the most neglected ones, but also the most crucial ones for success.
- The tasks in this category can include strategic thinking, deciding on goals or general direction and planning all vital parts of running a successful business.

• Category 3: Urgent/Not Important

- This is where you are busy but not productive. These tasks are often mistaken to be important, when they're most often busywork.
- Urgent but not important tasks are things that prevent you from achieving your goals.
- o However, some may be activities that other people want you to do.

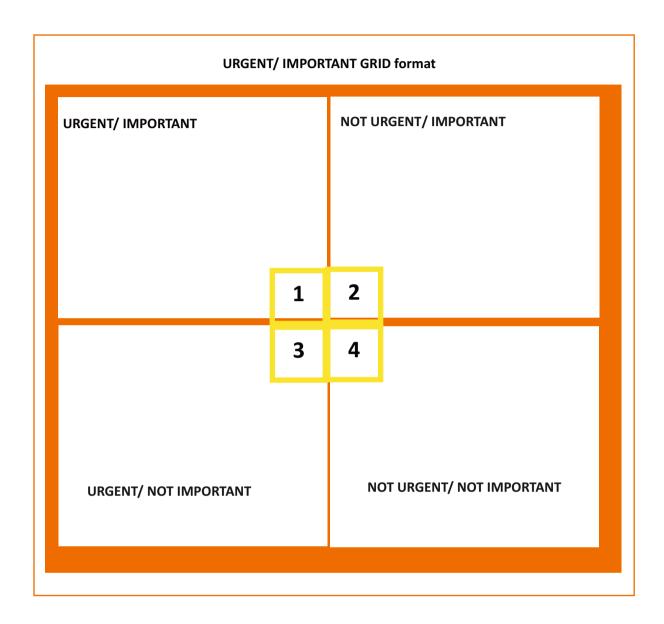
Category 4: Not Important and Not Urgent

- This category doesn't really include tasks, but rather habits that provide comfort, and a refuge from being disciplined and rigorous with your time management.
- O Some may be activities that other people want you to do.
- o These might include unplanned leisure activities as well.

To – Do List Format

1.	
2.	
3.	
4.	
5.	
6.	

7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
URGENT-IMPORTANT GRID									
 URGENT/ IMPORTANT Meetings Last minute demands Project deadlines Crisis 		 NOT URGENT/ IMPORTANT Planning Working towards goals Building relationship Personal commitments 							
	1	2							
InterruptionsPhone calls/ E-mailsOther people's minor demand	3	4	Internet surfingSocial mediaWatching TV						
URGENT/ NOT IMPORTANT		NOT URGENT/ NOT IMPORTANT							



Do



- Put down the formats for the to-do list and the urgent/ important grid on the board.
- Instruct the participants to prepare their to-do list first.
- Give the participants 10 minutes to prepare the list.
- Once done, instruct them to divide the tasks in to-do list into the four categories.
- Explain the four categories to the participants giving examples specific to their context.
- As you explain the categories fill the grid with the type of tasks.
- Give the participants 40 minutes to fill the grid.
- Then explain how to balance the tasks between the four categories.
- Keep a check on time. Tell the group to wind up quickly if they go beyond the given time limit.

Say



Activity De-brief:

How can we balance tasks between the four categories? How to manage time through this grid?

• Category 1: Urgent/Important

- Try to keep as few tasks as possible here, with the aim to eliminate.
- If you spend too much of your time in this category, you are working solely as a trouble shooter, and never finding time to work on longer-term plans.

• Category 2: Not Urgent/Important

- Plan these tasks carefully and efficiently as they are most crucial ones for success.
- o If necessary, also plan where you will do these tasks, so that you're free from interruptions.
- Include strategic thinking, deciding on goals or general direction and planning in your planning process.

• Category 3: Urgent/Not Important

- o Ask yourself whether you can reschedule or delegate them.
- A common source of such activities is other people. Sometimes it's appropriate to say "no" to people politely, or to encourage them to solve the problem themselves.

• Category 4: Not Important and Not Urgent

- You also want to minimize the tasks that you have in this category.
- These activities are just a distraction avoid them if possible.
- o You can simply ignore or cancel many of them.
- Politely say "no" to work assigned by others, if you can, and explain why you cannot do it.
- Schedule your leisure activities carefully so that they don't have an impact on other important tasks.
- Discuss the traits of effective time managers and effective time management techniques as given in the Participant Handbook.

Summarize



 Discuss the traits of effective time managers and effective time management techniques as given in the Participant Handbook.

Notes for Facilitation



- Here is a short story. You can conclude the session narrating the story. To make it more
 interesting you can perform the demonstration described and discuss the short story.
 - One day an expert in time management was speaking to a group of students. As he stood in front of the group, he pulled out a large wide-mouthed glass jar and set it on the table in front of him. Then he took out a bag of about a dozen rocks and placed them, one at a time, into the jar. When the jar was filled to the top and no more rocks would fit inside, he asked, "Is this jar full?" Everyone in the class said, "Yes." Then he said, "Really?"
 - O He reached under the table and pulled out a bucket of gravel (small stones). He dumped some gravel in and shook the jar causing pieces of gravel to work themselves down into the space between the rocks. Then he asked the group once more, "Is the jar full?" By this time, the class began to understand. "Probably not," one of them answered. "Good!" he replied.
 - He reached under the table and brought out a bucket of sand. He started dumping the sand in the jar and it went into all of the spaces left between the rocks and the gravel. Once more he asked the question, "Is this jar full?" No!" the class shouted. Once again he said, "Good." Then he grabbed a jug of water and began to pour it in until the jar was filled to the brim. Then he looked at the class and asked, "What is the point of this illustration? "One student raised his hand and said, "No matter how full your schedule is, if you try really hard you can always fit some more things in it!" "No," the speaker replied, "that's not the point. The truth this illustration teaches us is: If you don't put the big rocks in first, you'll never get them in at all." What are the 'big rocks' in your life? Your children; your loved ones; your edu cation; your dreams; a worthy cause; teaching or mentoring others; doing things that you love; time for yourself; your health; your mate (or significant other). Remember to put these BIG ROCKS in first or you'll never get them in at all. If you sweat about the little stuff (the gravel, sand, and water) then you'll fill your life with little things you worry about that don't really matter, and you'll never have the time you need to spend on the big, important stuff (the big rocks).
- End the story with these lines...
 So, tonight, or in the morning tomorrow, when you are reflecting on this short story, ask yourself this question: What are the 'big rocks' in my life? Then, put those in your jar first.

UNIT 5.1.7: Anger Management

Unit Objectives 6



At the end of this unit, participants will be able to:

- Discuss the importance of anger management
- Describe anger management strategies
- Discuss tips for anger management

Resources to be Used



Participant Handbook



- What is anger? Is anger good or bad?
- Is anger normal or an abnormal behaviour? How can anger harm you?
- Why is it important for entrepreneurs to manage their anger?



- Talk about anger and the importance of anger management in entrepreneurs as discussed in the Participant Handbook.
- Let us do a small activity. This is an individual activity.
- Think of the incidents and situations that angered you and hurt you.

Do



- Instruct them to note down these situations under different categories (as given in the Activity).
- Give the class 3-5 minutes to think and note down their answers.
- At the end of 5 minutes, ask some participants to volunteer and present their answers.
- They can also share these situations with their fellow participants if they do not wish to share it with the entire class.

Activity



- Do you remember any incident which has hurt?
 - o you physically
 - o you mentally
 - your career
 - o your relationships.

Ask



- Do you ever get angry?
- What are the things that make you angry?
- Do you remember any incident where your anger management helped you in maintaining healthy relationship?
- Do you remember any incident where someone lost business/ friend/ relationship due to temper (anger)?

Say



- There are a few strategies which can help in controlling your anger. Let's do an activity to understand the anger management process better.
- This is an individual activity.
- Think of the incidents/ situations which trigger your anger (the cause).
- Then think what happened as a result of your anger (the effect).
- You need to come up with some techniques to manage your anger.

Do



- Give the class the anger triggers (the cause) as listed in the activity.
- Put down the activity format (Anger Triggers, Result of your Anger, Anger Management Techniques) on the board and instruct the class to write the answers under different categories.
- Give the class 3-5 minutes to think and note down their answers.
- At the end of 5 minutes, ask the participants who wish to volunteer and present their answers.



Trigger points and Anger Management Techniques Activity **Anger Triggers**

List of triggers that make you angry:				
Someone says you did something wrong.				
You want something you can't have now.				
You get caught doing something you shouldn't have been doing.				
You are accused of doing something you didn't do.				
You are told that you can't do something.				
Someone doesn't agree with you.				
Someone doesn't do what you tell him to do.				
Someone unexpected happens that messes up your schedule.				
Result of your anger:				
Write the techniques that you use to manage your anger:				
Anger Management Techniques				



- Now, let's discuss the problems and solution with all.
- The individual will first briefly describe trigger points to the class.
- Then discuss the result of the anger. Other participants are requested to remain quiet while one is making the presentation.
- Post presentation, other participants may ask questions.

Do



- Congratulate each individual for sharing their points.
- Ask the audience to applaud for them.
- Ask de-brief questions after the presentation to the class.
- Keep a check on the time. Ask the participants to wind up the activity quickly if they go beyond the given time limit.

Ask (ask)



De-brief questions:

- In the situation described by the presenter, who was at fault?
- How could you have handled this situation alternatively?

Summarize



- Close the discussion by summarizing the strategies and tips of anger management for entrepreneurs.
- Ask the participants what have they learnt from this exercise/ activity.
- Ask if they have any questions related to what they have talked about so far.

Notes for Facilitation



- Encourage the participants to share information about them while presenting the situations to the class.
- Keep the format of the Activity prepared in a chart paper so that it can be displayed during the session.

UNIT 5.1.8: Stress Management: What is stress?

Unit Objectives



At the end of this unit, participants will be able to:

- Discuss the causes of stress
- Discuss the symptoms of stress
- Discuss tips for stress management

Resources to be Used



Participant Handbook

Ask ask



- You are waiting in the reception for an interview or a very important meeting, suddenly your legs are shaky, your hands are cold, you are feeling nervous. Have you ever been in this kind of situation?
- Have you had days when you had trouble sleeping?
- Have you ever been so worried about something that you ended up with a terrible headache?



You've probably heard people say, I'm really stressed out" or "This is making me totally stressed."

Ask (ask)



- What do you understand by stress?
- What gives you stress?
- How do you feel when you are stressed or what are the symptoms of stress?
- How can stress harm you?
- Why is it important for entrepreneurs to manage stress?



- When we feel overloaded or unsure of our ability to deal with certain challenges, we feel
- Discuss about stress, causes of stress, and symptoms of stress as discussed in the Participant Handbook.

- Let's understand the causes of stress and how to deal with them with the help of some case scenarios.
- You will be given some cases.
- You have to analyse the case scenario and then find an appropriate solution to the problem.
- This will be a group activity.

Do



- Divide the class into four groups of 5-6 participants (depending on the batch size).
- Assign one case scenario to each group.
- Instruct them to read the case carefully.
- The group is expected to analyse and discuss the case amongst them and find a solution to the given problem.
- Explain their discussion should result in getting answers for the following questions:
 - O What was/were the cause(s) of stress?
 - o Was the stress avoidable or manageable under the given circumstances?
 - o If yes, how do you think that the stress could be avoided (managed)?
 - o If no, then why not?
- Give the class 10-12 minutes to discuss the case and note down their solutions.
- At the end of 12 minutes, the team should present their case solution to the larger group.
- Ask the group to select a group leader for their group.
- The group leader to discuss and assign roles to the group members for the presentation.

Team Activity



Case Study Analysis

Scenario 1

Akash's alarm doesn't go off and he gets late getting out of the house. He hits traffic and ends up 15 minutes late to work, which his boss notices. He gets to his desk and finds he has to complete 2 reports in next one hour. Just when he is about to begin work, a message pops up "Telecon with the client begins in 10 minutes. Please be in the conference room in 5 minutes." He is not prepared for the call. He is stressed. He does not want to speak to his boss about this. He is stressed, feeling uncomfortable and sick. Not in a position to attend the call or finish the reports on time.

Scenario 2

While paying his overdue bills, Rahul realised that it's the middle of the month and he has only Rs 500 left in his account. He has already asked all of his friends, and family for loans, which he hasn't paid back yet. He is still contemplating over the issue when his phone rings. His sister's birthday is due next week and she has seen a beautiful dress which she wants to buy but cannot tell the parents as it is a bit expensive. She wishes if Rahul could buy the dress for her. Rahul has promised to buy her the dress for her birthday.

Rahul is stressed, does not understand what to do. He is unable to concentrate on his work and unable to complete the tasks assigned. His team leader has already warned him of the delay.

Scenario 3

Sheela calls the cable company as she has unknown charges on her bill. She has to go through the automated voice mail menu three times and still can't get through to a customer care executive. After 15 minutes of repeated efforts, her call is answered. She explains the entire issue to the customer care executive but before the person could suggest a way out, the call drops.

Now Sheela has to call back and repeat the whole process all over again with a new customer care executive. She is very angry and calls again but cannot connect this time.

She has to leave to office so she decides to call from office and check. When she connects this time, she is angry and argues with the executive on the call. All her co-workers around are looking at her as her volume has suddenly increased. She bangs the phone and ends the call. Her co-worker Neelam enquires what has happened to her. She ignores her and just walks off. She has become irritable and her behaviour and tone with other co-workers is not acceptable.

Scenario 4

Arpit is a young entrepreneur who started doing business through Facebook few weeks back. He had always been into a job. Although Arpit has very few financial liabilities, it wasn't an easy decision to leave a comfortable job at once and look for newer pastures. Arpit's boss warned him of the consequences and the challenges of starting a business when nobody ever in his family had been in business.

He has not been able to get a good deal till now. This is an important life shift for him which comes with unknown variables. Arpit is nervous and is wondering if he has what it takes to fulfill the requirement of his new role, or the new experiences he's likely to face.

Ask



- What was/ were the cause(s) of stress?
- Was the stress avoidable or manageable under the given circumstances?
- If yes, how do you think that the stress could be avoided (managed)?
- If no, then why not?

Say



- Now, let's discuss the problem and solution with the larger group.
- The group will first briefly describe the case to the class.
- Then discuss the issue identified and the proposed solution.
- Post presentation, the other groups may ask questions to the group that has presented.

Do



- Congratulate each group for sharing their points.
- Ask the audience to applaud for them.
- Ask de-brief questions to cull out the information from each group.
- Keep a check on time. Tell participants to wind up the discussion quickly if they go beyond the given time limit.

Say



- While it is common and normal to feel some tension. This feeling nervous and tensed can interfere with your thinking process and can have a negative impact on your performance.
- Stress can deplete the most vibrant of souls. It can have a negative effect on every aspect of a person's life including their health, emotional well-being, relationships, and career. However, one needs to understand the causes and types of stress before looking for ways to manage it.

De-brief:

Scenario 1

The cause of stress was lack of time management and the habit of procrastinating. If Akash would have managed his time well, planned alternate ways to get up on time, finished prior tasks on time and planned for client meetings in advance then he wouldn't have faced stress.

Scenario 2

The cause of stress was lack of financial planning. Rahul should have planned his financial resources well in advance and saved some money for the rainy day. Also, differentiating between needs and wants and keeping a check on non-essential expenditure would have saved Rahul from this situation.

Scenario 3

Sometimes, stress is caused due to external factors instead of internal ones. In this case, the stress was unavoidable because we have no control over this customer care system. Every time, you will get in touch with a new executive and will have to explain all over again. This might cause stress but despite being frustrated and angry there is little that we can do about it. All Sheela could do was to find ways to calm herself down through some breathing exercises and meditation, reading some good book or listening to music and then start afresh.

Scenario 4

A positive, major life change can be a source of good stress. Regardless of how good the change is, it can be stressful. Stress caused by a positive and major life change can be beneficial because it causes a person to step out of their comfort zone and learn new skills. Here, Arpit may become a successful entrepreneur or learn new ways to do things differently. Now let us see this scenario, can I have a volunteer to read out this case to the class





• Ask one of the participant who can volunteer and read out this scenario to the class.

Scenario 5

Rakesh lives in Kathmandu with his wife and two beautiful daughters Sarah and Sanya. Nepal was hit by a massive earthquake and Rakesh's building collapsed during the earthquake. During evacuation, Rakesh realised that though his wife and Sarah were fine and suffered only minor bruises, Sanya was nowhere in the scene. Panic stricken, he started calling her name and searching her frantically. A little later, he heard a meek voice from beneath the debris. He quickly removed the rubble to find a huge bed. Rakesh was pretty sure that Sanya was trapped underneath. Though he was badly bruised, he gathered all his courage and with all his might, he lifted the several-ton bed to save Sanya's life. Everyone was relieved to see Sanya alive and also extremely surprised to see this father's ability to access superhuman strength.

- Ask the audience to applaud for the participant after the scenario is read completely.
- Discuss the scenario, ask de-brief questions:
 - O What kind of stress was Rakesh undergoing in this case?
 - Was the stress avoidable or manageable under the given circumstances?
 - O What was the result of the stress?

Say



De-brief:

 Not all stress is harmful; good stress is actually energizing. This was a case of lifesaving stress, or hero stress, which is an important example of good stress. You may have heard stories in which a person performs an impossible feat of physical strength in order to save their life or the life of someone they love. This type of stress causing a surge of adrenaline is good for us.

Summarize



- Close the discussion by summarizing the tips to manage stress as given in the Participant Handbook.
- Ask the participants what they have learnt from this exercise/ activity.
- Ask if they have any questions related to what they have talked about so far.

Notes for Facilitation



- Keep printed copies of the activities/ scenarios ready for the session.
- Put down the de-brief questions on a flip chart so that it can be displayed in the class during the activity.
- Encourage participation and make the discussions interactive.

UNIT 5.2: Digital Literacy: A Recap

Key Learning Outcomes 🔯

At the end of this unit, participants will be able to:

- 1. Identify the basic parts of a computer
- 2. Identify the basic parts of a keyboard
- 3. Recall basic computer terminology
- 4. Recall the functions of basic computer keys
- 5. Discuss the main applications of MS Office
- 6. Discuss the benefits of Microsoft Outlook
- 7. Identify different types of e-commerce
- 8. List the benefits of e-commerce for retailers and customers
- 9. Discuss Digital India campaign will help boost e-commerce in India
- 10. Describe how you will sell a product or service on an e-commerce platform

UNIT 5.2.1: Computer and Internet Basics: Basic Parts of a Computer

Unit Objectives



At the end of this unit, participants will be able to:

- Identify the basic parts of a computer
- Identify the basic parts of a keyboard
- Recall basic computer terminology
- Recall the functions of basic computer keys

Resources to be Used



- Participant Handbook
- Computer Systems with the required applications



- Let's take a quick recap of the basic computer parts.
- Discuss 'Basic Parts of Computer' and 'Basic Parts of a Keyboard' with the class as given in the Participant Handbook.

Explain



Explain all the parts of the computer and the keyboard by demonstrating on the real system.

Ask (ask)



- Do you know about internet?
- Have you ever used internet?
- Why do you think internet is useful?
- What was the last task you performed on internet?



- Let's look at some basic internet terms.
- $Discuss\ 'Basic\ Internet\ Terms'\ with\ the\ participants\ as\ given\ in\ the\ Participant\ Handbook.$

Summarize



- Ask the participants what they have learnt from this exercise/ activity.
- Ask if they have any questions related to what they have talked about so far.
- Close the discussion by summarizing the importance of computer and internet for entrepreneurs.

Practical



- Conduct a practical session.
- Ask the participants to assemble in the computer lab.
- Give some hands-on practice exercises.

Do



- Group the participants for the activity depending on the batch size and the number of computer systems available in the lab.
- Explain the purpose and duration of the activity.
- Ensure the participants complete the practical exercises assigned.

UNIT 5.2.2: MS Office and Email: About MS Office

Unit Objectives 6



At the end of this unit, participants will be able to:

- Discuss the main applications of MS Office
- Discuss the benefits of Microsoft Outlook

Resources to be Used



- Participant Handbook
- Computer Systems with the required applications



- What is the most frequent activity that you do on the computer?
- Do you know how to make presentations on the computer?



- Give a brief introduction of MS Office as given in the Participant Handbook.
- Discuss the most popular office products. Explain in brief their application, benefits and
- Microsoft Word is a word processing program that allows for the creation of documents. The program is equipped with templates for quick formatting. There are also features that allow you to add graphics, tables, etc.
- Microsoft Excel is a tool for accounting and managing large sets of data. It can also simplify analysing data. It is also used to create charts based from data, and perform complex calculations. A Cell is an individual data box which will have a corresponding Column and Row heading. This gives the cell a name, referred to as the Cell Reference. There can be multiple pages in each workbook. Each page, or sheet, is called a Worksheet. When you open a new Excel file, it automatically starts you with three worksheets, but you can add more.

Explain



• Explain the working and frequently used features of Office on a real system.



- What do you know about e-mails?
- Do you have an email id?
- How often do you check your e-mails?



- Communication is vital for every business. The fastest and the safest way to communicate these days are through emails. MS Outlook helps to manage your emails in a better way and also offers a host of other benefits.
- Discuss "Why Choose Microsoft Outlook?" with the participants as given in the Participant Handbook.

Do



- Ask the participants to assemble in the computer lab.
- Explain the working of Outlook on a real system.

Demonstrate



- Demonstrate how to create email id.
- Demonstrate how to write new mails, send mails.
- Demonstrate how to use MS Office application to create a letter and send it as attachment in an email.
- Demonstrate how to use other MS Office applications.

Practical



- Give some hands-on practice exercises
- Group the participants for the activity depending on the batch size and the number of computer systems available in the lab.
- Explain the purpose and duration of the activity.

Summarize



- Ask the participants what they have learnt from this exercise/ activity.
- Ask if they have

UNIT 5.2.3: E-Commerce

Unit Objectives



At the end of this unit, participants will be able to:

- Identify different types of e-commerce
- List the benefits of e-commerce for retailers and customers
- Discuss Digital India campaign will help boost e-commerce in India
- Describe how you will sell a product or service on an e-commerce platform

Resources to be Used



- Computer Systems with internet connection
- Participant Handbook

Ask lask



- How many of you have done shopping online?
- Can you name at least five shopping websites?
- What is the product that you most frequently buy online?
- Why do you do shopping online instead of going to the market?



- Give a brief introduction of "What is E-commerce". Refer to the Participant Handbook.
- E- commerce emerged in the early 1990s, and its use has increased at a rapid rate. Today, many companies sell their products online. Everything from food, clothes, entertainment, furniture and many other items can be purchased online.

Ask ask



What other types of transactions have you performed on the internet other than buying products?



Give examples of e-commerce activities from Participant Handbook.

Team Activity



E-commerce examples

- Instruct the participants to list some of the payment gateways that they have used for ecommerce activities.
- Give them 5 minutes to make this list.
- Discuss payment gateways and transaction through payment gateways.
- Conclude the discussion by mentioning how important e-commerce has become in our day to day transactions.



- E-commerce activities can be classified based on the types of participants in the transaction.
- Discuss "Types of E-commerce" from the Participant Handbook.



- Discuss all types of E-commerce by giving examples and names of some popular websites which use them.
- Make the discussion interactive by asking the class to share some popular e-commerce sites of each type.



- E-commerce activities bring a host of benefits for both, retailers and customers.
- Discuss benefits of E-commerce from the Participant Handbook.

Explain



- The majority of the population that uses E-commerce activities lives in tier-1 and tier-2 cities. To encourage the use of digital money in tier -3 and 4 areas, PM Mr. Modi launched the "Digital India Campaign".
- Discuss "Digital India Campaign" from the Participant Handbook.
- By Digital India project the government will deliver services via mobile connectivity and in doing so, is expected to bring the internet and broadband to remote corners of the country. This connectivity will in turn enhance e-commerce activities also. Furthermore, the Indian Government is also modernizing India Post and aims to develop it as a distribution channel for e-commerce related services.



- Now let us discuss how to sell a product using E-commerce.
- Every product has to be sold on a platform on the internet. Think of it as a shop that you have to sell your product. Now this shop can be your own or shared or rented. If the shop is your own or rented there will be only your products in that shop. If the shop is shared, there will be products of multiple sellers in that shop. A common example is a departmental store which has products from multiple brands in the shop.
- Similarly, in E-commerce the shop is the website where your products are displayed. If it is your own website it will exclusively showcase your products. In this case the cost that you will incur will be:
 - Developing the website
 - Hosting the website
 - Maintenance of the website
- If you rent a website it will also showcase your own products but the development, hosting and maintenance parts goes to the owner. This saves time and the cost to manage these activities.
- Smaller companies usually go for renting a website and the bigger ones develop their own website.
- The concept of shared platforms has become very popular in recent times. In this platform, the sellers have to register and then they can sell their goods on a common platform. Among the most popular of these are Amazon, Myntra, Flipkart, etc.

Role Play



- Tell the participants to choose a product or service that they want to sell online.
- Tell them to write a brief note explaining how they will use existing e-commerce platforms, or create a new e-commerce platform to sell their product or service.



- How much money are you carrying in your wallet?
- Do you have a credit/debit card?
- How do you make payments while doing online shopping?

Say



- Demonetization has made carrying cash in the wallet very difficult. People either shop through cards or some other form of digital money.
- So, what do you think is digital money?
- In this form, the money is both paid and received digitally. There is no hard cash involved. It is an instant and convenient way to make payments.
- There are various types of digital payments. Let us discuss some of them in brief here.
- The first one is the most commonly used system i.e. the cards. Debit card, credit card, prepaid card, all fall under this category.
- Then is the e-wallet or the mobile wallet. This has become the most used form of digital money after demonetization. Examples are Paytm, state bank buddy, Freecha rge, etc.
- Many other forms of digital money are also coming up in market like mobile apps,
 Aadhar card based payment, etc.

Do



 Demonstrate how to make and receive payments through digital models like Paytm and state bank buddy.

Ask



• Why do you think people have started using digital money instead of hard cash? Is demonetization the only reason?

Say



- Digital money gives a lot of advantages over the conventional hard cash. Some of them are:
 - Digital payments are easy and convenient. You do not need to take loads of cash with you, a mobile phone or a card will suffice.
 - With digital payment modes, you can pay from anywhere anytime.
 - Digital payments have less risk.

Summarize



- Ask the participants what they have learnt from this exercise/ activity.
- Ask if they have any questions related to what they have talked about so far.
- Close the discussion by summarizing the importance of e-commerce and digital money.

UNIT 5.3: Money Matters

Key Learning Outcomes



At the end of this unit, participants will be able to:

- 1. Discuss the importance of saving money
- 2. Discuss the benefits of saving money
- 3. Discuss the main types of bank accounts
- 4. Describe the process of opening a bank account
- 5. Differentiate between fixed and variable costs
- 6. Describe the main types of investment options
- 7. Describe the different types of insurance products
- 8. Describe the different types of taxes
- 9. Discuss the uses of online banking
- 10. Discuss the main types of electronic funds transfer

UNIT 5.3.1: Personal Finance – Why to Save?

Unit Objectives 6



At the end of this unit, participants will be able to:

- Discuss the importance of saving money
- Discuss the benefits of saving money

Resources to be Used



Participant Handbook

Ask



- How many of you save money?
- Why do you feel the need to save it?
- Do you plan your savings?
- Where do you keep the money you save?
- How do you use the money that you have saved?

Example



• Let's look at these two examples:

Example 1:

Suhani works in a good company and earns Rs.30, 000 month. She always saves 5000 per month and keeps it aside as a personal saving. She keeps the money at home and has saved quite a lot. One day her mother has a medical emergency and has to be taken to the hospital. Her family is worried about the amount they have to spend for the treatment. It will cost them atleast 40,000.

Suhani says tells her family not to worry and that she has about 50,000, which she has saved over the months.

Example 2:

Jasmeet works in the same company and earns the same as Suhani. She is very fond of shopping and spends most of her money on buying new clothes. At the end of the month, she is always asking her father for money as her pay is finished.

Ask



- Who do you identify with –Suhani or Jasmeet?
- How do you think Suhani manages to save money which Jasmeet is unable to do?

Say



- We should always set aside some and save some money from our monthly pay. The
 future is unpredictable. Saving money not only gives you a sense of financial security but
 it can be used in case of emergencies.
- Discuss "Importance of Saving" with the participants as given in the Participant Handbook.

Ask



- What are the benefits of saving money?
- What does being financially independent mean to you?

Say



- Discuss "Benefits of Saving" with the participants as given in the Participant Handbook.
- Now let us continue with Suhani's story. Suhani has told her family not to worry and that she has about 50,000, which she has saved over the months. The family is happy about Suhani's decision of saving money, which will be of great help for them now.
 Suhani is going to the hospital today to pay the first instalment for the treatment.
 Suddenly finds only 35,000 in her cash box when she counts and does not remember using it. She has not kept any record and now she is upset.

Ask



- Was it a good decision by Suhani to save a part of her earnings every month?
- Was it a wise decision to keep all her savings as cash in a cash box?
- Could she have managed to save money in a better and more effective manner?
- Do you want to learn how to save money and use it effectively?

Say



• Let's learn personal saving with the help of a group activity.

Team Activity



Personal Finance-Why to save

• This activity has two parts:

PART 1

WAYS TO SAVE MONEY

- You are earning 30,000/- per month. You have recently changed your job and have to move to a metropolitan city. You are now living as a paying guest paying 10,000/- per month. Your other estimated expenditures like travel, food, recreation would be around Rs. 17, 000 per month.
- Make a list of different ways to save money.

PART 2 HOW WILL YOU USE THE MONEY?

- After a year how much have you been able to save?
- How will you use the money that you have saved?

Do



- Divide the class into groups of four.
- Instruct the participants to think and prepare a list of the various ways they can save money
- Give the participants 10 minutes to prepare the list.
- Once done, instruct them to think of how they could use the money they have saved.
- Give the participants 10 minutes to prepare the list.
- Keep a check on time. Tell the group to wind up quickly if they go beyond the given time limit.

Activity De-brief

- What were the different ways you could save money?
- How much money were you able to save?
- How will you use the money you have saved in one year?

Say



• Discuss the importance of personal finance and why it is important to save money.

Summarize



You can summarize the session by discussing:

- The importance of saving money.
- Ways to save money.
- How the money saved can be used for different purposes.

UNIT 5.3.2: Types of Bank Accounts, Opening a Bank Account

Unit Objectives 6



At the end of this unit, participants will be able to:

- Discuss the main types of bank accounts
- Describe the process of opening a bank account

Resources to be Used



- Account opening sample forms
- Participant Handbook



- How many of you save money?
- Where do you keep the money you save?
- How many of you have a bank account?
- What type of account do you have?

Example



Let's look at the given example:

Reena is in the third year of college but in the evening, she gives tuitions for children living in her colony. She earns 15,000/- per month. As her students stay in different parts of the city, she has to walk a lot.

To save time, she decides to buy a second hand scooter for herself. But she has to save money for it. Her class mate advises her to open a recurring deposit account in the bank. She goes to the bank close to her home. The personal manager gives her some forms to fill. She is confused as she has never done this before. Her elder sister has an account in the same bank. She asks for help from her sister. She goes to the bank the next day with her sister. The personal banker gives her a list of documents that she will need to submit with the form for opening an account. The banker advises her to open a 6 months recurring deposit.

Ask



- Do you try to save money monthly but have to spend it on unforeseen expenditure?
- Have you ever thought of depositing your savings in a bank?

Say



- Before opening a bank account, you need to know the types of accounts we have in India
- Discuss "Types of Bank Accounts" with the participants as given in the Participant Handbook.

Ask



• Can someone say what are the different types of bank accounts?

Say



• Let's learn about the different types of bank accounts through an activity.

Team Activity



- Divide the class in four groups.
- Label the groups as savings account, current account, recurring account and fixed deposit.
- On a chart paper, ask them to write the key points of their account.

Activity De-brief

• Ask each group to present the key points of their account.

Say



- Now that you know about the four different types of accounts, let's learn how to open a bank account.
- Discuss "Opening a Bank Account" with the participants as given in the Participant
 Handbook
- Discuss "Tips" that the participants should keep in mind while opening a bank account as given in the Participant Handbook.

Ask



- What are the main documents required for opening a bank account?
- What are some important points to ask the bank personnel while opening an account?

Say



- Mention officially valid KYC documents (refer to the Participant Handbook)
- Now, let's understand the procedure of opening a bank account through an activity.

Team Activity



Opening a Bank Account

- This activity is done in groups.
- Divide the class in groups of four or six

PART 1

FILLING A BANK ACCOUNT OPENING FORM

- You have to fill a bank opening form.
- You can refer to the section "Opening a Bank Account" of your Handbook for reference.
- List all the steps that you will be required to fill in the form.
- List the documents that you need for filling the form.
- Now fill in the form.

Activity De-brief

How did you design the form?

- What all details did you fill in the form?
- What were your KYC documents?
- How would this activity help you in future?

Do



- Instruct the participants to read the section "Opening a Bank Account' of the Participant Handbook
- Give each group one sample account opening form.
- Give the participants 5 minutes to read the form.
- Give them 15 minutes to fill it.
- Assist them by explaining each category and how to fill it.
- Keep a check on time.
- Tell the group to wind up quickly if they go beyond the given time limit

Summarize 🗵



Note:

- You can summarize the unit through a role play.
 - A person wanting to open an account in the bank.
 - O What is the procedure that he will go through?
 - o Discuss the key points of different types of bank accounts.
 - $\circ\quad \text{How to select the type of account}$
 - \circ How to fill the account opening form.
- A sample account opening form is given in the following page for reference. Use it for the activity in the class.

Sample Bank Account Opening form

			XXX	Ban
Photograph				
	SAVING B	SANK ACCOUN	T OPENING	G FORM
Account No.:				Date:
	T			
Name of the Branch				
Village/Town				
Sub District / Block				
District				
State (NA)				
SSA Code / Ward No.		Name of Village	/	
Village Code / Town Code		Name of Village Town	/	
applicant Details:		TOWIT		
Full Name Mr./Mrs./	First	Middle		Last Name
Marital Stat Ms .				
Name of				
Spanuse/Fatber ier				
Address				
Pin Code		,		
Tel No. Mobile			Date of Birth	
Aadhaar No.			Pan No.	
MNREGA Job Card No.	+			
Occupation/Profession	ו			
Annual Income				
No. of Dependents				

	Owning Hous Y/N		Y/N	Owning Farm :
	No. of Animal	s :		Any other
Existing Bank A/c. of family members /	Y	/ N	If ye	es, No. of A/cs.
nousehold	Miles Hara Files	LT-	VIN	
Kisan Credit Card	Whether Eligi		Y/N	
request you to is	A CONTRACTOR OF THE PARTY OF TH			
account after 6 m needs subject to	nonths of open the condition aft facility, I sh	ing my that onl	account for r y one memb	ter satisfactory operation of my meeting my emergency/ family er from the household will be as and conditions stipulated by
Place: Date:	: Hot availed al	ly Over	aran or credit	facility from any other bank. Signature / LTI of Applicant
lomination:				
I want to nomin	ate as under			
Name of Nominee	Relationship	Age	Date of Birth in	Person authorised in case to receive the amount of
			case of minor	deposit on behalf of the nominee in the event of my /minor(s) death.
Place:			The second secon	deposit on behalf of the nominee in the event of my
			The second secon	deposit on behalf of the nominee in the event of my
Date:			The second secon	deposit on behalf of the nominee in the event of my /minor(s) death.
Date:			The second secon	deposit on behalf of the nominee in the event of my /minor(s) death.
Place: Date: Witness(es)* 1			The second secon	deposit on behalf of the nominee in the event of my /minor(s) death.

UNIT 5.3.3: Costs: Fixed vs. Variables: What are Fixed and Variable Costs?

Unit Objectives



At the end of this unit, participants will be able to:

Differentiate between fixed and variable costs

Resources to be Used



- Participant Handbook
- Blank sheets of paper
- Pens

Ask



- What is cost?
- Will a telephone bill fall under the category of a fixed or variable cost?



Discuss: Fixed and Variable cost with examples. Let us do a small activity.

Team Activity



Identify the type of cost

- 1. Rent
- 2. Telephone bill
- 3. Electricity bill
- 4. Machinery
- 5. Insurance
- 6. Office supplies/Raw materials
- 7. Employee salaries
- 8. Commission percentage given to sales person for every unit sold
- 9. Credit card fees
- 10. Vendor bills

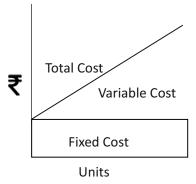


- Divide the class into two groups. Read out the list of costs given in the activity.
- Read out each item from the cost list and ask the groups in turns to identify whether it is a fixed or variable cost.

Say



- We saw that your utility bills like rent, electricity, telephone etc. are all fixed costs because you have to pay it every month.
- Variable costs is an expense which varies with production output or volume. For example, commission, raw material etc.
- Discuss "Cost: Fixed vs. variables" with the participants as given in the Participant Handbook.
- Illustrate the relation between the costs with a graph.



• Let's learn the difference between fixed and variable cost with the help of an activity.

Team Activity



Fixed vs. Variable Costs

- This is a group activity.
- You want to start your own entrepreneur business.
- State the type of business you want to start.
- List down all the cost or requirements for your business.
- How will you differentiate between the fixed and variable cost.

Activity De-brief

- What is the total cost of your business?
- What are the fixed costs?
- What are the variable costs?
- How did you differentiate between the fixed and variable costs?



- Instruct the participants that this is group work.
- Divide the class into small groups of 4 or 6.
- Give each group a sheet of paper.
- Tell the participants that they have to start their own entrepreneur business.
- Ask them the type of business they want to start.
- Instruct them to differentiate between the fixed and the variable costs of the business they want to start.
- Give the participants 15 minutes to discuss and write.
- Keep a check on time. Tell the group to wind up quickly if they go beyond the given time limit.

Summarize



Note: You can summarize the unit either by having a role play between a
consultant and a budding entrepreneur explaining the differences between fixed and
variable costs or by discussing the key points of the unit.

Notes for Facilitation



•	Answers for the activity - Identify the type of cost	
1.	Rent	(Fixed)
2.	Telephone bill	(Fixed)
3.	Electricity bill	(Fixed)
4.	Machinery	(Fixed)
5.	Insurance	(Fixed)
6.	Office supplies/ Raw materials	(Variable)
7.	Employee salaries	(Fixed)
8.	Commision percentage given to sales person for every unit sold	(Variable)
9.	Credit card fees	(Variable)
10	. Vendor bills	(Variable)

UNIT 5.3.4: Investments, Insurance and Taxes

Unit Objectives 6



At the end of this unit, participants will be able to:

- Describe the main types of investment options
- Describe the different types of insurance products
- Describe the different types of taxes

Resources to be Used



Participant Handbook

Ask



- Ask the participants- "What do you see first thing in when you get your mobile bill? Apart from the amount and due date do you have a look at the taxes you are being billed for?
- Why do you think people get their cars insured or have a medical insurance?
- You have saved money and want to invest it; how would you decide what is the best investment for your money?

Example



• Let's have a look at a few scenarios.

Ranbir has sold his house and deposited the money in his bank. His Chartered Accountant tells him that he will have to re-invest the money otherwise he will have to pay capital tax. What is capital tax and how is it different from income tax?

Jasmeet and Anup are blessed with a baby girl. They decide to have an insurance policy that will mature when their daughter is ready to higher education.

Shivani is working in a corporate office and getting good pay. She will have to pay income tax so she decides to invest her money in tax saving schemes. She goes to the bank manager to discuss the best products in which she can invest.



Discuss the Investment, Insurance and Taxes as given in the Participant Handbook.

Ask



• How do investments, insurances and taxes differ from each other?

Say



• Let's learn the differences between the three by having an activity.

Say



• We will have a quiz today.

Team Activity



• The activity is a quiz.

Do



- Divide the class into groups of three and give a name to each group
- Explain the rules of the quiz. For each correct answer, the group gets 1 mark. If the group is unable to answer the question is rolled over to the next group.
- Explain the purpose and duration of the activity.
- On the blackboard write the names of the groups.
- Ask the questions of the quiz.
- Keep a score for the groups.
- Set guidelines pertaining to discipline and expected tasks.

Summarize



• Summarize the unit by discussing the key points and answering question

Notes for Facilitation



Questions for the quiz

- 1. Mr. Das gets monthly return on one of his insurance policies. Name the policy? Money Back Life Insurance
- 2. What are bonds?

Bonds are instruments used by public and private companies to raise large sums of money.

3. Who issues the bonds?

Private and public companies issue the bonds.

4. Why are bonds issued?

To raise large amount of money as it cannot be burrowed from the bank.

5. Who is the buyer of stocks and equities?

The general public is the buyer.

6. What types of scheme is the Sukanya Samriddhi Scheme?

Small Saving Scheme

7. What is the difference between mutual and hedge funds?

Mutual funds are professionally managed financial instruments that invest the money in different securities on behalf of investors. Hedge funds invest in both financial derivatives and/or publicly traded securities.

8. Why is a loan taken from the bank to purchase real estate?

To lease or sell to make profit on appreciated property price.

9. Name the two types of insurances?

Life Insurance and Non-life or general insurance

10. Which insurance product offers financial protection for 15-20 years?

Term Insurance

11. What is the benefit of taking an endowment policy?

It offers the dual benefit of investment and insurance.

12. What are the two benefits of a Whole Life Insurance?

It offers the dual benefit of investment and insurance

13. Which policy covers loss or damage of goods during transit?

Marine Insurance

14. After what duration is the income tax levied?

One financial year

15. What is long term capital gain tax?

It is the tax payable for investments held for more than 36 months.

16. Name the tax that is added while buying shares?

Securities Transaction Tax

17. What is the source of corporate tax?

The revenue earned by a company.

18. Name the tax whose amount is decided by the state?

VAT or Value Added Tax

19. You have bought a T.V. What tax will you pay?

Sales Tax

20. What is the difference between custom duty and OCTROI?

Custom duty is the charges payable when importing or purchasing goods from another country. OCTROI is levied on goods that cross borders within India.

UNIT 5.3.5: Online Banking, NEFT, RTGS, etc.

Unit Objectives 6



At the end of this unit, participants will be able to:

- Discuss the uses of online banking
- Discuss the main types of electronic funds transfer

Resources to be Used



- Participant Handbook
- Computer System with internet connection
- Debit card

Ask



- When was the last time you visited a bank?
- How do you pay your bill for electricity and telephone?
- Have you ever tried to transfer money from one bank account to another bank account using the online banking facility?



- Most of us lead a busy life. Time has become more important than money. In this busy schedule, no one has time to stand in bank queues. That's where Online Banking comes in. Online banking or internet banking means accessing your bank account and carrying out financial transactions through the internet.
- Discuss "What is online banking?" from the Participant Handbook.
- There are various advantages of online banking:
 - It saves time, as you need to visit the branch.
 - You can conduct your banking transactions safely and securely without leaving the comfort of your home.
 - Online Banking also gives you round the clock access.
 - Online Banking makes it possible for you to pay your bills electronically.



- Show them how they can use the internet banking.
- Use the computer system and show the demo videos on how to use internet banking provided on most banking sites. the computer system.
- Tell the class the various features of online banking:
 - O Through their website set-up your online account.
 - O Choose a secure username and password.
 - Set-up your contact information.
 - Once your information is verified, you are good to go.
 - Once you enter the portal explore all the features and learn your way through the portal.

Say



- One of the biggest advantage that online banking offers, as discussed earlier, is transferring money from one account to another. This transaction is called electronic funds transfer. Electronic transfers are processed immediately with the transferred amount being deducted from one account and credited to the other in real time, thus saving time and effort involved in physically transferring a sum of money.
- Discuss "Electronic Funds Transfer" from the Participant Handbook.

Do



- Discuss how to transfer money from one account to another using online banking (NEFT/ RTGS, etc.).
- Illustrate with an example.

Summarize



- Close the discussion by summarizing the about online banking.
- Ask the participants if they have any questions related to what they have talked about so far.

UNIT 5.4: Preparing for Employment & Self-Employment

Key Learning Outcomes 🔯



At the end of this unit, participants will be able to:

- 1. Discuss the steps to follow to prepare for an interview
- 2. Discuss the steps to create an effective Resume
- 3. Discuss the most frequently asked interview questions
- 4. Discuss how to answer the most frequently asked interview questions
- 5. Identify basic workplace terminology

UNIT 5.4.1: Interview Preparation: How to Prepare for an Interview?

Unit Objectives 6



At the end of this unit, participants will be able to:

Discuss the steps to follow to prepare for an interview

Resources to be Used



Participant Handbook



- Have you ever attended an interview?
- How did you prepare before going for an interview?

Sav



- An interview is a conversation between two or more people (the interviewer(s) and interviewee) where questions are asked by the interviewer to obtain information from the interviewee.
- It provides the employer with an opportunity to gather sufficient information about a candidate and help them select the ideal candidate.
- It also provides the interviewee with an opportunity to present their true potential to the employer, build confidence and help make a decision about the job by asking questions regarding designation, salary, perks, benefits, promotions, transfers, etc.
- Let's do an activity to understand how to prepare for interviews better.

Activity 1



Introducing Yourself



- Select a participant and ask him/her to answer the following questions: "What can you tell me about yourself."
- Give the participant at least one minute to speak.
- Once he/she is done, ask the rest of the participant what they gathered about the participant who was providing information.
- Now repeat the exercise with five other participants.

Ask



- What information you should include when you are describing or introducing yourself in an interview?
- What information you should not include when you are describing or introducing yourself in an interview?

Say



- Tell the participants that when an interviewer asks you to say something about yourself, he/she is not asking you to present your life history.
- Introduction should be short and crisp, and should present you in a positive light. It should include the following points:
 - Any work experience that you might have
 - o A brief summary of your educational qualifications
 - Your strengths and achievements
 - o Any special projects that you might have been part of
- The following topics should be avoided during an introduction:
 - o Detailed description of your family (unless you are specifically asked to do so)
 - Too much information about your weaknesses
 - o Information that is not true

Do



- Congratulate each participant for sharing their points.
- Ask the audience to applaud for them.
- Ask de-brief questions to cull out the information from each group.
- Keep a check on time.

Activity 2



• Planning the right attire

Do



• Describe 2 individuals to the participants. One is wearing a casual t-shirt, jeans, and slippers. He has not combed his hair and neither has he trimmed or shaved his beard. The other individual is dressed formally with a shirt and pant, and is well-groomed. He has also worn formal shoes and a belt. Ask the participants which person would they prefer to hire in their organization and why?

Summarize



- Close the discussion by discussing 'how to prepare for an interview' as discussed in the Participant Handbook.
- You can add the following points to it:
 - Tell the participants to create a positive and good impression in an interview. It is important for them to prepare for an interview beforehand.
 - The interviewer analyses not only your technical knowledge in relation to the job, but also whether or not you are a fit for the organization.
 - Every employer looks at the whole package and not just one or two things in isolation. Therefore, the way you dress and the way you present yourself is also important along with your skills and talents.
 - o The participants will get only one chance to create a good first impression.

UNIT 5.4.2: Preparing an Effective Resume: How to Create an Effective Resume?

Unit Objectives 6



At the end of this unit, participants will be able to:

Discuss the steps to create an effective Resume

Resources to be Used



- Participant Handbook
- **Blank Papers**
- Pens

Ask



- When preparing for an interview, what are the most important things that you need to
- What documents do you carry with you, when you go for an interview?
- What is a resume?
- Why do you need a resume?

Sav



- Resume is not just a sheet of paper with your qualifications printed on it.
- It is a selling tool that will help the employer to see how and what you can contribute for company.
- Talk about the steps involved in creating an effective/attractive resume discussed in the Participant Handbook.
- Now let's prepare a resume to understand the process in a better way.

Do



- This is an individual activity.
- Give the details of the activity.
- Instruct them to read the activity carefully.
- The participant is expected to make an attractive resume based on the information provided.
- Give the class 25-30 minutes to study the case and create a resume.
- At the end of 30 minutes, the participants should exchange the resume with the person sitting next to him or her.
- Every participant will evaluate the resume prepared with their fellow participants.

Say



- Do you think the candidate should apply for the job posting described in the advertisement?
- We have already discussed the steps involved in creating an effective/attractive resume.
- Now let's prepare a resume for the candidate details given in the activity.

Activity



Case Study Analysis

- In the first section of the activity, you are being given the information about a candidate who is applying for a particular job.
- In the second section, you are being given the detailed description of the job posting. Create a resume for the candidate to apply for the job posting.
- Use the information that has been provided about the candidate to create this resume

Candidate Details

Nipesh Singla was born on 20th April, 1988 in Chandigarh, India. He currently resides at 1XX7, Sector XX D, Chandigarh –160018. His mobile number is 988XXXXX01, and e-mail address is nxxxxxxxxxla@gmail.com. Nipesh attended middle and senior school at Government Boys Senior Secondary School, Sector 15, Chandigarh. He has been a very talented boy since school. He was fond of painting and watching old Hindi movies. As part of a school charity program, he volunteered at the children's hospital during his senior years.

In July 2007, he joined Westwood School of Hotel Management, Zirakpur to pursue a diploma course in Hotel Management and Catering. After completing this course, he joined XYZ Group of Hotels as a Housekeeping intern in June 2010 for six months. In this role, he was responsible for cleanliness and maintenance of one floor in the hotel. Taking advantage of his strong interpersonal skills, he also got opportunities to make housekeeping arrangements for corporate meetings. While pursuing education, he gained working knowledge of Microsoft Word, Excel, Access and PowerPoint.

Nipesh is detail-oriented, flexible and adaptable. He has successfully worked with a diverse work force. He gelled well with his peers, both in college and during his internship. After completing the internship, his objective has been to find a job opportunity where he can use his skills and experience. Backed by experience, he is confident about his skills as housekeeping assistant.

Job Posting

*Do you see yourself as a HOUSEKEEPING SUPERVISOR?

What's your passion? Whether you're into cricket, reading or hiking, at IHG we are interested in YOU. At IHG, we employ people who apply the same amount of care and passion to their jobs as they do in their hobbies people who put our guests at the heart of everything they do. And we're looking for more people like this to join our friendly and professional team.

THE LOCATION:

At the moment, we are looking for HOUSEKEEPING SUPERVISOR to join our youthful and dynamic team at Holiday Inn Amritsar, Ranjit Avenue in Amritsar, Punjab (India). Holiday Inn Amritsar is ideally located in Amritsar's commercial district on Ranjit Avenue with the world famous Golden Temple located only a short distance away. Sparkling chandeliers mark an incomparable arrival experience as you escape to the welcoming environment that is, Holiday Inn Amritsar. The fresh international brand to celebrate and explore Amritsar.

Salary: Negotiable

Industry: Travel / Hotels / Restaurants / Airlines / Railways

Functional Area: Hotels, Restaurants

Role Category: Housekeeping

Role: Housekeeping Executive/Assistant.

Desired Candidate Profile

Friendly, pleasant personality, Service - oriented.

You should ideally be Graduate/ Diploma holder in HM and at least 2 years of experience as a supervisor in good brand with good communication skills, English is a must.

In return we'll give you a competitive financial and benefits package. Hotel discounts worldwide are available as well as access to wide variety of discount schemes and the chance to work with a great team of people. Most importantly, we'll give you the room to be yourself.

*Please get in touch and tell us how you could bring your individual skills to IHG. Education-

UG: Any Graduate/Diploma holder

PG: Post Graduation Not Required

Say



• Now, let's share the resume with the fellow participant sitting next to you and evaluate each other's effort.



- Congratulate each participant for making their first attempt towards creating an effective resume.
- As a follow up activity, you can suggest them to prepare their own resume and show it to you the next day.

Summarize



- Close the discussion by showing some effective resume samples to the candidates.
- Ask the participants what they have learnt from this activity.
- Ask if they have any questions related to what they have talked about so far.

Notes for Facilitation



- Keep printed copies of the activity ready for the session.
- Put down the suggested format of the resume on the board while explaining the steps in preparing a resume.
- Do check the participants' resume and suggest necessary changes.
- Suggested example for the case presented:

Nipesh Singla

#1XX7, Sector XX-D

Chandigarh-160018

Mobile No: 91-988XXXXX01 E-mail: nxxxxxxxxxla@gmail.com

Objective: Seeking an opportunity to use my interpersonal skills and experience to contribute to your company's growth, profitability and objectives.

Professional strengths:

- Proficient in housekeeping
- Experienced in and capable of working with a diverse work force
- Team player and friendly in nature
- Successful working in a multi-cultural environment
- Detail oriented, flexible, and adaptable
- Knowledge of Microsoft Word, Excel, Access and PowerPoint

Educational background

- Diploma in Hotel Management and Catering, Westwood School of Hotel Management,
 Zirakpur
- High School, Government Boys Senior Secondary School, Sector 15, Chandigarh

Professional internships:

- Housekeeping Intern, XYZ Group of Hotels, New Delhi (June 2010 August 2010)
 - o Responsible for cleanliness and maintenance of one floor in the hotel.
 - o Got opportunities to make housekeeping arrangements for corporate meetings.

Volunteer Work:

• Student volunteer at children's hospital in Chandigarh.

Nipesh Singla

UNIT 5.4.3: Interview FAQs

Unit Objectives 6



At the end of this unit, participants will be able to:

- Discuss the most frequently asked interview questions
- Discuss how to answer the most frequently asked interview questions

Resources to be Used



Participant Handbook



- Tell the participants you will provide them with interview situation and questions and they have to try to answer them.
- Tell them you will also explain the different ways to approach these questions.

Do



- Divide the class in pairs and ask the participants to perform a role play.
- One partner will play the role of the interviewer while the other will play the role of the
- Tell them the interviewer can start the interview by asking the interviewee to introduce himself/herself.
- Call all the pairs one by one in front of the class to enact the role play.
- Follow the same pattern for all other situations.
- Time allotted for each situation is 8-10 minutes.
- Congratulate each participant for giving their input.
- Ask the class to applaud each time a team has completed their role play.
- Keep a check on time.

Role Play



Conduct a role play for the situation given.

Situation 1

- The interviewer will start by asking the interviewee a few generic questions such as:
 - O What is your name?
 - Tell me something about yourself?
 - o Can you tell me something about your family?

- Then, the interviewer will bluntly ask the following questions:
 - O How do you explain this huge time gap in your resume?
 - O What is the reason for this?
 - O Weren't you looking for a job or is it that no one selected you?

Say



De-brief:

- When you put information on your resume, you should be prepared to answer any questions about it.
- Be present and focused on the questions being asked to you.
- One way of tackling the blunt questions is to tell the interviewer you did not come
 across an opportunity where you were sufficiently satisfied with both the remuneration
 offered as well as the profile. Therefore, you waited for the right opportunity to come
 along while looking for an ideal job.

Role Play



Conduct a role play for the situation given.

Role Play – Situation 2

- The interviewer will start by asking the interviewee a few generic questions such as:
 - O What is your name?
 - o Tell me something about yourself?
 - o Can you tell me something about your family?
- Then, at the end of the interview, ask the interviewee:
 - There are over 200 people who have applied for this job, some with excellent work experience. Why should I hire you?

Say



De-brief:

- There is nothing wrong with stating your strengths and achievements. However, do not come across as arrogant or too boastful.
- You need show the interviewee that you have unique skills or talents to contribute to the company. The interviewer needs to know how you stand apart from the rest of the crowd.
- Tell the interviewer you are looking forward to working with the company and that you are a hard-working individual.

Role Play



Conduct a role play for the situation given.

Role Play – Situation 3

- The interviewer will start by asking the interviewee a few generic questions such as:
 - O What is your name?
 - o Tell me something about yourself?
 - o Can you tell me something about your family?
- Then, lean forward, clasp your hands on the table and in a soft voice ask the interviewee:
 - Did you ever experience any neglect or disregard from your previous office? In other words, did you ever suffer because your office or team displayed favouritism?



De-brief:

- Keep this in mind: Do not criticize anyone during an interview.
- You are free to express your opinion, however, your language, answers, body language, and the tone of your voice should remain constructive and neutral.
- Since criticism will show you in negative light, you should keep your answers honest yet diplomatic.
- You can tackle such questions by saying, "I got along well with most of my faculty and

Role Play



Conduct a role play for the situation given.

Role Play - Situation 4

- The interviewer will start by asking the interviewee a few generic questions such as:
 - O What is your name?
 - o Tell me something about yourself?
 - o Can you tell me something about your family?
- Then very bluntly ask the interviewee:
 - O How long do you plan to stay with this company if you are selected?
- After the candidate responds, ask sarcastically:
 - O Do you seriously mean that?

Sav



De-brief:

- Don't provide unreal and idealistic answers.
- Your answers should be honest yet diplomatic. In a situation like this, the interviewer does not expect you to provide a specific timeline.

 You can say something like, "I would like to stay with the company as long as I can contribute constructively and develop as an employee, within the organization, professionally and financially."

Role Play



Conduct a role play for the situation given.

Role Play - Situation 5

- The interviewer will start by asking the interviewee a few generic questions such as:
 - O What is your name?
 - o Tell me something about yourself?
 - o Can you tell me something about your family?
- Ask him/her how important he/she thinks it is to be punctual in the corporate world.
- After he/she answers, look up sternly at the interviewee and in a crisp voice, say:
 - You were late for this interview by 10 minutes. That surely does not seem to be in line with what you just said?

Say



De-brief:

- Politely apologize for being late.
- You can add something such as, "I assure you this is not a habit". All your future actions should be in line with this statement.
- Avoid giving any excuses.
- You might feel obligated to provide a justification for your tardiness, but the interviewer is not interested in that.
- Do not over apologize. Once this response is out of the way, turn your focus back to the interview.

Role Play



Conduct a role play for the situation given.

Role Play - Situation 6

- The interviewer will start by asking the interviewee a few generic questions such as:
 - O What is your name?
 - o Tell me something about yourself?
 - o Can you tell me something about your family?
- After asking a few academic or job-related questions, ask the interviewee:
 - o If you get this job, what salary package do you expect us to give you?

Say



De-brief:

• If there is no way for you to avoid this question, respond to the interviewer by providing a reasonable and well-thought out salary range.

Role Play



Conduct a role play for the situation given.

Role Play - Situation 7

- The interviewer will start by asking the interviewee a few generic questions such as:
 - O What is your name?
 - o Tell me something about yourself?
 - o Can you tell me something about your family?
- Then, bringing the interview to a close, ask the interviewee:
 - O Do you have any questions for me?

Say



De-brief:

- Ask relevant questions.
- Don't bombard the interviewer with questions.
- If you have questions about the result of the interview, you can limit your questions to 1 or 2. Keep them short and relevant like:
 - O When will I be informed about the results of the interview?
 - O What are the working hours?
 - o Will the job require me to travel?

Explain



- Tell the participants to be prepared for answering different types of questions in an interview.
- Stay calm and focused, and take a moment to think about how you should respond. Always maintain a confident tone.
- Even if you don't intend to, your body language conveys your level of discomfort with a particular question.
- Try to keep your actions, tone, and gestures neutral.
- Maintain your composure while answering personal question.



- Tell all the participants to form pairs again.
- Tell them to use the following list of frequently asked interview questions to conduct mock interviews.
- They will use all or some of these questions to conduct mock interviews with their partners.
- One partner will play the role of the interviewer while the other will play the role of the interviewee.
- After they are through asking and answering the questions, the roles will be reversed.
- The same list of questions will be used again.
- After each mock interview ask the interviewer to provide feedback and clear any doubts that may arise.
- Time allotted for each situation is 30-35 minutes.

Activity



Mock Interview Questions

Mock Interview Questions

Tell me something about your family.

What qualities would you look for in a Manager or a Supervisor?

Why did you apply for this job?

What do you know about this company?

How do you deal with criticism?

How do you plan to strike a good work-life balance?

Where do you see yourself five years from now?

Have you applied for jobs in other companies?

What kind of salary do you expect from this job?

Do you have any questions for me?

Summarize



- Close the discussion by discussing the questions in the both activities.
- Ask the participants what they have learned from this activity.
- Ask if they have any questions related to what they have talked about so far.

UNIT 5.4.4: Work Readiness – Terms and Terminology

Unit Objectives 6



At the end of this unit, participants will be able to:

Identify basic workplace terminology

Resources to be Used



- Participant Handbook
- Chart papers
- Blank sheets of paper
- Pens

Ask



- What do you understand by workplace terminology?
- Are offer letter and contract of employment the same?



• Let's start this unit with an activity.

Team Activity



Workplace terminology

• This is a group activity conducted in three parts.

Part 1

Sheila received a call from the recruiter of MND Company. Before she is recruited by the company, think of the recruitment process she will have to go through. Start from the telephone call to signing her letter of acceptance. Write down all the words that come to your mind.

Activity De-brief

- Have the participants read out the words they have written
- Encourage all the participants to participate in the activity



- Divide the class into small groups of 4 or 6.
- Instruct the participants that they will be doing a brainstorming activity.
- Give them one chart paper each. Tell them to divide the chart in two parts.
- Instruct them that they have to use one half of the chart paper now. The other half will be used later.
- The participants have to write all the words that come to their mind related to the recruitment process.
- Give them 10 minutes to do the activity.
- Tell them that there are no right or wrong answers.
- Keep a track of the time.

Say



- You all know quite a few words related to the terms used in the office.
- Let us talk about some new terms that have been missed out.
- Discuss "Work Readiness Terms and Terminology" with the participants as given in the Participant Handbook.

Ask



- Why is it important to know the workplace terms?
- How do they help?
- Can the words be categorised further?

Say



Let's now continue the activity.

Team Activity



Terms and Terminology

• This is again a group activity. The members of the group remain the same as in Activity 1.

Part 2

 With the help of the new terms you have learned, make a flow chart of the hiring process of MND Company.

Activity De-brief

• Ask the groups to share the flow charts and the new terms they added while preparing the flow chart.



- Instruct the participants that they have to use the 2nd half of the same chart they had used before.
- Using the new terminology and the terms they had previously written on the chart, they have to make a flow chart of the hiring process of the MND Company.
- Give them 10 minutes for this activity.
- Keep a check on time. Tell the group to wind up quickly if they go beyond the given time limit.

Say



• Let's go ahead with the activity.

Team Activity



Terms and Terminology

• The activity continues with the same group members.

Part 3

Sheila now works for the MND Company. She is not aware of the company culture and policies. She goes to the HR Department to get her doubts clarified. Can you think of the terms for which she wants clarity? Make a list of those words.

Activity De-brief

 Ask the groups to share their list of words. Some of the words are benefits, comp. time, deduction, employee training, holidays, lay-off, leave, maternity leave, mentor, notice, paternity leave, and time sheet.

Do



- Instruct the participants to identify the key terms an employee of a company should know. They can use the same chart paper for this activity.
- Give them 5 minutes for this activity.
- Keep a check on time. Tell the group to wind up quickly if they go beyond the given time limit.

Summarize



 Note: You can either summarize the key points of the unit or have a role play where an employee has just joined a company and the HR Manager explains the terms of employment.

UNIT 5.5: Understanding Entrepreneurship

Key Learning Outcomes



At the end of this unit, participants will be able to:

- 1. Discuss the concept of entrepreneurship
- 2. Discuss the importance of entrepreneurship
- 3. Describe the characteristics of an entrepreneur
- 4. Describe the different types of enterprises
- 5. List the qualities of an effective leader
- 6. Discuss the benefits of effective leadership
- 7. List the traits of an effective team
- 8. Discuss the importance of listening effectively
- 9. Discuss how to listen effectively
- 10. Discuss the importance of speaking effectively
- 11. Discuss how to speak effectively
- 12. Discuss how to solve problems
- 13. List important problem-solving traits
- 14. Discuss ways to assess problem solving skills
- 15. Discuss the importance of negotiation
- 16. Discuss how to negotiate
- 17. Discuss how to identify new business opportunities
- 18. Discuss how to identify business opportunities within your business
- 19. Explain the meaning of entrepreneur
- 20. Describe the different types of entrepreneurs
- 21. List the characteristics of entrepreneurs
- 22. Recall entrepreneur success stories
- 23. Discuss the entrepreneurial process
- 24. Describe the entrepreneurship ecosystem
- 25. Discuss the purpose of the Make in India campaign
- 26. Discuss key schemes to promote entrepreneurs
- 27. Discuss the relationship between entrepreneurship and risk appetite
- 28. Discuss the relationship between entrepreneurship and resilience
- 29. Describe the characteristics of a resilient entrepreneur
- 30. Discuss how to deal with failure

UNIT 5.5.1: Concept Introduction (Characteristic of an Entrepreneur, types of firms/ types of enterprises)

Unit Objectives



At the end of this unit, the participants will be able to:

- Discuss the concept of entrepreneurship
- Discuss the importance of entrepreneurship
- Discuss the characteristics of an entrepreneur
- Describe the different types of enterprises

Resources to be Used



Participant Handbook



Let's start this session with some interesting questions about Indian entrepreneurs.

Team Activity



Quiz Questions

- Who is the founder of Reliance Industries? Dhirubhai Ambani
- 2. Who is the Chairman of Wipro Limited? Azim Premji
- 3. Who launched e-commerce website Flipkart? Sachin Bansal and Binny Bansal
- 4. Who is the founder of Paytm? Vijay Shekhar Sharma
- 5. Who is CEO of OLA Cabs? Bhavish Aggarwal
- 6. Who is the founder of Jugnoo? Samar Singla (autorickshaw aggregator)
- 7. Who is the founder of OYO Rooms? Bhavish Aggarwal



- Tell them that you will ask them few questions about a few entrepreneurs.
- Divide the class in to two groups.
- In turns ask the quiz questions to the groups.
- If the answer is incorrect pass the question to the other group.
- Share the answer if the groups are not able to answer.
- Congratulate the participants who answered correctly.

Ask Lask



- What do you understand by entrepreneurs?
- What is the importance of entrepreneurship in today's scenario?
- What do you think are the characteristics of successful entrepreneurs?
- What are different types of enterprises that an entrepreneur in India can own and run?



- Talk about entrepreneurs, importance of entrepreneurship, characteristics of successful entrepreneurs, and different types of enterprises in India as discussed in the Participant Handbook.
- Tell the participants, stories of successful Indian entrepreneurs their struggles, the moments of heartbreak, the perseverance and triumph.
- Ask them if they know of any such entrepreneur.

Summarize



• Close the discussion by summarizing about the opportunities for entrepreneurs in India.

Notes for Facilitation



- Check out different Government schemes for small entrepreneurs. Share the information with the participants.
- You can tell them about the government websites like Start Up India, mudra.org.in etc.
- Discuss about various schemes and policies by the Government of India for entrepreneurs.

UNIT 5.5.2: Leadership and Teamwork

Unit Objectives



At the end of this unit, participants will be able to:

- List the qualities of an effective leader
- Discuss the benefits of effective leadership
- List the traits of an effective team

Resources to be Used



- Participant Handbook
- Blank sheets of paper
- Pens

Do



- Show the picture given below to the class.
- Ask them to quickly write on a piece of paper what comes to their mind after seeing the
 picture.
- Now ask them, "What do you understand from this picture?"
- Encourage participants to share their thoughts.

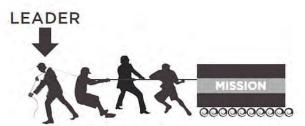




Fig 5.5.1: Sharing thoughts



- This picture depicts the qualities of a leader and the difference between a leader and a
- A boss focuses on structure and inspires fear whereas a leader follows vision and generates enthusiasm.
- A boss blames employee for the breakdown whereas a leader fixes breakdowns.
- A boss depends on authority whereas a leader depends on goodwill.
- A boss says "I" and a leader says "We."
- A boss drives employee whereas a leader coaches them.
- A boss takes credit whereas a leader gives credit.

Sav



Talk about leadership and leadership qualities for an entrepreneur as discussed in the Participant Handbook.

Ask lask



Why is it important for a leader to be effective? How does it help the organization?

Sav



- Let us discuss benefits of effective leadership as discussed in the Participant Handbook.
- "Out-of-the-box thinking" is one of the new leadership styles. It means thinking differently and from a new perspective.



Do you consider yourself a team player?

Team Activity



Long Chain

This is a group activity.

Do



- Divide the class into 2 teams.
- Ask each team to create a chain using materials they have in class such as shoe laces, belts, paper, handkerchief, ribbons, etc.
- The team that creates the longest chain wins the game.
- Observe if the participants are interacting with their team or working in isolation.
- Share your observations with the class.

Say



De-brief:

- What did the winning team do differently?
- Who was responsible for the winning team's success?
- How does this activity explain the role of teamwork in entrepreneurial success?

Say



- Tell the class that both the teams performed well.
- Discuss that the objective of this activity was to open communication channels and how this has been achieved.
- The participants should aim to keep the communication channels open when interacting with their peers and team members.
- It will set the pace and enthusiasm required for all the ensuing teamwork activities.
- Talk about teamwork and importance of teamwork in entrepreneurial success as discussed in the Participant Handbook.

Summarize



- Close the discussion by summarizing about the importance of teamwork for employees.
 - o Teamwork helps in reducing stress for the employees.
 - Teamwork helps employers in generating more number of solutions to a problem and developing improved communication amongst employees.
- Ask the participants what they have learned from these exercises.
- Ask if they have any questions related to what they have talked about so far.

UNIT 5.5.3: Communication Skills: Listening & Speaking: The Importance of Listening Effectively

Unit Objectives



At the end of this unit, the participants will be able to:

- Discuss the importance of listening effectively
- Discuss how to listen effectively
- Discuss the importance of speaking effectively
- Discuss how to speak effectively

Resources to be Used



Participant Handbook

Activity



Activity - Chinese Whisper

Step 1: Form a circle.

Step 2: Start a whisper chain. Any one participant will whisper a message into his/her neighbour's ear. No one else must hear the message. The message can be serious or downright si.

Step 3: The next person who first heard the message should whisper the message very quickly to the person sitting next to them.

Step 4: The game goes on until the last person says whatever they heard out loud and the first person reveals the real message.

Compare them and have a great laugh!

Ask ask



De-brief questions:

- Was the original message the same as the message that is communicated at the end of
- Why do you think there was a difference in the messages?



- No, the original message was not same at the end of game.
- The barriers to communication like language, disturbance and noise, poor listening skills, boredom, poor speaking skills, etc. are the potential reasons this happens.

- There are various aspects to communication. Speaking skills and listening skills are two major components to any communication. There is always some room for improvement in the way we communicate.
- It is important to accept the reality of miscommunication and work to minimise its negative impacts.

Say



- Communication is a two-way process where people exchange information or express their thoughts and feelings
- It involves effective speaking and effective listening.
- If I go to the store to get bread, I exchange money for the bread. I give something and get something in return.
- Communication takes place in the same manner. You have to provide an d receive information for communication to take place.

Ask



- How often do you hear these statements?
 - o "You're not listening to me!"
 - o "Why don't you let me finish what I'm saying?"
 - o "You just don't understand!"
- What do you think the other person is trying to convey to you through these sentences?
- We will not talk about the importance of listening effectively as discussed in the Participant Handbook.

Say



• Let's play a game to understand effective listening process better.

Do



- This is a class activity.
- The participants need to answer the questions they hear.
- Instruct them to listen carefully.
- You will read it at a stretch and if need be repeat it once more.
- Tell the participants to raise their hand if they know the answer to the question asked.
- Keep a check on time.

Activity



Riddles:

Is there any law against a man marrying his widow's sister?

If you went to bed at eight o'clock at night and set the clock's alarm to ring at nine o'clock, how many hours of sleep would you get?

Do they have a 26th of January in England?

If you had only one match and entered a dark room that had a kerosene lamp, oil heater, and a wood stove, what would you light first?

The Delhi Daredevils and the Chennai Super Kings play five IPL matches. Each wins three matches. No match was a tie or dispute. How is this possible?

There was an airplane crash. Every single person died, but two people survived. How is this possible?

If an airplane crashes on the border of two countries, would unidentified survivors be buried in the country they were travelling to or the country they were travelling from?

A man builds an ordinary house with four sides except that each side has a southern exposure. A bear comes to the door and rings the doorbell. What is the colour of the bear?

Answers:

There's no law against a man marrying his widow's sister, but it would be the neatest trick in the book since to have a widow, the man would have to be dead.

You'd get one hour's sleep since alarm clocks do not know the difference between morning and night.

Oh, yes. They have a 26th of January in England. They also have a 27th, a 28th, and so on.

First of all, you would light the match.

Who said the Delhi Daredevils and the Chennai Super Kings were playing against each other in those games?

Every SINGLE person died, but those two were married.

You can't bury survivors under any law especially if they still have enough strength to object.

The bear that rang the doorbell would have to be a white bear. The only place you could build a house with four southern exposures is at the North Pole where every direction is in South

Ask (as

De-brief question:

- What were the barriers that came into your way of listening?
- How can you overcome barriers to listening?

Say



- · There is a difference between hearing and listening.
- If you don't listen properly, the message may be misunderstood.
- Be open-minded while listening to someone.
- It is important to listen effectively and carefully without making assumptions.

Activity



Elevator Pitch:

You are in the lift of a hotel and you bumped into your former client who is a famous businessman. He has financed a lot of small business ventures and can finance your new start-up too. After exchanging pleasantries, he asks you what your new company does. You open your mouth, and then pause. Where do you even begin?

Then, as you try to organize your thoughts, his meeting is called, and he is on his way. If you would been better prepared, you're sure that he would have stayed long enough to schedule a meeting with you too.

If you were given another chance, what would you have said to this person?

Do



- Start off the task by providing a beginning sentence to get the story started, and then go around the classroom getting each one to add a new sentence to keep the story going.
- This task should be done spontaneously allowing only a little time to think (30 seconds).
- For example: There was once a student who was looking for a job after graduation.

Notes for Facilitation



- Tell the participants to follow these steps to create a great pitch, but bear in mind that you'll need to vary your approach depending on what your pitch is about.
 - 1. **Identify Your Goal:** Start by thinking about the objective of your pitch. For instance, do you want to tell the potential clients about your organization? Do you have a great new product idea that you want to pitch to an executive or do you want a simple and engaging speech to explain what you do for a living?
 - 2. **Explain What You Do:** Start your pitch by describing what your organization does. Focus on the problems that you solve and how you help people. Ask yourself this question as you start writing: what do you want your audience to remember most about you? Keep in mind that your pitch should excite you first. After all, if you don't get excited about what you're saying neither will your audience. People may not remember everything that you say, but they will likely remember your enthusiasm.
 - 3. **Communicate Your USP:** Your elevator pitch also needs to communicate your unique selling proposition or USP. Identify what makes you, your organization or your idea unique. You'll want to communicate your USP after you've talked about what you do.

- 4. **Engage with a Question:** After you communicate your USP, you need to engage your audience. To do this, prepare open-ended questions (questions that can't be answered with a "yes" or "no" answer) to involve them in the conversation. Make sure that you're able to answer any questions that he or she may have.
- 5. **Put it all Together:** When you've completed each section of your pitch, put it all together. Then, read it aloud and use a stopwatch to time how long it takes. It should be no longer than 20-30 seconds. Remember, the shorter it is, the better! **Example:**

Here's how your pitch could come together:

- "My company deals with cloth retail online business and we use various e-commerce platforms to sell our products. This means that you can do shopping with ease and spend time on other important tasks. Unlike other similar companies, we have a strong feedback mechanism to find out exactly what people need. This means that, on average, 95 percent of our clients are happy with our products. So, how can you help us in creating our own web portal?
- 6. **Practice:** Like anything else, practice makes perfect. Remember, how you say it is just as important as what you say. If you don't practice, it's likely that you'll talk too fast, sound unnatural or forget important elements of your pitch. Set a goal to practice your pitch regularly. The more you practice, the more natural your pitch will become. Practice in front of a mirror or in front of colleagues until the pitch feels natural.

Summarize



 Close the discussion by summarizing how to speak effectively as discussed in the Participant Handbook.

UNIT 5.5.4: Problem Solving & Negotiation Skills

Unit Objectives



At the end of this unit, participants will be able to:

- Discuss how to solve problems
- List the important problem-solving traits
- Discuss ways to assess problem solving skills
- Discuss the importance of negotiation
- Discuss how to negotiate

Resources to be Used



Participant Handbook



- What is a 'problem'?
- What do you think are the problems you may face in the process of becoming a successful entrepreneur?



- Discuss the definition of problem as given in the Participant Handbook.
- In a hurdle race the hurdles are the obstacles on the way to reach your goal.
- Similarly, obstacles are the hurdles you may face while reaching your goal i.e. to set-up your own business.
- Your goal will be to reach the finishing line after crossing these hurdles.

Ask (ask)



- What do you do when you face a problem?
- How do you resolve it? You can pick examples from the question asked previously 'the problems they are likely to face in the process of becoming a successful entrepreneur'.



Discuss how to solve problems as given in the Participant Handbook.

Team Activity



- This is a group activity.
- The groups will solve the problem and come up with the best solution in each case.

- 1. Unable to arrange for some extra finance for setting up a beauty parlour. The loan sanctioned and disbursed is not enough. You have tried all your contacts, friends and relatives. But unable to manage the extra amount. Bank will not sanction more amount as you have used up the complete sanction limit.
- 2. You have rented a space for your business and all arrangements are done. You will be operating from the office space rented in two days. Now the owner comes up to you and says he wants to sell the place and wants you to vacate in 15 days.
- 3. You have just set up your business and need extra human resource. You have tried invieing a few also tied up with an agency for getting the right candidate. But you are unable to get the right candidate. If the candidate is good, you cannot offer the salary demanded. If the candidate agrees to the salary, he/she has other demands like working hours to be reduced, leaves etc. which may not work for your set up.

Do



- Divide the class into three groups. Give one scenario to each group.
- Explain the purpose and duration of the activity.
- Ask the groups to build on the scenario and present their solution as a role play.

Say



De-brief questions:

- 1. What was the problem?
- 2. Is there any other alternative solution?
- 3. Is this the best solution presented?

Ask lask



Try to think of some people around you who are able to solve problems very easily. Even you or your friends might be approaching them when there is a problem. What qualities do they have? What personality traits do such people possess?



Discuss the important traits for problem - solving as given in the Participant Handbook.

Ask ask



- In order to build a successful organization, you need to hire people who possess good problem-solving skills.
- How would you assess the level of problem solving skills of potential candidates before hiring them?

Say



• Discuss how to assess for problem- solving skills as given in the Participant Handbook.

Summarize



- Ask the participants the things that they have learnt so far.
- Ask if they have any questions related to what they have talked about so far.
- · Summarize the discussion on problem solving.

Activity



• The activity is to organise an election event. Select three volunteers from the group. They have to give a speech on their election manifesto to the class. They have to negotiate with the fellow participants and convince them to vote for them. The best negotiator will win the election.

Do



- Ask three participants to volunteer for the activity.
- Explain the purpose and duration of the activity.
- Set guidelines pertaining to discipline and expected tasks.

Ask



- Out of the three contestants, whom would you support? Why? What did they say or do which convinced you to make your decision?
- Have you ever tried to negotiate in your personal or professional life?
- Ask the class to share some of their experiences where they have been able to strike a deal by negotiating.

Say



• Discuss "What is Negotiation?" as given in the Participant Handbook.

Ask



 Why is it important to negotiate? As an entrepreneur, where do you think that negotiation skills will be needed?

Say



 Discuss the importance of negotiation while starting a business as given in the Participant Handbook.

Say



• Discuss the important steps to negotiate as given in the Participant Handbook.

Role Play



- Conduct a role play activity.
- Ask the participants to assemble together.
- Explain the purpose and duration of the activity.
- Set guidelines pertaining to discipline and expected tasks.

Do



- Divide them into groups of four (4) (depending on the batch size).
- Give them the hand-outs for role play scenarios.
- Two groups to be given scenarios on problem solving.
- Other two groups to be given scenarios on negotiation.
- The groups will build on the scenarios and prepare for the role play.
- Give the groups atleast 5 mins to discuss and be ready with the role play.
- Invite each group one by one to come and present their role play.

Problem solving Scenario 1

Avinash has a Mobile Repair Store in Allahabad. His outlet is one of the most popular one in the vicinity and he has great rapport with his customers. He is always well-dressed, jovial and full of energy.

It's around 11 AM, when a customer barges in to the shop and starts shouting at Avinash for giving her back the instrument which is still not working. The screen of her mobile is also cracked from one side. Avinash remembered thoroughly checking the handset before handing it over to the customer. The customer threatens to sue the company and to g o to Consumer Court for cheating her.

Problem solving Scenario 2

You are running a successful small scale business, Shreeji Aggarbattis,. Your staff members do door to door selling and organise marketing campaigns in local markets. Your brand has established it's name in last few years.

Recently, lot of customers have been coming to you and lodging complaints that your staff members indulge in malpractices. Few of them informed you that a staff member engaged them in a friendly conversation. In the meanwhile, the other gave them lesser packets of aggarbattis than they paid for.

Another set of customers lodged complaint about the misconduct and rude behaviour of a particular staff member. You often hear from your customers that the orders don't get delivered on time or wrong products get delivered. You have already been struggling with shortage of staff and such complaints are a serious concern as it is hampering your brand image. What strategies will you adopt to solve this problem?

Negotiation Scenario 1

You have interviewed a prospective new employee who could be a key member of your new entrepreneurial venture. The new person is demanding a salary that is 20% higher than you thought based on your business

plan. Finances are tight, yet you believe this person could make a significant impact on future profits. If you paid the required salary for the new person, then you would have to restructure your entire business plan. You've been searching for an individual with this skill level for three months. to the candidate is waiting for your response. Now you have to call him in to make the final negotiations.

Negotiation Scenario 2

You are a young entrepreneur who has just registered his start up project and applied for a bank loan accordingly. You receive a letter saying that your loan application has been rejected as your start up idea did not appeal to the bank and they think that it is not a revenue generating model. You have taken an appointment to meet the manager and show your negotiation skills to get your loan approved.

Notes for Facilitation



Facilitating Role Plays

Preparing for the activity

- 1. Carefully review the details of the scenario and the character descriptions.
- 2. Become familiar with the key issues being addressed in the scenario.
- 3. Study the provided material so that you are ready to address issues related to the situations depicted in the role-plays.
- 4. Anticipate and know how to address issues participants might raise during the activity.

Conducting the activity

- 1. Introduce the activity. Emphasize that role-playing provides participants with an opportunity to apply their new knowledge, skills, and tools in situations that simulate actual interactions with customers.
- 2. Ask participants to form pairs. Direct the members of each group to choose who will play the roles. Remind the groups that each participant should be given the opportunity to play/practice the different roles.
- 3. Conduct a demonstration so that participants become familiar with the expectations related to the roles and support materials.
- 4. Give the pairs/groups 10 to 15 minutes to conduct the role-play (depending on the duration of the session).
- 5. After all the groups have finished with the role-play, conduct a debriefing session on each role-play.
- Ask the groups to take five minutes to talk about what happened during the role-play. The groups should discuss the questions given in the debriefing for each role-play.
- 7. Encourage participants to provide constructive criticism during their discussions.

Summarize



• Wrap the unit up after summarizing the key points and answering questions.

UNIT 5.5.5: Business Opportunity Identification: **Entrepreneurs and Opportunities**

Unit Objectives



At the end of this unit, the participants will be able to:

- Discuss how to identify new business opportunities
- Discuss how to identify business opportunities within their business

Resources to be Used



- Participant Handbook
- Blank sheets of paper
- Pens

Ask ask



- How does an entrepreneur identify an opportunity?
- What do you think are the common queries or concerns faced by entrepreneurs?
- How can you identify new business opportunity?

Sav



- Let's talk about opportunity, common queries or concerns faced by entrepreneurs, idea as an opportunity, factors to consider when looking for opportunities, ways to identify new business, and opportunity analysis as discussed in Participant Handbook.
- Let's do an activity to understand ways to identify business opportunities within your business.

Do



- Tell the class that this is an individual activity.
- Tell the participants to create a matrix on their notebooks.
- There will be four boxes in your matrix.
- Strength, Weakness, Opportunity and Threats will be the four headings of the matrix. This is called the SWOT matrix.
- Read out the questions to them and tell the participants they need to answer the questions asked in each matrix.
- Tell them they can also use their own understanding of themselves to fill the SWOT matrix.

Activity



Do your SWOT analysis

Strength

What are your strengths?

What unique capabilities do you possess? What do you do better than others?

What do others perceive as your strengths?

Opportunity

What trends may positively impact you? What opportunities are available to you?

Weakness

What are your weaknesses?

What do your competitors do better than you?

Threat

Do you have solid financial support? What trends may negatively impact you?



- Congratulate everyone for the class activity.
- Ask the audience to applaud for themselves.
- Allot the participants sufficient time to complete this activity, but do keep a check on
- Ask de-brief questions to cull out information from the participants.

Ask ask



De-brief questions:

- What are your weaknesses according to your SWOT analysis?
- Do you think you can change your weakness into strength? How?
- Do you think you can work on your threats? How?

Summarize



- Close the discussion by summarizing ways to identify business opportunities within your business.
- Ask the participants what they have learned from this exercise.
- Ask if they have any questions related to what they have talked about so far.

UNIT 5.5.6: Entrepreneurship Support Eco-System

Unit Objectives



At the end of this unit, participants will be able to:

- Explain the meaning of entrepreneur
- Describe the different types of entrepreneurs
- List the characteristics of entrepreneurs
- Recall entrepreneur success stories
- Discuss the entrepreneurial process
- Describe the entrepreneurship ecosystem
- Discuss the purpose of the 'Make in India' campaign
- Discuss the key schemes to promote entrepreneurs

Resources to be Used



- Participant Handbook
- Chart papers
- Marker pens
- Pencils
- Colour pencils
- Scale
- Other requisite stationery material



- Do you think that entrepreneurs need support?
- What do you think is an eco-system?
- What do you think 'entrepreneurship support eco-system' means?



- Let's learn what entrepreneurship support eco-system means.
- Discuss 'Entrepreneurship Support Eco-System' as given in the Participant Handbook



- Can you define entrepreneurship support eco-system?
- What are the key domains of the support eco-system?



- Let's learn more about these domains by conducting an activity.
- You have to make a poster showing the components of the six main domains of entrepreneurship support eco-system.

Team Activity



Making a poster showing the entrepreneurship support eco-system.

Do



- Divide the class into groups of four or six.
- Hand out chart paper and coloured pens.
- Explain the purpose and duration of the activity.
- Go around checking the progress of each group.
- Set guidelines pertaining to discipline and expected tasks.

Activity De-brief

Ask each group to display their poster and explain the key domains of entrepreneurship support eco-system.

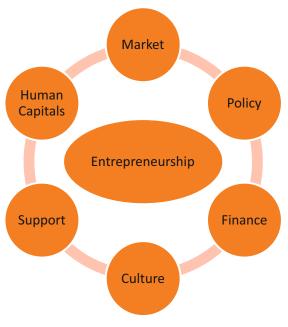


Fig 5.5.2: Key domains of entrepreneurship



What kind of government support eco-system is available for entrepreneurs in India?

Say



• Discuss 'Make in India' campaign as given in the Participant Handbook.

Team Activity



• Presentation on key schemes to promote entrepreneurs

Do



- Divide the class into pairs.
- Number each pair from 1-15.
- Assign a scheme, same as their group number, to each group.
- Ask them to read the scheme carefully and present it to the class.
- Explain the purpose and duration of the activity.
- Go around checking the progress of each group.
- Set guidelines pertaining to discipline and expected tasks.

Activity De-brief

• Ask each group to explain the scheme offered by government to promote entrepreneurs.

Summarize



• Summarize the unit by discussing the key points and answering questions the participants may have.

UNIT 5.5.7: Risk Appetite & Resilience

Unit Objectives 6



At the end of this unit, participants will be able to:

- Discuss the relationship between entrepreneurship and risk appetite
- Discuss the relationship between entrepreneurship and resilience
- Describe the characteristics of a resilient entrepreneur

Resources to be Used



- Participant Handbook
- Chart papers
- Blank sheets of paper
- Pens
- Marker pens



- Can you define risk or explain what constitutes a risk?
- What do you people mean when they say, "This may be a risky proposition"?
- What risks are they talking about?

Example 🔽



• Let's have a look at these two examples:

Rohit and his family were travelling by car from Delhi to Nainital. It was their second trip there. Rohit was familiar with the road. His friends told him that the highway after Rampur was in a bad condition. They advised him to take a shortcut and turn left from Moradabad and take the Kaladhungi road. This road is in a better condition.

Since he was going with his family, and did want to take the risk of getting lost, he left early. He took the Kaladhungi road and reached Nainital well in time.

Suresh and his family too were travelling by car from Delhi to Nainital. It was their second trip there. His friends too advised him to take a shortcut and turn left from Moradabad and take the Kaladhungi road as this road was in a better condition.

Suresh too decided to take the Kaladhungi road but he left Delhi in the afternoon. It was dark by the time he reached Kaladhungi, and he was sure that he was taking the correct turn. As it was late, he could not find anyone to give him directions. He ended up being in an unknown place that was scarcely inhabited.

Say



- Let's see what type of risks Rohit and Suresh took.
- Discuss 'Risk Appetite and Resilience' with the participants as given in the Participant Handbook.

Say



• Let's learn more about risk appetite and resilience with the help of an activity.

Team Activity



Risk Appetite

- This is a group activity.
- In the previous unit, you read success stories of Mr Dhirubhai Ambani and Dr Karsanbhai Patel
- Mr Ambani left his job and started his company Reliance with just Rs. 50,000/-.
- Dr Patel kept his job, went door-to-door to sell Nirma, and only when the brand started gaining popularity did he start his own company.
- What types of risk did both of them take?
- What risk factors, do you think, did they keep in mind before launching their company?
- Write the Risk Appetite Statement of both the companies.

Activity De-brief

- Who took a greater risk?
- What are the differences between the Risk Appetite Statement of both the companies?

Do



- Instruct the participants that this is group work.
- Divide the class into small groups of 4.
- Give each group a chart paper.
- Tell the participants that they have to evaluate the risks taken by Mr Dhirubhai Ambani and Dr Karsanbhai Patel.
- Give the participants 15 minutes to discuss and write.
- Keep a check on time. Tell the group to wind up quickly if they go beyond the given time limit.

Ask



- Do you think all entrepreneurial ventures are successful?
- What happens if the first venture is not successful?
- Should the entrepreneur stop when faced with challenges or face them?

Example



Let's have a look at the following example:

Vijay Shekhar Sharma is the founder of Paytm, which is a giant Indian e-commerce. He was born in a middle-class family in Uttar Pradesh. He started his first job at an MNC. He quit after six months and built a company One97 with his friends. As One97 grew bigger, it needed more money because it was running more servers, bigger teams, and had to pay royalty. At that time, the tech bubble popped and technology companies were running in losses. Finally, money ran out. So One97 took loans and then more loans at higher rates of interest, as high as 24 per cent, and became caught in a vicious cycle.

In 2014, Paytm was launched with online wallet services after which, the company enabled online payment transactions. The company got licenses from RBI in 2016 to launch India's first ever payment bank. Moreover, the main motive of Paytm was to transform India into a cashless economy.

After demonetization came into effect, Vijay Shekhar Sharma started promoting online and digital transactions to deal with the cash crunch. In fact, the service of the company's mobile wallet is accepted across India. The logo of Paytm is now popular almost everywhere from tea stalls to major companies.

Say



- Let's see what qualities made Vijay Shekhar Sharma a resilient entrepreneur.
- Discuss Entrepreneurship and Resilience with the participants as given in the Participant Handbook.

Say



• Let's learn more about entrepreneurship and resilience with the help of an activity.

Team Activity



Entrepreneurship and Resilience

- This is a group activity.
- Think of some entrepreneurship ventures that faced challenging times, but later resulted in success stories.
- Who is the founder of that company?
- What challenging times did it face?
- How did it overcome those challenges?
- List the resilient characteristics of the entrepreneur.

Activity De-brief

- Each group to give their presentation.
- Why did you choose this company?
- What is the success story of the company?

Do



- Instruct the participants that this is group work.
- Divide the class into small groups of 4.
- Give each group a chart paper.
- Tell the participants that they have to think of an entrepreneur who faced challenging times, but eventually succeeded.
- Give the participants 15 minutes to discuss and write.
- Keep a check on time. Tell the group to wind up quickly if they go beyond the given time limit.

Summarize



- You can summarize the key points of the unit.
- Ask the participants what they learned from the activities.
- Clarify any questions or doubts they might have.

UNIT 5.5.8: Success and Failures

Unit Objectives



At the end of this unit, participants will be able to:

Discuss how to deal with failure

Resources to be Used



Participant Handbook

Ask ask



- Have you heard the quote 'nothing is impossible'?
- What do you think it means?
- Do you think that all successful entrepreneurs became famous overnight or did they have to struggle or face failure before succeeding?

Example



Let's have a look at this example.

Shah Rukh Khan, also known as, SRK or King Khan is a force to reckon with. Did he achieve stardom overnight?

Shah Rukh Khan, who has seen many struggles in his life – he has slept on streets, struggled to support himself and his sister at a very young age, and lost his parents very early in life, which led to his sister seeking mental health support. Amidst all the chaos and challenges, he kept pushing himself, and today he stands tall as the 'Badshah of Bollywood'. Certainly, those years were not easy for him.

When he was young, he stood at Marine Drive and said, "I will rule this city one day". Failure was not just his companion during or before his stardom, it is still a substantial part of his life. Success does not come easy. What made him a star was his acceptance of failure and the urge to improve.

Say



- How do you define success and failure?
- What is fear?
- Discuss "success and failure" with the participants as given in the Participant Handbook.



- Have you felt or experienced fear?
- What led you to feel that emotion?
- How did you handle it?



Let's learn the about success and failure with the help of an activity.

Team Activity



- Divide the class into groups of four.
- Instruct them to think of one scenario where they have to interview a successful entrepreneur.
- Explain the purpose and duration of the activity.
- Set guidelines pertaining to discipline and expected tasks.
- They have to choose one person from the group as the interviewee and one as the interviewer.
- Go around and make sure they have understood what is to be done and are discussing the roles properly.
- Check that everyone understands their role. Give clarifications if needed. Give the participants about 5 minutes to discuss and decide their roles.
- Ask the groups to stop the discussion as soon as the time is over.
- Invite each group one by one to come and present their interview as a role play.

Notes for Facilitation



Facilitating Role Plays

Preparing for the activity

- 1. Carefully review the details of the scenario and the character descriptions.
- 2. Become familiar with the key issues being addressed in the scenario.
- 3. Study the provided material so that you are ready to address issues related to the situations depicted in the role plays.
- 4. Anticipate potential questions that might be raised by the participants and be ready to address them.

Conducting the activity

1. Introduce the activity. Emphasize that role playing provides participants with an opportunity to apply their new knowledge, skills, and tools in situations that simulate actual interactions with customers.

- 2. Ask participants to form pairs. Direct the members of each group to choose who will play the roles. Remind the groups that each participant should be given the opportunity to play/practice the different roles.
- 3. Conduct a demonstration so that participants become familiar with the expectations related to the roles and support materials.
- 4. To maintain spontaneity of the interactions during the role play, ask the participants not to discuss the details of their roles prior to the role play.
- 5. Give the pairs 15-20 minutes to conduct the role play.
- 6. Circulate among the groups to answer any questions that may arise and provide guidance as needed.
- 7. After all the pairs have finished with the role play, conduct a de -briefing session on each role play.
- 8. Ask the groups to take five minutes to talk about what happened during the role play. The groups should discuss the questions given in the de-briefing for each role play. Encourage participants to provide constructive criticism during their discussions.
- 9. Conclude the activity by asking participants to think about whether and how they might use scripted role plays in their real life.

Summarize



• Wrap the unit up after summarizing the key points and answering questions.

UNIT 5.6: Preparing to be an Entrepreneur

Key Learning Outcomes 🔯

At the end of this unit, participants will be able to:

- 1. Discuss how market research is carried out
- 2. Describe the 4 Ps of marketing
- 3. Discuss the importance of idea generation
- 4. Recall basic business terminology
- 5. Discuss the need for CRM
- 6. Discuss the benefits of CRM
- 7. Discuss the need for networking
- 8. Discuss the benefits of networking
- 9. Discuss the importance of setting goals
- 10. Differentiate between short-term, medium-term and long-term goals
- 11. Discuss how to write a business plan
- 12. Explain the financial planning process
- 13. Discuss ways to manage your risk
- 14. Describe the procedure and formalities for applying for bank finance
- 15. Discuss how to manage their own enterprise
- 16. List the important questions that every entrepreneur should ask before starting an enterprise

UNIT 5.6.1: Market Study/ The 4Ps of Marketing/ Importance of an IDEA: Understanding Market Research

Unit Objectives



At the end of this unit, participants will be able to:

- Discuss how market research is carried out
- Describe the 4 Ps of marketing
- Discuss the importance of idea generation

Resources to be Used



- Participant Handbook
- Chart papers
- Markers pens
- Blank sheets of paper

Ask ask



- Suppose, you want to open a restaurant, what are the factors you will consider?
- How will you promote your restaurant?

Example



Let's have a look at this example.

Arjun was an MBA working in a company. But he wanted to start a low cost budget hostel for foreign tourists coming to India. He did a lot or market research before starting the project. Based on the information he gathered, he made his business plan. His hostel is now flourishing and he is thinking of expanding to other tourist destinations.

Sav



- Discuss "Market Study" with the participants. Refer to the Participant Handbook.
- Let's learn about market study and research with the help of an activity.

Team Activity



Market Study

- This is a group activity.
- You want to start your own tuition centre.
- What type of research will you do?

Activity De-brief

- Ask each group to come forward and give a brief presentation.
- Encourage other groups to be interactive and ask questions.
- What factors did you keep in mind while doing your research?
- Based on our research would you go ahead and open a tuition centre?

Do



- Instruct the participants that this is group work.
- Divide the class into small groups of 4 or 6.
- Give each group a chart paper.
- Tell the participants that they have to start their own tuition centre.
- Give the participants 10 minutes to discuss and write the research work they need to do.
- Keep a check on time. Tell the group to wind up quickly if they go beyond the given time limit.

Say



By opening a tuition centre you are offering a service.

Ask ask



What factors will you keep in mind before opening it?



Discuss "The 4Ps of Marketing" with the participants as given in the Participant Handbook.

Say



Let's learn about the 4Ps of Marketing with the help of an activity.

Team Activity



4 Ps of Marketing

- This is a group activity.
- You have to sell a pen to four different segments:
- Rural villagers 1.
- 2. Rural middle class
- 3. Urban middle class
- Upper end rich people (Niche market)

Keeping the 4Ps of Marketing in mind, what marketing strategy will you design to sell the pen?

Activity De-brief

- Ask each group to present their strategy.
- Encourage other groups to be interactive and ask questions.

Do



- Instruct the participants that this is group work.
- Divide the class into four groups.
- Give each group a chart paper.
- Assign each group a target audience for selling the pens:
- 1. Rural villagers
- 2. Rural middle class
- 3. Urban middle class
- 4. Upper end rich people
- Tell the participants that they have to design a marketing strategy keeping the 4Ps of Marketing in mind.
- Give the participants 20 minutes to discuss and come up with their strategy.
- Keep a check on time. Tell the group to wind up quickly if they go beyond the given time limit

Activity De-brief

- Ask each group to come forward and give a brief presentation.
- Ask each group what they kept in mind while designing their marketing strategy.
- Encourage other groups to be interactive and ask questions.

Say



- Each entrepreneur has an idea of wants he wants to sell. It may be a service or a product.
- Discuss "Importance of an IDEA" as given in the Participant Handbook.

Summarize



- Summarize the key points of the unit.
- Ask the participants what they learnt from the activities.
- Encourage them to ask if they have any doubts.

UNIT 5.6.2: Business Entity Concepts

Unit Objectives



At the end of this unit, participants will be able to:

Recall basic business terminology

Resources to be Used



Participant Handbook



- Let's recall some basic business terminology.
- Discuss the Business Entity Concepts as given in the Participant Handbook.
- Let's learn some basic business terminology by having an activity.
- We will have a quiz today.

Activity



The activity is a quiz.

Do



- Divide the class in two groups and give a name to each group.
- Explain the rules of the quiz. For each correct answer the group gets 1 mark.
- If the group is unable to answer the question is passed to the next group.
- Explain the purpose and duration of the activity.
- Ask the questions of the quiz.
- Keep a score of the groups.
- Set guidelines pertaining to discipline and expected tasks.

Summarize



Summarize the unit by discussing the key points.

Notes for Facilitation



QUESTIONS FOR THE QUIZ

1. What does B2B mean?

Business to business

2. What is a financial report?

A comprehensive account of a business' transactions and expenses

3. Who is a sales prospect?

A potential customer

4. How is working capital calculated?

Current assets minus current liabilities

5. What is an estimation of the overall worth of a business called?

Valuation

6. You are buying a house. What type of transaction is it?

Complex transaction

7. How will you calculate the net income?

Revenue minus expenses

8. How is Return on Investment expressed?

As percentage

9. How will you calculate the cost of goods sold?

Cost of materials minus cost of outputs

10. 10. What is revenue?

Total amount of income before expenses are subtracted.

11. What is a Break-Even Point?

This is the point at which the company will not make a profit or a loss. The total cost and total revenues are equal.

12. What is the formula used to calculate simple interest?

A = P(1 + rt); R = r * 100

13. What are the three types of business transactions?

Simple, Complex and Ongoing Transactions

14. The degrading value of an asset over time is known as

Depreciation

15. What are the two main types of capital?

Debt and Equity

UNIT 5.6.3: CRM & Networking

Unit Objectives



At the end of this unit, participants will be able to:

- Discuss the need for CRM
- Discuss the benefits of CRM
- Discuss the need for networking
- Discuss the benefits of networking

Resources to be Used



Participant Handbook

Ask



- Can your business run without customers/buyers?
- Who is the most important entity in any business?



- The key to every success business lies on understanding the customer's expectations and providing excellent customer service.
- Discuss about CRM and its benefits. Refer to the Participant Handbook.
- Providing excellent customer service entails:
 - Treating your customers with respect.
 - Be available as per their need/ schedule.
 - Handling complaints effectively.
 - Building long lasting relationships.
 - Collecting regular feedback.
- Handle customer complaints proactively. Ask "what happened", "why it happened", "how can it be avoided next time", etc.
- Collecting feedback from the customers regularly will enable you to improve your good/service.
- "Let's understand it better with the help of some case scenarios. You will be given some cases within your groups. You have to analyse the case scenario that has been given to you and then find an appropriate solution to the problem."

Do



- Divide the class into four groups of maximum six participants depending on the batch size.
- Give one case study to each group.
- Instruct them to read the case carefully.
- The group is expected to analyse and discuss the case amongst them and find a solution to the given problem.
- Put down the discussion points (de-brief questions) on the board. Give the class 5-10 minutes to discuss the case and note down their solutions.
- At the end of 10 minutes, the team should present their case solution to the class.

Team Activity



Case Study Analysis

Raju runs a business of wooden furniture. He has a huge list of customers on Facebook and WhatsApp who give him orders regularly. Ankita is one of his old and regular customers. She placed an order for a new chester and TV cabinet via WhatsApp and requested Raju to send them as soon as possible. When the parcel reached Ankita through courier she found that chester was broken and the TV unit was chipped from the bottom. Ankita was heartbroken. It was a complete waste of money. She sent a message to Raju on WhatsApp, expressing her anger and disappointment. Raju might lose an old customer forever if he doesn't satisfy the customer. What should Raju do to retain his customer?

Scenario 2

Rajni runs a boutique shop. She sells suits and sarees. She is one of the most successful designer in her city. Rajni swears that all the clothes in her boutique have unique designs. Smita has to attend her cousin's wedding; she goes to Rajni's boutique to buy a saree. Smita wanted a unique designer saree. Rajni customized a saree for her and sent it over the courier. When Smita had a look at the saree she realised her two friends had the same design sarees. She sent a message to Rajni on WhatsApp, expressing her anger and disappointment. Did Rajni make a false promise? Were her designs copied? What could happen to Rajni's image after this incident? What would you do if you were in Rajni's place?

Scenario 3

Shama is a beautician who offers parlour services to ladies by making home visits. Recently, Shama got her name registered on an e- commerce website. Two days earlier, she got a message from Mrs Sushma. The appointment was fixed for next day, 11:00 am and the remuneration for the services was decided beforehand. When Shama reached there at 10:50 am, Mrs Sushma was not at home. When Shama called her, she asked her to wait for a while. Mrs Sushma reached home at 11:45 am. Meanwhile, Shama had to reschedule her next appointment. After availing Shama's services, Mrs Sushma refused to pay the requisite amount and started finding faults in the services provided by her. Who was at fault in this scenario? What should you do in case the customer behaves unreasonably? What would you do if you were in Shama's place?

Scenario 4

Shailender is the manager of a car showroom. He proactively takes part in all the transactions that happen in his showroom. Vinita wants to buy a new car. She has chosen a car from Shailender's showroom. The salesperson has given her a very good discount and has also promised free service for one year. Vinita goes to the showroom and asks to complete all the formalities to purchase the car. When she sees the final bill she realize that she has not received the promised discount neither was there any mention of the free services. She immediately demands to see the Shailender. When Shailender's head asks how much discount Vinita was promised, he realised the discount will make the sale in loss. The car showroom owner might lose a customer and deal due to false commitments made by his manager. Besides, the customer might tell this to other people, creating a bad name and image for the showroom. If you owned that showroom, how would you have convinced your customer?

Say



- Now, let's discuss the problem and solution with the class.
- The group will first briefly describe the case to the class.
- Then discuss the issue identified and the proposed solution.
- Present the solution as a role play.
- Post presentation, the other groups may ask questions from the group that has presented.

Do



- Congratulate each group for the presentation/ role play.
- Ask the audience to applaud for them.
- Keep a check on time. Tell the group to wind up the discussion quickly if they go beyond the given time limit.

Say



- If your customers are happy with you they will give referrals which will help to grow your husiness
- One more way of growing business is 'Networking'.
- Discuss Networking and its benefits. Refer to the Participant Handbook.

Activity



Group Discussion

 Conduct a group discussion in the class on how they can do networking for their business.

Summarize



- Ask the participants what they have learnt from this exercise/ activity.
- Ask if they have any questions related to what they have talked about so far.
- Close the discussion by summarizing the importance of CRM and Networking for entrepreneurs.
- Close the discussion by summarizing the importance of CRM and Networking for entrepreneurs.

UNIT 5.6.4: Business Plan: Why Set Goals?

Unit Objectives



At the end of this unit, participants will be able to:

- Discuss the importance of setting goals
- Differentiate between short-term, medium-term and long-term goals
- Discuss how to write a business plan
- Explain the financial planning process
- Discuss ways to manage your risk

Resources to be Used



- Participant Handbook
- Chart papers
- Blank papers
- Marker pens
- Ruler

Ask ask



- Remember we had written SMART Goals in a previous session? Let's try and recall why it is important to set goals?
- While framing SMART goals, we talked about 'T' in SMART, which was 'Time Bound'? What do we mean by time bound goals?
- What time limit did you set for your goal- 3 weeks, 3 years, 10 years?



Talk about short term, long term and medium-term goals, as discussed in the Participant Handbook.



As you are planning to become an entrepreneur, you must have thought of an idea for a start-up. What is your business idea?



Ask few participants to share their business ideas.

Ask (as

- Have you created a business plan for your business idea?
- Do you think it is important to have a business plan in place? Why/ why not?

Say



- Talk about 'Why Create a Business Plan' as discussed in the Participant Handbook.
- Let's understand it better with the help of an activity.

Team Activity



Writing a business Plan

- This is a group activity.
- Give the groups the required resources such as chart paper and markers.
- This activity is divided into two parts:
- 1. Create a business idea
- 2. Develop a business plan
- The group will discuss and come up with a new business idea and present their idea to the class.
- In the second part of the activity the group will develop a business plan for the business idea
- The business plan prepared will be presented by the groups to the class.

MY BUSINESS PLAN
Executive Summary: What is your Mission Statement?
Business Description: What is the nature of your business?
Market Analysis: What is your target market?
Organization and Management: What is your company's organizational structure?
Service or Product Line: What is the lifecycle of your product/ service?
Marketing and Sales: How will you advertise and sell your products?
Funding Request: How much fund is required and from where?

Say



- Teams will need to brainstorm for this part of the activity.
- Use the blank papers for the second part of this activity
- Make your business plan on a chart paper based on the following parameters:
- 1. Executive Summary
- 2. Business Description
- 3. Market Analysis
- 4. Organization and Management
- 5. Service or Product Line
- 6. Marketing and Sales
- Explain each parameter in detail as done in the Participant Handbook.
- Discuss each parameter with the business idea examples of the groups.
- Groups will discuss and develop the business plan for their business idea.

Say



- Now, let's share our plan with the class.
- Each group will briefly describe the plan to the class.
- Post presentation, the other groups may ask questions to the group who have presented their plan.

Do



- Congratulate each group for sharing their points.
- Ask the audience to applaud for them.
- Keep a check on time. Tell group to wind up the discussion quickly if they go beyond the given time limit.

Say



- Along with a business plan, you need to create a financial plan and evaluate the risk involved with your start up.
- Discuss 'Financial Planning' and 'Risk Management' in detail as given in the Participant Handbook.

Summarize



- Ask the participants what they have learnt from this exercise/ activity.
- Ask if they have any questions related to what they have talked about so far.

Notes for Facilitation



Keep the business plan format ready in a flipchart to display it during the activity.

UNIT 5.6.5: Procedures and Formalities for Bank Finance

Unit Objectives



At the end of this unit, participants will be able to:

- Discuss the importance of setting goals
- Differentiate between short-term, medium-term and long-term goals
- Discuss how to write a business plan
- Explain the financial planning process
- Discuss ways to manage your risk

Resources to be Used



- Participant Handbook
- Bank loan/finance form sample



While preparing a business plan in the last session, we discussed financial planning to arrange financial resources for your start-up. Therefore, how will you collect funds to start your business?



- While most entrepreneurs think 'product' is the most difficult thing to decide for a business, start-up capital poses an even a bigger obstacle. Though there are various ways of funding the business, to convince investors to invest money is the most challenging.
- Some of the funding options available in India are:
 - Bootstrapping: Also called self-financing is the easiest way of financing
 - Crowd funding: Funds are collected by consumers pre-ordering or donating for starting the business.
 - Angel investors: Individual or group of investors investing in the company
 - Venture capitalists: Venture capitals are professionally managed funds who invest in companies that have huge potential. They usually invest in a business against equity.
 - **Bank loans**: The most popular method in India.
 - Microfinance Providers or NBFCs
 - **Government programmes**
- Let us know discuss the most popular method i.e. bank finance in detail here.

Do



- Discuss the list of documents that are required to apply for a loan like letter of introduction, business brochure, references of other banks, and financial statements.
- Explain the details to be filled in a loan application form.
- Divide the class into groups. Give each group a loan application form.
- Ask the groups to discuss and fill the form.

Summarize



- Close the discussion by summarizing the important documents needed for bank loan.
- Ask the participants if they have any questions related to what they have talked about so

Notes for Facilitation



- Checklist of documents is provided as resources for the session.
- You can make some copies and distribute it during the group activity.
- Download sample loan application forms from any nationalised bank's website. Print sufficient copies to circulate it amongst the groups.

CHECKLIST OF DOCUMENTS TO BE SUBMITTED ALONG WITH LOAN APPLICATION (Common for all banks)

- 1. Audited financial statements of the business concern for the last three years
- 2. Provisional financial statements for the half year ended on
- 3. Audited financial statements of associate concern/s for the last three years
- 4. Copy of QIS II for the previous quarter ended on
- 5. Operational details in Annexure I
- 6. CMA data for the last three years, estimates for current year and projection for the next year
- 7. Term loan/DPG requirements in Annexure II
- 8. List of machinery in respect of machinery offered as security in Annexure III
- 9. Additional details for export advances furnished in Annexure IV
- 10. Property statements of all directors/partners/proprietor/guarantors
- 11. Copies of ITAO of the company for the last three years
- 12. Copies of ITAOs/WTAOs of the directors/partners/proprietor and guarantors
- 13. Copies of certificate from banks and financial institutions certifying the latest liability with them
- 14. Copy of board resolution authorizing the company to apply to your bank for the credit facilities mentioned in application

- 15. Copy of memorandum and article of association (in case of limited company)/partnership deed (in case of partnership firm)
- 16. Cash budget for the current year and next year in case of contractors and seasonal industries.

UNIT 5.6.6: Enterprise Management – An Overview: How to Manage Your Enterprise?

Unit Objectives



At the end of this unit, participants will be able to:

Discuss how to manage their own enterprise

Resources to be Used



Participant Handbook

Ask ask



- Having set up a business, do you think it is possible to do everything on your own?
- Does one require trained persons for help?
- What does management mean?



Kapil had a small business that was beginning to pick up pace. He wanted to expand his business, and therefore employed few more people. One day, as he was walking past Ramesh, one of his new employees, he overheard Ramesh talking rudely to a customer on the phone. This set him thinking. Kapil realised that he should have regular team meetings to motivate his employees and speak with them about any problems they might be facing during work. He should also conduct training sessions on new practices, soft skills, and technology, and develop work ethics manual for managing his enterprise.

Say



- Was Kapil correct in his approach or he should have scolded Ramesh instantly in front of his other employees?
- Discuss "Enterprise Management An Overview" with the participants as given in the Participant Handbook.



Let's learn how to effectively manage an enterprise or business through an activity.

Team Activity



Enterprise Management

- This is a group activity.
- Design a matrix listing the topics and key words that are needed to run an enterprise effectively and smoothly.

Activity De-brief

- Have each group present their matrix.
- Encourage participants of the other groups to ask question about each other's presentation.

Do



- Instruct the participants that this is group work.
- Divide the class into small groups of 4.
- Give each group a chart paper and coloured pen.
- Tell the participants that they have make a matrix they need to fill.
- They have to write the main topics and key words that will them effectively manage their enterprise.
- Give the participants 15 minutes to discuss and write.
- Keep a check on time. Tell the group to wind up quickly if they go beyond the given time limit.

Summarize



- Ask the participants what they have learned from this exercise/activity.
- Ask if they have any questions related to what they have talked about so far.
- Close the discussion by summarizing the importance of effective management to run an enterprise as given in the Participant Handbook.

UNIT 5.6.7: 20 Questions to Ask Yourself before **Considering Entrepreneurship**

Unit Objectives



At the end of this unit, participants will be able to:

List the important questions that every entrepreneur should ask before starting an enterprise

Resources to be Used



- Participant Handbook
- Blank sheets of paper
- Pens

Ask



Why do you want to become an entrepreneur?

Say



- It is very important to know why you want to become an entrepreneur. Your personal goals for becoming an entrepreneur play a key role in the success of your business. Your goals should be clear well before you start your business.
- Apart from the goals, the other aspects of business that you need to bear in mind are the potential problems that you may face to set-up, your areas of interest, and all the other dimensions of the business.
- Let's understand it better with the help of some questions that every entrepreneur should ask before starting their own business.
- Open the Participant Handbook section named '20 Questions to Ask Yourself Before Considering Entrepreneurship'. You have to answer the questions individually.
- Then, we will have a class discussion on all the questions.

Do



- Read out the questions one by one in front of all the participants.
- Participants have to answer all the one by one questions.
- Give the class 10-15 minutes to note down their answers.
- At the end of 15 minutes, open the discussion for all the questions.
- Moderate the discussion by focusing on the relevant points.

- Keep a check on time and don't let the discussion get sabotaged or lose track of time. Ensure all the questions are covered and discussed.
- Give the participants 15 minutes to discuss and write.
- Keep a check on time. Tell the group to wind up quickly if they go beyond the given time limit.

Summarize 2



- Ask the participants what they have learned from this exercise/activity.
- Ask if they have any questions related to what they have talked about so far.





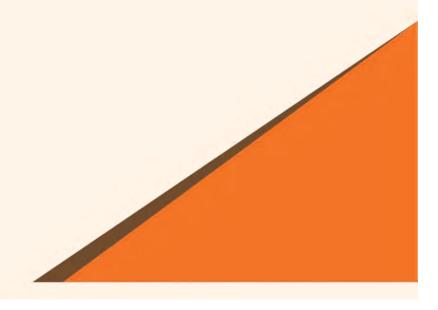






6. Annexures

Annexure 1 – Training Delivery Plan Annexure 2 – Assessment Criteria



Annexure 1

Training Delivery Plan

Training Delivery Plan									
Program Name:	Certificate Course in Sol	ar Panel Installation Techi	nician						
Qualification Pack Name & Ref. ID	Solar panel Installation	Technician (ELE/Q5901)							
Version No.	V1.0 Version Update Date 12-05-2017								
Pre-requisites to Training	10th Standard passed ITI/Diploma (electrical, mechanical) * Minimum 6 months preferred but not mandatory in equipment installation								
Training Outcomes	 Fundamentals of PV Ensuring effective fu Solar PV Technology Proactive Maintena Assessing the install Pre-requisites, arrar 	inctioning of solar energy and usage	system after installation the installation						

No Name Name 1 Solar PV Introductio Essential n to solar energy • Global overview of Power Development. • Global overview of Renewable Energy Development • National overview of Power Development • National overview of Power Development • National overview of Power Development • National overview of Renewable Energy Development • National overview of Renewable Energy Development • National overview of Renewable Energy Development including Solar	Tools/Ads	
Solar PV Essential s Introductio n to solar energy Power Development. Global overview of Renewable Energy National overview of Renewable Energy Power Development National overview of Renewable Energy Development National overview of Renewable Energy Development National overview of Renewable Energy Development Including Solar National overview of Renewable Energy Development Including Solar The Need of Solar Power, Benefits, Application of Solar Energy Solar Power Myths Basics on solar energy and power generation systems. Basic principles of Solar Power	 Projector Different types of Solar Panels Components of a Solar PV Installation Systems Solar Lighting and other application systems Inverters Charge Controllers Testing Equipment 	Theory: 17:00 Practical: 17:00
Essential s n to solar energy Development. • Global overview of Renewable ELE/N9952 KB1 to KB2 ELE/N9953 Development including Solar • National overview of Power Development • National overview of Renewable Energy Development including Solar • National overview of Renewable Energy Development including Solar • The Need of Solar Power, Benefits, Application of Solar Energy • Solar Power Myths • Basics on solar energy and power generation systems. • Basic principles of Solar Power	Different types of Solar Panels Components of a Solar PV Installation Systems Solar Lighting and other application systems Inverters Charge Controllers Testing Equipment	17:00 Practical: 17:00
Solar Thermal, Dish Type, Solar Tower) Manufacturing process for Solar Photovoltaic and Solar thermal equipment Use and handling procedure of solar panels, energy storage, control and conversion Basic electrical system and functioning of various electrical		

2	Core and Generic skills	Reading and Writing skills		site survey, design and evaluation of various parameters tools involved in installation of system quality and process standards occupational health and safety standards waste management and disposal procedures and standards importance of wearing protective clothing and other safety gear while carrying out installation precautions to be taken while handling different electrical and mechanical products Read product and equipment manuals, installation manuals, etc. Read warnings, instructions and other text material on product labels, components, etc Fill in job completion form after installation activities have been completed To clearly communicate installation and design instructions to team To clearly communicate the constraints and quality requirements To communicate the constraints and quality requirements to team Purpose and specification of	ELE/N5901 SA1 to SA3 ELE/N5902 SA1 to SA5 ELE/N9952 SA1 to SA5	Facilitator-led — Discussion Demonstratio n	•	Product Manuals of PV Panels Charge Controllers Inverters Battery Bank On Grid and Off Grid System Component Solar application appliances	Theory: 17:00 Practical: 17:00
1	nal skills	handling	1	specification of	SB1 to SB5	Discussion	•	Testing	17:00

		thinking		used in	ELE/N5902	Demonstratio			Practical:
		skill		maintenance	SB1 to SB8	n			10:00
				activity	ELE/N9952				
			•	How to operate/use	SB1 to SB4				
				different tools	ELE/N9953				
				such as screw	SB1 to SB2				
				driver, inspection					
				fixtures, wire					
				cutter, pliers,					
				tester,					
				spanner, etc.					
				How to handle tools					
				and equipment					
				and maintain them					
				in a good					
				condition					
			•	How to interact					
				with supervisor to					
				understand the					
				daily production					
				target					
			•	How to interact					
				with co-workers in					
				order to coordinate					
				work processes					
			•	Reflective thinking					
			•	Decision making					
4	Understa	Work	•	Understand the	ELE/N5901	Facilitator-led	•	Videos	Theory:
	nding	requiremen		individual work	PC1 to PC6	Discussion	•	PPT's	17:00
	the	ts		requirement and		Demonstratio	•	Laptop	Practical:
	work			areas of operation		n	•	Projector,	17:00
	requirem		•	Interact with the			•	Projector	
	ent			supervisor in order				Screen	
				to understand the				White	
				installation targets				Board	
				for the day and/or			•	Marker	
				week					
			•	Understand the			•	Duster	
				location of			•	Attendance	
				installations and				Sheet	
				optimise the route			•	Feedback	
				plan				Form	
			•	Plan the day's			•	Internet	
				activities and the					
				complete work plan					
				for each					
				installation					
			•	Coordinate with the					
				various					
				departments and					
				persons involved					
				in installation					
			•	Operation such as					
				design, logistics,					
				material handling					
				and stores					
			•	Minimise					
				absenteeism and					
				report to					
				work on time					

					ELE /NIE004	F 100 1 1 1	1		-
5	Assessin	Pre-	•	Assess the site level	ELE/N5901	Facilitator-led	•	Videos	Theory:
	g site	requisite		pre-requisites	PC7 to	– Discussion	•	PPT's	17:00
	conditio	for		for solar panel	PC18	Demonstratio	•	Laptop	Practical:
	ns and	installation		installation		n	•	Projector,	17:00
	understa		•	Decide on the type			•	Projector	
	nding			of mounting to				Screen	
	installati			be made such as			•	White	
	on			roof top, open				Board	
	requirem			fields, small spaces			•	Marker	
	ents		•	Ensure that land is			•	Duster	
				levelled for flat			•	Attendance	
				surface mounting				Sheet	
			•	Decide the type of				Feedback	
				mounting				Form	
				accessories				Internet	
				required for				meme	
				installation					
				as per the site					
				condition					
			•	Decide the place of					
				installation and					
				ensure maximum					
				period of sunlight					
				is captured in the					
				area					
			•	Ensure that					
				construction is					
				strong to					
				hold solar panel for					
				20-25 years,					
				especially, on roof					
				top					
				Inform the					
			•	customer for any					
				civil					
				construction to be					
				undertaken for					
			•	installing the panels To be competent,					
				•					
				the user/ individual					
				must be able to:					
				be able to: understand the					
				location					
				and mounting					
				preference of					
				•					
				customers, interact with customers					
				and understand the					
				purpose of installation and					
				suggest alternatives					
			•	Match the voltage					
				and power output					
				of the type of					
				installation					
				designed					
				and losses with					
				customer's					
				requirement					

			T.	Informa					
			•	Inform customers about the					
				approximate time					
				• •					
				required for installation and any					
				requirements					
				-					
				during installation					
			•	Get concurrence					
				from the customer					
				on the package of					
				materials to be					
				procured for installation based					
6	Collectin	Standard	•	on agreed design	ELE/N5901	Facilitator-led		Classica	Theory:
О		module	•	Arrange for and	PC19 to	– Discussion	•	Charge	17:00
	g the materials			collect the solar	PC19 to	Demonstratio		Controllers	Practical:
	for	handling procedure		panels as per customer's	PC30		•	Invertors	17:00
		procedure				n	•	On-Grid and	17.00
	installati on and			requirement				Off Grid	
	ensuring		•	Ensure that the				system	
	quality			quantity of modules				components	
	of			/ panels match the voltage			•	Application	
	material							Equipment	
	and			requirement of the system			•	Testing	
	handling		l_					Equipment	
	Handing		•	Arrange for					
				mounting stands as					
				per					
			l_	design					
			•	Arrange for tools					
				and consumables					
				required for					
				mounting the solar					
				panels					
			•	Decide on the					
				workforce required					
				and arrange for					
			l_	team					
			•	Ensure that only					
				company recommended					
				quality materials					
				are used unless					
				specified by					
				customer					
				Ensure all the					
				materials procured					
				are QC passed					
			•	Ensure that module					
			1	is not damaged					
				and the outer glass					
				is not broken					
				Understand the					
				material handling					
				requirement and					
				follow the standard					
				operating					
				procedure while					
				moving					
				them					
			1	CICIII	l .	<u> </u>			

			1				1		
7	Organiza tional context	Company policies and documenta tion policy		Cover the glass module with an opaque material to ensure that there is no electricity generation before installation Ensure standard module handling procedure such as two people should lift a module; module should not be carried on head, etc Ensure that modules are stored in a way that it is not damaged by falling or by any external disturbance Company's policies on: incentives, personnel management Company's code of conduct importance of individual's role in the work flow Organisation culture Company's reporting structure Company's documentation policy Company's different department and concerned authority Company's installation policy Company's customer support	ELE/N5901 KA1 to KA9 ELE/N5902 KA1 to KA9 ELE/N9952 KA1 to KA3 ELE/N9953 KA1 to KA4	Facilitator-led — Discussion Demonstratio n		Charge Controllers Invertors On Grid and Off Grid system components Application Equipment Testing Equipment	Theory: 17:00 Practical: 17:00
8	Understa	Installation	•	policy Understand the	ELE/N5902	Facilitator-led	•	Charge	Theory:
3	nding installati on and material usage procedur e and	procedures	•	customer requirement on installation Ensure that all appropriate materials are available during installation time	PC1 to PC14	– Discussion Demonstratio n	•	Controllers Invertors On Grid and Off Grid system components Application Equipment	17:00 Practical: 17:00

	1		1			1
assessing	•	Ensure that the		•	Testing	
mountin		installation meets			Equipment	
g		the local building		•	Clamping	
		rules and			Accessories	
		regulations			for	
	•	Ensure to			installation	
		disconnect PV				
		module				
		from any electric				
		sources such as				
		batteries, inverters,				
		etc., before				
		working on the				
		module				
	•	Check that the				
		module is defect				
		free				
		before installing				
	•	Ensure to take				
	1	specified measures				
		such as fire				
		resistance,				
		corrosion				
		resistance for the				
		module during				
		_				
		installation				
	•	To be competent,				
		the user/				
		individual must be				
		able to:				
	•	Understand the				
		type of mounting				
		and other				
		accessories				
		required				
	•	Assess the degree				
		of inclination and				
		angle of tilt of PV				
		module for the				
		specific area,				
		locality or region to				
		enable the system				
		absorb maximum				
		annual sunlight				
	•	Ensure that sunlight				
		falls				
		perpendicular to				
		the PV module to				
		absorb maximum				
		energy				
	•	Ensure that panels				
		are mounted in a				
		place where there				
		is no shade at				
		any time of the year				
	•	Ensure that				
		mounting is strong				
		to withstand rain,				
		storm.				
	•	Ensure that any				
		special construction				

 -		1				1		1
Installing the panel and connecti ng the system and check for functioni ng	Proper connection and functioning of solar module		requirement for mounting is done by following acceptable quality standards, especially, in rooftop installations Use approved tools for mounting Set the mounting fixture firmly at the desired location Remove packaging of the solar panel carefully Handle the panels carefully without damaging the material Take safety measures and wear protection gear such as gloves to avoid shock / injuries while handling modules Cover the module with opaque material while installing to avoid any current generation Ensure that junction box in covered Do not disturb or disassemble any part of the module part during installation Take necessary precautions for fire resistance of modules Use recommended material of solar cable and plugs for electrical	ELE/N5902 PC15 to PC32	Facilitator-led – Discussion Demonstratio n	•	Charge Controllers Invertors On Grid and Off Grid system components Application Equipment Testing Equipment Clamping Accessories for installation	Theory: 16:00 Practical: 16:00
		•	modules Use recommended material of solar cable and plugs for electrical					
		•	connection Install spare fuse to avoid any short circuits as per company policy Mount the module on the fixture with the mounting rails					
			using bolts and nuts					

	1	1			T	T			
			•	Ensure that the					
				panels are mounted					
				Firmly, to be					
				competent, the					
				user/					
				individual must be					
				able to:					
			•	Use the cables to					
				connect multiple					
				PV modules in					
				combination to					
				generate the					
				desired voltage and					
				current					
			•	Choose type of					
				connection, i.e.,					
				series or parallel, as					
				per design					
				Use recommended					
				cable to					
				generate maximum					
				voltage					
			•	Check the					
				maximum system					
				voltage					
				as per the					
				installation and					
				follow					
				adjustment					
				measures					
				accordingly to					
				match output					
				requirement					
			•	Ensure that the					
				modules are					
				grounded as					
				specified					
			•	Connect the system					
				and check for					
				functioning					
			•	Escalate for any					
				issues faced during					
				the functioning of					
				the system					
10	Completi	Maintenan	•	To be competent,	ELE/N5902	Facilitator-led	•	Charge	Theory:
	ng the	ce and		the user/	PC32 to	– Discussion		Controllers	16:00
	work	safety		individual must be	PC43	Demonstratio	•	Invertors	Practical:
	and	guidelines		able to:		n	•	On Grid and	16:00
	following		•	Clean the work area				Off Grid	
	quality			after				system	
	and			completing the				components	
	safety			installation activity			•	Application	
	procedur		•	Remove all the				Equipment	
	es			tools, consumables			•	Testing	
				used from the				Equipment	
				installation area			•	Clamping	
			•	Fill in the job				Accessories	
				completion form				for	
				and				installation	
				get the signature of					
				the customer					
	I .	I	1		<u> </u>	<u>i</u>	1		<u>. </u>

		I	1		I		1	
			•	Inform customers				
				about				
				maintenance of				
				solar panels and				
				procedure for				
				cleaning of solar				
				panels				
			•	Follow company				
				standards in				
				documentation of				
				installation				
				activities				
				performed				
			•	To be competent,				
				the user/ individual				
				must				
				be able to:				
			•	Remove any metals				
				or jewellery to				
				avoid possibility of				
				current shock				
				during installation				
			1	activity				
			•	Wear all safety				
				gears such as work				
				shoes, cotton				
				gloves, goggles				
				while				
				carrying out				
				installation				
				activities				
			•	Take specified				
				precautionary				
				measures while				
				handling electrical				
				system				
			•	Keep work area				
				clean and				
				organised				
			•	Adhere to relevant				
				health and safety				
				standards				
			•	Dispose of any				
				waste materials in				
				accordance with				
				safe working				
				practices and				
				procedures				
11	Interacti	Reporting	•	Understand and	ELE/N9952	Demonstratio		Theory:
1 11				assess work	PC1 to	n and		16:00
	ng with	to superior	1		PC1 to			l l
	supervis			requirements	PC1/	Facilitator-led		Practical:
	or and		•	Understand the		- discussion		16:00
	coordina			targets and				
	ting with		1	incentives				
	colleagu		•	Understand new				
	es		1	operating				
			1	procedures and				
				constraints				
			•	Report problems in				
		<u></u>	L	the field				<u> </u>
			•		•		•	

					Т				1
			•	Resolve personnel issues					
			•	Receive feedback					
				on work					
				standards and					
				customer					
				satisfaction					
			•	Communicate any					
				potential hazards					
				at a particular					
				location					
			•	Meet given targets					
			•	Deliver work of					
				expected quality					
				despite constraints					
			•	Get trained on					
				latest technologies					
				and updates					
			•	Receive positive feedback on					
				behaviour and					
				attitude shown					
				during					
				interaction					
			•	To be competent,					
				the user/					
				individual must be					
				able to:					
			•	Interact with					
				colleagues from					
				different functions					
				and understand					
				the nature of their					
12	Followin	Safety	•	work comply with safety	ELE/N9953	Demonstratio	•	Safety	Theory:
12	g safety	procedures		procedures	PC1 to	n and	•	equipment	16:00
	procedur	required at		followed in the	PC15	Facilitator-led		счатритент	Practical:
	es and	work area		company	. 525	- discussion			16:00
	participa		•	take adequate					
	ting and			safety measures					
	drills			while handling					
	and			hazardous					
	worksho			materials					
	ps			or tools					
			•	take necessary					
				measures while					
				handling electrical					
			•	equipment escalate matters					
				about hazardous					
				materials or things					
				found in the					
				premises					
			•	follow appropriate					
				material handling					
				procedures to avoid					
				any damages					
				and injuries					
						1			
			•	Use safety materials such as					

	gloves, goggles,		
	masks, helmets,		
	etc.		
•	undertake		
	adequate safety		
	measures while on		
	work to prevent		
	accidents		
•	ensure zero		
	accidents in work		
•	avoid damage of		
	components due to		
	negligence in ESD		
	procedures		
•	ensure no loss for		
	company due to		
	safety negligence		
•	To be competent,		
	the user/individual		
	must be able to:		
•	participate in		
	regular safety drills		
	for being prepared		
	in the event of a		
	fire or natural		
	calamity		

Annexure II

Assessment Criteria CRITERIA FOR ASSESSMENT OF TRAINEES

Assessment Criteria	for "Solar panel Installation Technician"
Job Role	Solar panel Installation Technician
Qualification Pack	ELE/ Q 5901
Sector Skill Council	Electronics Sector Skills Council of India
Sr. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	Each NOS will have assessed both for theoretical knowledge and practical
3	The assessment will be based on knowledge bank of questions created by the SSC.
4	Individual assessment agencies will create unique question papers for theory and skill practical part for each candidate at each examination/training center
5	To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS
6	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

Assessment Strategy		Marks Allocation		
NOS	Performance criteria	Total	Theory	Practical
	PC1. understand the individual work requirement and areas of operation	2	1	1
	PC2. interact with the supervisor in order to understand the installation targets for the day and/or week	3	2	1
	PC3. understand the location of installations and optimise the route plan	2	1	1
1. ELE/ N5901 Check site	PC4. plan the day's activities and the complete work plan for each installation	2	1	1
conditions and collect tools and raw mate	PC5. coordinate with the various departments and persons involved in installation operation such as design, logistics, material handling and stores	2	0	2
rials	PC6. minimize absenteeism and report to work on time	2	0	2

PC7. assess the site level pre-requisites for solar panel installation small spaces	2	0	2
PC8. decide on the type of mounting to be made	2	1	1
such as roof top, open fields, small spaces			
PC9. ensure that land is levelled for flat surface	2	0	2
mounting			
PC10. decide the type of mounting accessories	2	1	1
required for installation as per the site condition PC11. decide the place of installation and ensure	3	1	2
maximum period of sunlight is captured in the area	3	1	2
PC12. ensure that construction is strong to hold	2	1	1
solar panel for 20-25 years, especially, on roof top			
PC13. inform the customer for any civil	2	0	2
construction to be undertaken for installing the			
panels	-		
PC14. understand the location and mounting	2	1	1
preference of customers PC15. interact with customers and understand the	4	1	3
purpose of installation and suggest alternatives	4	1	3
PC16. match the voltage and power output of the	4	2	2
type of installation designed and losses with			
customer's requirement			
PC17. inform customers about the approximate	4	2	2
time required for installation and any			
requirements during installation	-	2	2
PC18. get concurrence from the customer on the	6	3	3
package of materials to be procured for installation based on agreed design			
PC19. arrange for and collect the solar panels as	4	2	2
per customer's requirement	-	_	_
PC20. ensure that the quantity of modules / panels	4	2	2
match the voltage requirement of the system			
PC21. arrange for mounting stands as per design	4	1	3
PC22. arrange for tools and consumables required	4	1	3
for mounting the solar panels	5	2	3
PC23. decide on the workforce required and arrange for team	5	2	5
PC24. ensure that only company recommended	4	2	2
quality materials are used unless specified by	•	_	_
customer			
PC25. ensure all the materials procured are QC	4	1	3
passed			
PC26. ensure that module is not damaged, and the	5	0	5
outer glass is not broken	4	1	2
PC27. understand the material handling	4	1	3
requirement and follow the standard operating procedure while moving them			
procedure withe moving them			

	PC28. cover the glass module with an opaque material to ensure that there is no electricity generation before installation	4	1	3
	PC29. ensure standard module handling procedure such as two people should lift a module, module should not be carried on head, etc.	5	2	3
	PC30. ensure that modules are stored in a way that it is not damaged by falling or by any external disturbance	5	2	3
		100	35	65
	PC1. understand the customer requirement on installation accessories required	2	1	1
	PC2. ensure that all appropriate materials are available during installation time	2	1	1
	PC3. ensure that the installation meets the local building rules and regulations	2	0	2
2. ELE/ N5902 Install the solar	PC4. ensure to disconnect PV module from any electric sources such as batteries, inverters, etc., before working on the module	3	1	2
panel	PC5. check that the module is defect free before installing	3	1	1
	PC6. ensure to take specified measures such as fire resistance, corrosion resistance for the module during installation	3	0	3
	PC7. understand the type of mounting and other accessories required	3	1	2
	PC8. assess the degree of inclination and angle of tilt of PV module for the specific area, locality or region to enable the system to absorb maximum annual sunlight	4	2	2
	PC9. ensure that sunlight falls perpendicular to the PV module to absorb maximum energy	3	1	2
	PC10. ensure that panels are mounted in a place where there is no shade at any time of the year	2	0	2
	PC11. ensure that mounting is strong to withstand wind, rain, etc	2	1	1
	PC12. ensure that any special construction requirement for mounting is done by following acceptable quality standards, especially, in rooftop installations	2	1	1
	PC13. use approved tools for mounting	2	1	1
	PC14. set the mounting fixture firmly at the desired location	2	0	2
	PC15. remove packaging of the solar panel carefully	2	1	1
	PC16. handle the panels carefully without damaging the material	3	1	2

PC17 Take safety measures and wear protection	3	1	2
gear such as gloves to avoid shock / injuries while			
handling modules	_	_	_
PC18. cover the module with opaque material	3	1	2
while installing to avoid any current generation			
PC19. ensure that junction box in covered	3	1	2
PC20. do not disturb or disassemble any part of	2	0	2
the module part during installation			
PC21. take necessary precautions for fire	2	0	2
resistance of module	_	_	_
PC22. use recommended material of solar cable	2	1	1
and plugs for electrical connection	_	_	_
PC23. Install spare fuse to avoid any short circuits	2	1	1
as per company policy	_	_	_
PC24. mount the module on the fixture with the	2	1	1
mounting rails using bolts and nuts		_	
PC25. ensure that the panels are mounted firmly	1	0	1
PC26. use the cables to connect multiple PV	2	1	1
modules in combination to generate the desired			
voltage and current	_	_	_
PC27. choose type of connection, i.e., series or	3	1	2
parallel, as per design	_	_	_
PC28. use recommended cable to generate	2	1	1
maximum voltage		4	4
PC29. Check the maximum system voltage as per	2	1	1
the installation and follow adjustment measures			
accordingly to match output requirement		4	4
PC30. ensure that the modules are grounded as	2	1	1
specified	2	0	2
PC31. connect the system and check for	2	0	2
functioning	4	2	2
PC32. escalate for any issues faced during the	4	2	2
functioning of the system	2	0	2
PC33. clean the work area after completing the	2	0	2
installation activity	1	0	1
PC34. remove all the tools, consumables used from	1	0	1
the installation area	2	1	1
PC35. fill in the job completion form and get the	2	1	1
signature of the customer	2	2	0
PC36. inform customers about maintenance of	3	3	0
solar panels and procedure for cleaning of solar panels			
•	2	1	1
PC37. follow company standards in documentation of installation activities performed			1
PC38. remove any metals or jewellery to avoid	3	1	2
possibility of current shock during installation		1	_
activity			
activity	<u> </u>	<u> </u>	

	PC39. wear all safety gears such as work shoes,	3	1	2
	cotton gloves, goggles while carrying out installation activities			
	PC40. take specified precautionary measures while	3	1	2
	handling electrical system			
	PC41. keep work area clean and organised	2	0	2
	PC42. adhere to relevant health and safety	1	1	0
	standards			
	PC43. dispose of any waste materials in	1	0	1
	accordance with safe working practices and			
	procedures			
		100	35	65
	PC1. understand and assess work requirements	6	3	3
	PC2. understand the targets and incentives	6	3	3
	PC3. understand new operating procedures and constraints	8	3	8
	PC4. report problems in the field	6	2	4
	PC5. resolve personnel issues	8	2	6
	PC6. receive feedback on work standards and	6	3	3
3. ELE/ N0051	customer satisfaction			
Coordinate	PC7. communicate any potential hazards at a	6	3	3
with team	particular location			
members	PC8. meet given targets	4	2	2
	PC9. deliver work of expected quality despite	6	2	4
	constraints			
	PC10. get trained on latest technologies and updates	6	2	4
	PC11. receive positive feedback on behaviour and	8	3	5
	attitude shown during interaction			
	PC12. interact with colleagues from different	4	2	2
	functions and understand the nature of their work			
	PC13. receive materials from tool room or stores;	4	0	4
	deposit faulty modules and tools to stores			
	PC14. pass on work allocation to colleagues in a	4	2	2
	respective geographical area			
	PC15. share work according to competency and capability	6	2	4
	PC16. assist colleagues with resolving field	6	2	4
	problems resolve conflicts and achieve smooth			
	workflow			
	PC17. follow the company policy during cross	6	2	4
	functional interaction	100	35	65
	PC1. comply with safety procedures followed in	6	3	3
	the company			
	PC2. take adequate safety measures while handling hazardous materials or tools	6	3	3
	PC3. take necessary measures while handling electrical equipment	6	3	3
				•

	PC4. escalate matters about hazardous materials	6	3	3
	or things found in the premises			
4. ELE/ N0052	PC5. follow appropriate material handling	6	3	3
Ensure safety	procedures to avoid any damages and injuries			
at work place	PC6. use safety materials such as gloves, goggles,	7	3	4
	masks, helmets, etc.			
	PC7. undertake adequate safety measures while	7	3	4
	on work to prevent accidents			
	PC8. ensure zero accidents in work	10	4	6
	PC9. avoid damage of components due to	10	4	6
	negligence in ESD procedures			
	PC10. ensure no loss for company due to safety	6	5	5
	negligence			
	PC11. participate in regular safety drills for being	4	2	4
	prepared in the event of a fire or natural calamity			
	PC12. help others during the drill or calamity	6	2	2
	PC13. administer basic first aid	4	3	3
	PC14. participate in company organised games and	4	2	2
	fitness sessions such as yoga, etc.			
	PC15. develop good posture for working so that	6	2	4
	long term health problems do not arise			
		100	35	65



- Explain each Guideline for Assessment in detail
- Explain the score that each trainee needs to obtain
- Recapitulate each NOS one-by-one and take participants through the allocation of marks for Theory and Skills Practical.
- Explain the Allocation of Marks. Explain that they will be assessed on Theory and Skills Practical.



Notes 🗐 ——		

