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SATELLITE DISH INSTALLER

TRAINER GUIDE

National Vocational Certificate Level 2

Version 1 - October, 2019

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SATELLITE DISH INSTALLER

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National Vocational Certificate Level 2

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Introduction

Competence-based training helps to bridge the gap between what is taught in training and what tasks will be performed on the job. Training trainees to perform actual job functions helps to ensure that future front-line workers have the skills, knowledge and abilities required to perform their jobs properly, safely and effectively. In addition to competence-based training, assessment based on the performance of actual work competencies helps to ensure that:

- trainees are performing their work tasks as safely as possible
- performance gaps are recognized prior to serious incidents
- training can be implemented to improve competence.

There are significant benefits to competence-based training:

1. **Cost effectiveness**

   Since training activities and assessments in a competence-based approach are goal-oriented, trainers focus on clearly defined areas of skills, knowledge and understanding that their own industry has defined in the competence standards. At the same time, trainees are more motivated to learn when they realize the benefits of improved performance.

2. **Efficiency**

   The transfer gap between the training environment and working on the job is reduced substantially in a competence-based approach. This is because training and assessment are relevant to what needs to be done on the job. As a result, it takes less time for trainees to become competent in the required areas. This, in turn, contributes to improved efficiency where training and assessment are concerned.

3. **Increased productivity**

   When trainees become competent in the competence standards that their own industry has defined, when they know what the performance expectations are and receive recognition for their abilities through successful assessments, they are likely to be more motivated and experience higher job satisfaction. The result is improved productivity for organizations. The communication and constructive feedback between future employers and employees will improve as a result of a competence-based approach, which can also increase productivity.

4. **Reduced risk**

   Using a competence-based approach to training, development, and assessment, employers are able to create project teams of people with complementary skills. A trainee's record of the skills, knowledge and understanding relating to the competence standards they have achieved can be used by a future employer to identify and provide further relevant training and assessment for new skills areas. Competence standards can shape employee development and promotional paths within an organization and give employees the opportunity to learn more competencies beyond their roles. It can also provide organizations with greater ability to scale and flex as needed, thereby reducing the risk they face.

5. **Increased customer satisfaction**

Employees who have been trained and assessed using a competence-based approach are, by the definition of the relevant competence standards, able to perform the required tasks associated with a job. The knock-on effect is that, in service-related industries, they are able to provide high service levels, thereby increasing customer satisfaction. In production or manufacturing industries, they are able to work closely to industry standards in a more effective and efficient way.

Lesson plans

This manual provides a series of lesson plans that will guide delivery of each module for the *Satellite Dish Installer* qualification. It is important for trainers to be flexible and be ready to adapt lesson plans to suit the context of the subject and the needs of their trainees.

Good teachers acknowledge that CBT means each and every trainee in the class learns at a different speed. The good teacher is prepared to throw aside the day's lesson plan and do something different (and unplanned) for the class even if it means 'writing' a lesson plan for each trainee to match their learning pace for that day or week.

Learning by doing is different from learning theory and then applying it. To learn to do something, trainees need someone looking over their shoulder saying 'it's not quite like that, it's like this', 'you do it like this because …', or even 'tell me why you chose to do it like this?'.

In this way, trainees learn that theoretical knowledge is meaningless if it is not seen in the context of what they are doing. In other words, if a trainee doesn't know why they do something, they will not do it competently (skills underpinned by knowledge = competent performer).

This is how a *Satellite Dish Installer* acquires a practical grasp of the standards expected. It's not by learning it in theory, but because those standards are acquired through correction by people who show what the standards are, and correct the trainee where they do not meet those standards, and where they repeat it correction until they have internalised those standards.

Demonstration of skill

Demonstration or modeling a skill is a powerful tool, which is used, in vocational training. The instructions for trainers for demonstration are as under:

a) Read the procedure mentioned in the Trainer Guide for the relevant Learning Unit before demonstration.
b) Arrange all tools, equipment and consumable material, which are required for demonstration of a skill.
c) Practice the skill before demonstration to trainees, if possible.
d) Introduce the skill to trainees clearly at the commencement of demonstration.
e) Explain how the skill relates to the skill(s) already acquired and describe the expected results or show the objects to trainees.
f) Carry out demonstration in a way that can be seen by all trainees.
g) Use the same tools and materials that the learner will be using.
h) Go through EACH of the steps involved in performing the skill.
i) Go SLOWLY - describe each step as it is completed.
j) Encourage the learners to move around and watch what you are doing from a number of different angles.
k) Identify critical or complex steps, or steps that involve safety precautions to be followed.

l) Explain theoretical knowledge where applicable and ask questions to trainees to test their understanding.
m) Try to involve the learners: Ask them questions about why they think the process may work that way.
n) Repeat critical steps in demonstration, if required.
o) Summarize the demonstration by asking questions to trainees.

Involvement in the process (actively seeing) is important at this stage. When you work on getting involved, getting people to participate, you make them a part of what is happening. Questions for clarification or explanation are important throughout the demonstration. It is up to the learners to ask questions about things they do not understand, but it is also important for trainers to seek out and elicit questions from learners. A trainer may need to do repeated demonstrations of difficult or complex skills.

Overview of the program

Course: *Satellite Dish Installer, Level - 2*	**Total Course Duration:** 450 hours
Course Overview:	
The purpose of the training is to provide skilled manpower to improve the existing capacity of Electronics sector. This training will provide the requisite skills to the trainees to Install Satellite Dish. It will enable the participants to meet the challenges in the field of Satellite Dish industry. Further, to improve the skill level of the technician and prepare them for the Electronics industry to meet the market competition nationally and internationally. The core purpose of this qualification is to produce employable Satellite Dish Installer who could Install Satellite Dish according to national and international standards. In addition this qualification will prepare unemployable youth to employee in this sector.	

Module	Learning Unit	Duration
Module 2: Develop Basic Electrical/ Electronic Skills **Aim:** Objective of this module is to cover the skills and knowledge required to lay Electrical cables, perform single-phase AC Connection, Perform DC Connection, perform basic electric wiring and conduct wiring test.	**LU1:** Lay Electrical cables **LU2:** Perform single-phase AC Connection **LU3:** Perform DC Connection **LU4:** Perform Basic Electrical wiring **LU5:** Conduct wiring Test	150 hours
Module 3: Perform Cable Connection **Aim:** The objective of this module is to provide skills and knowledge related to Fix Splitter, Lay Coaxial Cables, Fix/Mount Diseqc Switch,	**LU1:** Fix Splitter **LU2:** Lay Coaxial Cables **LU3:** Fix/Mount Diseqc Switch **LU4:** Make Coaxial Cable Connections **LU5:** Connect Input/ Output Cables	100 hours

Module	Learning Unit	Duration
Make Coaxial Cable Connections and Connect Input/ Output Cables		
Module 4: Assemble Dish Antenna **Aim:** The objective of this module is to provide skills and knowledge related to Assemble Dish Stand, Combine Dish Pieces, Install Actuator, MountLNB Support Arm for Downlink and Mount LNA Support Arm for Uplink	**LU1:** Assemble Dish Stand **LU2:** Combine Dish Pieces **LU3:** Install Actuator. **LU4:** Mount LNB Support Arm for Downlink **LU5:** Mount LNA Support Arm for Uplink	200 hours

FORMAT FOR LESSON PLAN			
Module 2: Develop Basic Electrical/ Electronic Skills			
Learning Unit CU4: Perform Basic Electrical wiring			
Methods White Board Duster **Multimedia Projector**	Key Notes Tools, materials and equipment used for Performing Basic Electrical wiring	Media	Time 30 Hrs
Introduction			
	This session will introduce learners to the tools, techniques and material used for Performing Basic Electrical wiring, using presentation, demonstration, question and answer, and practical skills development.		
Main Body			
	• Measure cables as per requirement • Connect cables • Perform joints • Insulate Joints		
Conclusion			
	To conclude the session, review the tools, techniques and material used for Performing Basic Electrical wiring. Give learners the opportunity to ask questions.		
	<u>Assessment</u> Question and answer, discussion groups with feedback, observation of practice skills development		
		Total time:	30 Hrs

FORMAT FOR LESSON PLAN			
Module 3: Perform Cable Connection			
Learning Unit CU2: Lay Coaxial Cables			
Methods White Board Duster **Multimedia Projector**	Key Notes Tools, materials and equipment used for Laying Coaxial Cables	Media	Time 20 Hrs
Introduction			
	This session will introduce learners to the tools, techniques and material used for Laying Coaxial Cables, using presentation, demonstration, question and answer, and practical skills development.		
Main Body			
	• Measure cables as per route • Select cable • Perform ducting/piping • Drill holes if required • Lay cables as per standard.		
Conclusion			
	To conclude the session, review the tools, techniques and material used for Laying Coaxial Cables. Give learners the opportunity to ask questions.		
	<u>Assessment</u> Question and answer, discussion groups with feedback, observation of practice skills development		
		Total time:	20 Hrs

FORMAT FOR LESSON PLAN			
Module 4: Assemble Dish Antenna			
Learning Unit CU1: Assemble Dish Stand			
Methods White Board Duster **Multimedia Projector**	Key Notes Tools, materials and equipment used for Assembling Dish Stand	Media	Time 40 Hrs
Introduction			
	This session will introduce learners to the tools, techniques and material used for Assembling Dish Stand, using presentation, demonstration, question and answer, and practical skills development.		
Main Body			
	• Select tools and equipment • Select dish stand as per size requirement • Identify parts of stand • Assemble stand of dish antenna as per drawing		
Conclusion			
	To conclude the session, review the tools, techniques and material used for Assembling Dish Stand. Give learners the opportunity to ask questions.		
	<u>Assessment</u> Question and answer, discussion groups with feedback, observation of practice skills development		
		Total time:	40 Hrs

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Module-2
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Trainer's guidelines

Module 2: 0619001081 Develop Basic Electrical / Electronic Skills			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
LU1: Lay Electrical cables	Lead a discussion on Laying Electrical cables. Encourage ALL trainees to participate in the discussion. Ensure that the discussion addresses the following points: • Interpret electrical drawing/document • Identify Electrical cables • Laying Electrical cables • Connect earthing. Display a slide or flip chart with a key question relating to Laying Electrical cables. **Step 1 – Think** Working on their own, each learner thinks about the question and makes notes of their responses or key points which they believe to be important. **Step 2 – Pair** For the next step, each learner pairs up with a partner. The two learners exchange their ideas and make further notes to add clarity to their own ideas. **Step 3 – Share** The final step is for you to invite different pairs to share the ideas they have discussed in response to the key question relating to Laying Electrical cables.	Practical: Electrical Lab	Learner guide Multi-media projector Handouts Videos **Tools and equipment** • Measuring tape • Insulated plier, insulated wire cutter, insulated screw driver set, VOM, Cable knife, Cable cutter, Solder iron, blow lamp, Insulation tape.

Module 2: 0619001081 Develop Basic Electrical / Electronic Skills			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	Demonstrate the tools and equipment needed for Laying Electrical cables. Enable learners to practice using the appropriate tools and equipment for Laying Electrical cables in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Laying Electrical cables in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU2: Perform single-phase AC Connection	Deliver an illustrated presentation on Performing single-phase AC Connection. Ensure that the presentation focuses on the following: 1. Select cable gauge 2. Select cables colors 3. Select tools and equipment 4. Connect cables 5. Insulate Joints Learners need to devise 10 quiz questions with answers based on Performing single-phase AC Connection. They must make sure their questions cover key topics for Performing single-phase AC Connection. Issue each learner with 10 blank cards. Each learner should number the cards and write their name on one side with a question about Performing single-phase AC Connection. On the reverse of the card, they should write an appropriate answer to their question.	Practical: Electrical Lab	Learner guide Multi-media projector Handouts Videos **Tools and equipment** • Measuring tape • Insulated plier, insulated wire cutter, insulated screw driver set, VOM, Cable knife, Cable cutter, Solder iron, blow lamp, Insulation tape. • AWG, SWG, Cable tables. • Multimeter/ VOM, Megger

Module 2: 0619001081 Develop Basic Electrical / Electronic Skills			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	For the quiz, arrange learners in two equal teams. Ask one learner to keep score using a suitable score-card. Player 1 for Team A asks one of their questions to Player 1 of Team B, who needs to answer the question. Discuss the answer with the group and ask the group to determine if the answer is correct. Player 1 of Team A then confirms the answer they had devised. (You need to correct answers if the learner's answer was not wholly correct.) The scorekeeper records 1 mark for a correct answer under the appropriate team's score column. Play then passes to Player 1 of Team B, who asks their question to Player 1 of Team A, and so on. Total the scores at the end of the quiz to see which team won. After the quiz, collect learners' question/answer cards and check that answers provided were correct. Return any incorrect answers to learners and ask them to change their answer to the correct one. Demonstrate the tools and equipment needed for Performing single-phase AC Connection. Enable learners to practice using the appropriate tools and equipment for Performing single-phase AC Connection in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Performing single-phase AC Connection in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		

Module 2: 0619001081 Develop Basic Electrical / Electronic Skills			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
LU3: Perform DC Connection	Deliver an illustrated presentation on Performing DC Connection. Ensure that the presentation focuses on the following: 1. Select cable Gauge 2. Select cables colors 3. Connect cables 4. Insulate Joints Prepare either: • A flip chart • A PowerPoint slide • A handout …showing key topics for Perform DC Connection. Learners need to work in small groups discussing the key topics. Each group should make notes from their discussions that identify **three main points** that related to **each key topic**. After the discussion, begin the feedback session. Ask one group to share the main points they have recorded for the first key topic for Perform DC Connection. Discuss these main points briefly with the whole group. Learners should make additional notes to record additional points their group had not identified. Then ask the next group to share the main points they have recorded for the second key topic. Repeat the discussion process. Continue until you have covered all	Practical: Electrical Lab	Learner guide Multi-media projector Handouts Videos **Tools and equipment** • Measuring tape • Insulated plier, insulated wire cutter, insulated screw driver set, Cable knife, Cable cutter, Solder iron, blow lamp, Insulation tape. • AWG, SWG, Cable tables. • Multimeter/VOM, Megger

Module 2: 0619001081 Develop Basic Electrical / Electronic Skills			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	the key topics. End the group discussion activity with a summary. Demonstrate the tools and equipment needed for Performing DC Connection. Enable learners to practice using the appropriate tools and equipment for Performing DC Connection in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Performing DC Connection in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU4: Perform Basic Electrical wiring	Lead a discussion on Performing Basic Electrical wiring. Encourage ALL trainees to participate in the discussion. Ensure that the discussion addresses the following points: 1. Measure cables as per requirement 2. Connect cables 3. Perform joints 4. Insulate Joints Prepare either: • A flip chart • A PowerPoint slide • A handout …showing the key topics about Performing Basic Electrical wiring. Go through all the key topics briefly and then allocate **one key topic** to each group.	Practical: Electrical Lab	Learner guide Multi-media projector Handouts Videos **Tools and equipment** • Measuring tape • Insulated plier, insulated wire cutter, insulated screw driver set, VOM, Cable knife, Cable cutter, Solder iron, blow lamp, Insulation tape. • Measuring tape. • Wires of different size or gauges. • Insulation tape

Module 2: 0619001081 Develop Basic Electrical / Electronic Skills			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	Learners need to work in their small groups discussing the key topic that has been allocated to their group. Each group should use a sheet of flip chart paper to record **three main points** from their discussions that relate to **their key topic**. After the discussion, begin the feedback session. Ask one group to come to the front of the class with their flipchart. Put up the flipchart where it can be easily seen by other learners. Ask the group to share the main points they have recorded for their key topic for Performing Basic Electrical wiring. Discuss these main points briefly with the whole group. Learners should make additional notes **on the flip chart** to record additional points their group had not identified. Then ask the next group to share their flipchart showing the main points they have recorded for the next key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary. Photograph or scan all the flipcharts and use these to create a handout to distribute to all learners. Demonstrate the tools and equipment needed for Performing Basic Electrical wiring. Enable learners to practice using the appropriate tools and equipment for Performing Basic Electrical wiring in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Performing Basic Electrical wiring in an appropriate practical setting.		

Module 2: 0619001081 Develop Basic Electrical / Electronic Skills			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	Ensure that learners have the opportunity to ask questions to support their understanding.		
LU5: Conduct wiring Test	Lead a brainstorm on Conducting wiring Test. List the brainstorm ideas on a flipchart. If necessary, prompt learners to consider the following: • Operate multi-meter for voltage and current • Perform continuity test • Perform polarity test • Perform earthing test • Perform insulation test • Record test results Display a slide or flip chart with a key question relating to Conducting wiring Test. **Step 1 – Think** Working on their own, each learner thinks about the question and makes notes of their responses or key points which they believe to be important. **Step 2 – Pair** For the next step, each learner pairs up with a partner. The two learners exchange their ideas and make further notes to add clarity to their own ideas. **Step 3 – Share** The final step is for you to invite different pairs to share the ideas they have discussed in response to the key	Practical: Electrical Lab	Learner guide Multi-media projector Handouts Videos **Tools and equipment** • Measuring tape • Insulated plier, insulated wire cutter, insulated screw driver set, VOM, Cable knife, Cable cutter, Solder iron, blow lamp, Insulation tape. • Megger • earth tester • phase tester • Lamp tester

Module 2: 0619001081 Develop Basic Electrical / Electronic Skills			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	question relating to Conducting wiring Test. Demonstrate the tools and equipment needed for conducting Wiring test. Enable learners to practice using the appropriate tools and equipment for Wiring testing in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to conducting wiring test in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		

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Module 3: 0619001082 Perform Cable connection			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
LU1: Fix Splitter	Deliver an illustrated presentation on Fixing Splitter. Ensure that the presentation focuses on the following: • Select splitter • Make IF connecter with coaxial cable • Mount splitter with screw • Connect in/out cable with splitter. Learners need to devise 10 quiz questions with answers based on Fixing Splitter. They must make sure their questions cover key topics for Fixing Splitter. Issue each learner with 10 blank cards. Each learner should number the cards and write their name on one side with a question about Fixing Splitter. On the reverse of the card, they should write an appropriate answer to their question. For the quiz, arrange learners in two equal teams. Ask one learner to keep score using a suitable score-card. Player 1 for Team A asks one of their questions to Player 1 of Team B, who needs to answer the question. Discuss the answer with the group and ask the group to determine if the answer is correct. Player 1 of Team A then confirms the answer they had devised. (You need to correct answers if the learner's answer was not wholly correct.) The scorekeeper records 1 mark for a correct answer under the appropriate team's score column. Play then	Practical: Lab	Learner guide Multi-media projector Handouts Videos **Tools and equipment** • Steel roll/Steel wire • Gloves • Electric Drill Machine • Grip plier • Hacksaw • Thimble plier • Hammers • Vernier caliper • Measuring tape • Wire gauge • Micrometers • Wire stripper • Nose plier • Phase tester • Multi-meter • Plier • Wire Tester • LAN Tester

Module 3: 0619001082 Perform Cable connection			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	passes to Player 1 of Team B, who asks their question to Player 1 of Team A, and so on. Total the scores at the end of the quiz to see which team won. After the quiz, collect learners' question/answer cards and check that answers provided were correct. Return any incorrect answers to learners and ask them to change their answer to the correct one. Demonstrate the tools and equipment needed for Fixing Splitter. Enable learners to practice using the appropriate tools and equipment for Fixing Splitter in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Fixing Splitter in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		• Screw driver set • Side cutter • Coaxial Cable Stripper • Crimping Tool • Cable Compression Tool
LU2: Lay Coaxial Cables	Deliver an illustrated presentation on Laying Coaxial Cables. Ensure that the presentation focuses on the following: • Measure cables as per route • Select cable • Perform ducting/piping • Drill holes if required • Lay cables as per standard.	Practical: Lab	Learner guide Multi-media projector Handouts Videos **Tools and equipment (LU1)**

Module 3: 0619001082 Perform Cable connection			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	Prepare either: • A flip chart • A PowerPoint slide • A handout …showing the key topics about Laying Coaxial Cables. Go through all the key topics briefly and then allocate **one key topic** to each group. Learners need to work in their small groups discussing the key topic that has been allocated to their group. Each group should use a sheet of flip chart paper to record **three main points** from their discussions that relate to **their key topic**. After the discussion, begin the feedback session. Ask one group to come to the front of the class with their flipchart. Put up the flipchart where it can be easily seen by other learners. Ask the group to share the main points they have recorded for their key topic for Laying Coaxial Cables. Discuss these main points briefly with the whole group. Learners should make additional notes **on the flip chart** to record additional points their group had not identified. Then ask the next group to share their flipchart showing the main points they have recorded for the next key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary. Photograph or scan all the flipcharts and use these to		

Module 3: 0619001082 Perform Cable connection			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	create a handout to distribute to all learners. Demonstrate the tools and equipment needed for Laying Coaxial Cables. Enable learners to practice using the appropriate tools and equipment for Laying Coaxial Cables in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Laying Coaxial Cables in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU3: Fix/Mount Diseqc Switch	Lead a brainstorm on Fixing/Mounting Diseqc Switch. List the brainstorm ideas on a flipchart. If necessary, prompt learners to consider the following: • Select Diseqc switch. • Make IF connecter with coaxial cable • Mount Diseqc switch with screw • Connect in/out cable with Diseqc switch. Prepare either: • A flip chart • A PowerPoint slide • A handout …showing key topics for Fixing/Mounting Diseqc Switch. Learners need to work in small groups discussing the key topics. Each group should make notes from their discussions that identify **three main points** that related	Practical: Lab / Field	Learner guide Multi-media projector Handouts Videos **Tools and equipment (LU1)**

Module 3: 0619001082 Perform Cable connection			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	to **each key topic**. After the discussion, begin the feedback session. Ask one group to share the main points they have recorded for the first key topic for Fixing/Mounting Diseqc Switch. Discuss these main points briefly with the whole group. Learners should make additional notes to record additional points their group had not identified. Then ask the next group to share the main points they have recorded for the second key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary. Demonstrate the tools and equipment needed for Fixing/Mounting Diseqc Switch. Enable learners to practice using the appropriate tools and equipment for Fixing/Mounting Diseqc Switch in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Fixing/Mounting Diseqc Switch in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU4: Make Coaxial Cable Connections	Deliver an illustrated presentation on Making Coaxial Cable Connections. Ensure that the presentation focuses on the following: • Make IF connecter with all coaxial cable	Practical: Lab / Field	Learner guide Multi-media projector Handouts Videos

Module 3: 0619001082 Perform Cable connection			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	• Connect one end of cable with LNB/LNA. • Connect other end in the input of Diseqc switch/Splitter. • Connect one end of the cable at the output of Diseqc switch/Splitter. • Connect other end of the cable with input of satellite receiver. Learners need to devise 10 quiz questions with answers based on Making Coaxial Cable Connections. They must make sure their questions cover key topics for Making Coaxial Cable Connections. Issue each learner with 10 blank cards. Each learner should number the cards and write their name on one side with a question about Making Coaxial Cable Connections. On the reverse of the card, they should write an appropriate answer to their question. For the quiz, arrange learners in two equal teams. Ask one learner to keep score using a suitable score-card. Player 1 for Team A asks one of their questions to Player 1 of Team B, who needs to answer the question. Discuss the answer with the group and ask the group to determine if the answer is correct. Player 1 of Team A then confirms the answer they had devised. (You need to correct answers if the learner's answer was not wholly correct.)		**Tools and equipment**

Module 3: 0619001082 Perform Cable connection			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	The scorekeeper records 1 mark for a correct answer under the appropriate team's score column. Play then passes to Player 1 of Team B, who asks their question to Player 1 of Team A, and so on. Total the scores at the end of the quiz to see which team won. After the quiz, collect learners' question/answer cards and check that answers provided were correct. Return any incorrect answers to learners and ask them to change their answer to the correct one. Demonstrate the tools and equipment needed for Making Coaxial Cable Connections. Enable learners to practice using the appropriate tools and equipment for Making Coaxial Cable Connections in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Making Coaxial Cable Connections in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU5: Connect Input/ Output Cables	Lead a brainstorm on Connecting Input/ Output Cables. List the brainstorm ideas on a flipchart. If necessary, prompt learners to consider the following: • Select audio, video and HDMI cables as per standard • Identify input/output ports of Display unit and	Practical: Lab / Field	Learner guide Multi-media projector Handouts Videos **Tools and equipment**

Module 3: 0619001082 Perform Cable connection			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	Receiver • Connect output of Receiver with input of Display unit • Connect power cables of Receiver and display unit with power supply Prepare either: • A flip chart • A PowerPoint slide • A handout …showing the key topics about Connecting Input/ Output Cables. Go through all the key topics briefly and then allocate **one key topic** to each group. Learners need to work in their small groups discussing the key topic that has been allocated to their group. Each group should use a sheet of flip chart paper to record **three main points** from their discussions that relate to **their key topic**. After the discussion, begin the feedback session. Ask one group to come to the front of the class with their flipchart. Put up the flipchart where it can be easily seen by other learners. Ask the group to share the main points they have recorded for their key topic for Connecting Input/ Output Cables. Discuss these main points briefly with the whole group. Learners should make additional notes **on the flip chart** to record		

Module 3: 0619001082 Perform Cable connection			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	additional points their group had not identified. Then ask the next group to share their flipchart showing the main points they have recorded for the next key topic. Repeat the discussion process. Continue until you have covered all the key topics. End the group discussion activity with a summary. Photograph or scan all the flipcharts and use these to create a handout to distribute to all learners. Demonstrate the tools and equipment needed for Connecting Input/ Output Cables. Enable learners to practice using the appropriate tools and equipment for Connecting Input/ Output Cables in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Connecting Input/ Output Cables in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		

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Module 4: 0619001083 Assemble Dish Antenna			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
LU1: Assemble Dish Stand	Deliver an illustrated presentation on Assembling Dish Stand. Ensure that the presentation focuses on the following: • Select tools and equipment • Select dish stand as per size requirement • Identify parts of stand • Assemble stand of dish antenna as per drawing Learners need to devise 10 quiz questions with answers based on Assembling Dish Stand. They must make sure their questions cover key topics for Assembling Dish Stand. Issue each learner with 10 blank cards. Each learner should number the cards and write their name on one side with a question about Assembling Dish Stand. On the reverse of the card, they should write an appropriate answer to their question. For the quiz, arrange learners in two equal teams. Ask one learner to keep score using a suitable score-card. Player 1 for Team A asks one of their questions to Player 1 of Team B, who needs to answer the question. Discuss the answer with the group and ask the group to determine if the answer is correct. Player 1 of Team A then confirms the answer they had devised. (You need to correct answers if the learner's answer was not wholly correct.) The scorekeeper records 1 mark for a correct answer	Practical: Lab/ Field	Learner guide Multi-media projector Handouts Videos **Tools and equipment** • Screw driver set • L-Key • Socket set • Drill Machine • Hammer • Pliers • Hack saw • Drill bits • Measuring tape • Spirit level • Satellite finder • Compass • Multi-meter

Module 4: 0619001083 Assemble Dish Antenna			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	under the appropriate team's score column. Play then passes to Player 1 of Team B, who asks their question to Player 1 of Team A, and so on. Total the scores at the end of the quiz to see which team won. After the quiz, collect learners' question/answer cards and check that answers provided were correct. Return any incorrect answers to learners and ask them to change their answer to the correct one. Demonstrate the tools and equipment needed for Assembling Dish Stand. Enable learners to practice using the appropriate tools and equipment for Assembling Dish Stand in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Assembling Dish Stand in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU2: Combine Dish Pieces	Lead a discussion on Combining Dish Pieces. Encourage ALL trainees to participate in the discussion. Ensure that the discussion addresses the following points: • Identify pieces of dish antenna • Follow sequence of dish pieces as per drawing • Assemble dish pieces as per sequence Display a slide or flip chart with a key question relating	Practical: Lab/ Field	Learner guide Multi-media projector Handouts Videos **Tools and equipment** • Screw driver set • L-Key • Socket set • Drill Machine

Module 4: 0619001083 Assemble Dish Antenna			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	to Combining Dish Pieces. **Step 1 – Think** Working on their own, each learner thinks about the question and makes notes of their responses or key points which they believe to be important. **Step 2 – Pair** For the next step, each learner pairs up with a partner. The two learners exchange their ideas and make further notes to add clarity to their own ideas. **Step 3 – Share** The final step is for you to invite different pairs to share the ideas they have discussed in response to the key question relating to Combining Dish Pieces. Demonstrate the tools and equipment needed for Combining Dish Pieces. Enable learners to practice using the appropriate tools and equipment for Combining Dish Pieces in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Combining Dish Pieces in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		• Hammer • Pliers • Hack saw • Drill bits • Measuring tape • Spirit level • Satellite finder • Compass • Multi-meter
LU3: Install Actuator.	Lead a brainstorm on Installing Actuator. List the brainstorm ideas on a flipchart. If necessary, prompt learners to consider the following: • Identify horizontal/vertical actuators • Adjust arc of actuator between North and South	Practical: Lab/ Field	Learner guide Multi-media projector Handouts Videos

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Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	• Adjust arc of actuator between East and West • Install limit switches Prepare either: • A flip chart • A PowerPoint slide • A handout …showing the key topics about Installing Actuator. Go through all the key topics briefly and then allocate **one key topic** to each group. Learners need to work in their small groups discussing the key topic that has been allocated to their group. Each group should use a sheet of flip chart paper to record **three main points** from their discussions that relate to **their key topic**. After the discussion, begin the feedback session. Ask one group to come to the front of the class with their flipchart. Put up the flipchart where it can be easily seen by other learners. Ask the group to share the main points they have recorded for their key topic for Installing Actuator. Discuss these main points briefly with the whole group. Learners should make additional notes **on the flip chart** to record additional points their group had not identified. Then ask the next group to share their flipchart showing the main points they have recorded for the next key topic. Repeat the discussion process. Continue until you have covered all the key topics.		**Tools and equipment** • Screw driver set • L-Key • Socket set • Drill Machine • Hammer • Pliers • Hack saw • Drill bits • Measuring tape • Spirit level • Satellite finder • Compass • Multi-meter

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Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	End the group discussion activity with a summary. Photograph or scan all the flipcharts and use these to create a handout to distribute to all learners. Demonstrate the tools and equipment needed for Installing Actuator. Enable learners to practice using the appropriate tools and equipment for Installing Actuator in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Installing Actuator in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU4: Mount LNB Support Arm for Downlink	Deliver an illustrated presentation on Mounting LNB Support Arm for Downlink. Ensure that the presentation focuses on the following: • Identify LNB support arm for downlink • Mount LNB supports arm with satellite dish • Fix feed-horn at the top of support arms • Fix LNB in feed-horn as per focal length • Fix dual feed-horn for C and Ku bands Learners need to devise 10 quiz questions with answers based on Mounting LNB Support Arm for Downlink. They must make sure their questions cover key topics for Mounting LNB Support Arm for Downlink. Issue each learner with 10 blank cards. Each learner should number the cards and write their name on one	Practical: Lab/ Field	Learner guide Multi-media projector Handouts Videos **Tools and equipment** • Screw driver set • L-Key • Socket set • Drill Machine • Hammer • Pliers • Hack saw • Drill bits • Measuring tape • Spirit level

Module 4: 0619001083 Assemble Dish Antenna			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	side with a question about Mounting LNB Support Arm for Downlink. On the reverse of the card, they should write an appropriate answer to their question. For the quiz, arrange learners in two equal teams. Ask one learner to keep score using a suitable score-card. Player 1 for Team A asks one of their questions to Player 1 of Team B, who needs to answer the question. Discuss the answer with the group and ask the group to determine if the answer is correct. Player 1 of Team A then confirms the answer they had devised. (You need to correct answers if the learner's answer was not wholly correct.) The scorekeeper records 1 mark for a correct answer under the appropriate team's score column. Play then passes to Player 1 of Team B, who asks their question to Player 1 of Team A, and so on. Total the scores at the end of the quiz to see which team won. After the quiz, collect learners' question/answer cards and check that answers provided were correct. Return any incorrect answers to learners and ask them to change their answer to the correct one. Demonstrate the tools and equipment needed for Mounting LNB Support Arm for Downlink. Enable learners to practice using the appropriate tools and equipment for Mounting LNB Support Arm for Downlink in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Mounting LNB Support		• Satellite finder • Compass • Multi-meter

Module 4: 0619001083 Assemble Dish Antenna			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	Arm for Downlink in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		
LU5: Mount LNA Support Arm for Uplink	Deliver an illustrated presentation on Mounting LNA Support Arm for Uplink. Ensure that the presentation focuses on the following: • Identify LNA support arm for uplink • Mount LNA supports arm with satellite dish • Fix feed-horn at the top of support arms • Fix LNA in feed-horn as per focal length • Connect LNA with transmitter though wave guide Display a slide or flip chart with a key question relating to Mounting LNA Support Arm for Uplink. **Step 1 – Think** Working on their own, each learner thinks about the question and makes notes of their responses or key points which they believe to be important. **Step 2 – Pair** For the next step, each learner pairs up with a partner. The two learners exchange their ideas and make further notes to add clarity to their own ideas. **Step 3 – Share** The final step is for you to invite different pairs to share the ideas they have discussed in response to the key question relating to Mounting LNA Support Arm for Uplink.	Practical: Lab/ Field	Learner guide Multi-media projector Handouts Videos **Tools and equipment** • Screw driver set • L-Key • Socket set • Drill Machine • Hammer • Pliers • Hack saw • Drill bits • Measuring tape • Spirit level • Satellite finder • Compass • Multi-meter

Module 4: 0619001083 Assemble Dish Antenna			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	Demonstrate the tools and equipment needed for Mounting LNA Support Arm for Uplink. Enable learners to practice using the appropriate tools and equipment for Mounting LNA Support Arm for Uplink in a controlled environment. Learners must be able to practice and develop their knowledge and skills relating to Mounting LNA Support Arm for Uplink in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.		

Frequently Asked Questions

1. What is Competency Based Training (CBT) and how is it different from currently offered trainings in institutes?	Competency-based training (CBT) is an approach to vocational education and training that places emphasis on what a person can do in the workplace as a result of completing a program of training. Compared to conventional programs, the competency based training is not primarily content based; it rather focuses on the competence requirement of the envisaged job role. The whole qualification refers to certain industry standard criterion and is modularized in nature rather than being course oriented.
2. What is the passing criterion for CBT certificate?	You shall be required to be declared “Competent” in the summative assessment to attain the certificate.
3. What are the entry requirements for this course?	The entry requirement for this course is as follow. • Middle (Grade 8) for level-1 • Level-1 for level-2 • Level-2 for level-3 • Level-3 for level-4
4. How can I progress in my educational career after attaining this certificate?	You shall be able to progress further to National Vocational Certificate Level-4 in satellite Dish Installer; and take admission in a level-5, DAE or equivalent course. In certain case, you may be required to attain an equivalence certificate from The Inter Board Committee of Chairmen (IBCC).
5. If I have the experience and skills mentioned in the competency standards, do I still need to attend the course to attain this certificate?	You can opt to take part in the Recognition of Prior Learning (RPL) program by contacting the relevant training institute and getting assessed by providing the required evidences.

6. What is the entry requirement for Recognition of Prior Learning program (RPL)?	There is no general entry requirement. The institute shall assess you, identify your competence gaps and offer you courses to cover the gaps; after which you can take up the final assessment.
7. Is there any age restriction for entry in this course or Recognition of Prior Learning program (RPL)?	There are no age restrictions to enter this course or take up the Recognition of Prior Learning program
8. What is the duration of this course?	The duration of the course work is ……..
9. What are the class timings?	The classes are normally offered 25 days a month from 08:00am to 01:30pm. These may vary according to the practices of certain institutes.
10. What is equivalence of this certificate with other qualifications?	As per the national vocational qualifications framework, the level-4 certificate is equivalent to Matriculation. The criteria for equivalence and equivalence certificate can be obtained from The Inter Board Committee of Chairmen (IBCC).
11. What is the importance of this certificate in National and International job market?	This certificate is based on the nationally standardized and notified competency standards by National Vocational and Technical Training Commission (NAVTTC). These standards are also recognized worldwide as all the standards are coded using international methodology and are accessible to the employers worldwide through NAVTTC website.
12. Which jobs can I get after attaining this certificate? Are there job for this certificate in public sector as well?	You shall be able to take up jobs in the Satellite Dish Installation industry with the following designations • Domestic Satellite Dish Installer • Industrial Satellite Dish Installer • Satellite dish Technician • Satellite dish supervisor • Satellite installation technician • Satellite dish Trainer • Cable distributer,

	• Internet Service Provider • TV Network distributor, • TV Technician • work in Telecommunication.
13. What are possible career progressions in industry after attaining this certificate?	You shall be able to progress up to the level of supervisor after attaining sufficient experience, knowledge and skills during the job. Attaining additional relevant qualifications may aid your career advancement to even higher levels.
14. Is this certificate recognized by any competent authority in Pakistan?	This certificate is based on the nationally standardized and notified competency standards by National Vocational and Technical Training Commission (NAVTTC). The official certificates shall be awarded by the relevant certificate awarding body.
15. Is on-the-job training mandatory for this certificate? If yes, what is the duration of on-the-job training?	On-the-job training is not a requirement for final / summative assessment of this certificate. However, taking up on-the-job training after or during the course work may add your chances to get a job afterwards.
16. How much salary can I get on job after attaining this certificate?	The minimum wages announced by the Government of Pakistan in 2019 are PKR 17,500. This may vary in subsequent years and different regions of the country. Progressive employers may pay more than the mentioned amount.
17. Are there any alternative certificates which I can take up?	There are some short courses offered by some training institutes on this subject. Some institutes may still be offering conventional certificate courses in the field.
18. What is the teaching language of this course?	The leaching language of this course is Urdu and English.
19. Is it possible to switch to other certificate programs during the course?	Partially no, but if you have covered the Generic and functional competencies of this course and you want to switch to other certificate or want to enroll in other course, then you will take exemptions from the generic and functional competencies of the same level.
20. What is the examination / assessment system in this program?	Competency based assessments are organized by training institutes during the course which serve the purpose of assessing the progress and preparedness of each student. Final /

	summative assessments are organized by the relevant qualification awarding bodies at the end of the certificate program. You shall be required to be declared “Competent” in the summative assessment to attain the certificate.
21. Does this certificate enable me to work as freelancer?	Yes! You can start your small business of Installation of satellite dish or other telecom equipment. You may need additional skills on entrepreneurship to support your initiative.

Test Yourself (Multiple Choice Questions)

MODULE 2

Question 1 Which of the following protects a cable against mechanical injury?

A Bedding

B Sheath

C Armouring

D None of the above

Question 2 **The thickness of the layer of insulation on the conductor, in cables, depends upon**

A Reactive power

B Power factor

C Voltage

D Current carrying capacity

Question 3 At time of installation of power cable technician follows electrical cables color codes, In case of three core flexible cable the colour of the neutral will be____.

A Blue

B Black

C Brown

D None of the above

Question 4 PVC stands for_____, it is third widely used plastic type and have been used mainly in construction of pipes.

A Polyvinyl chloride

B Post varnish conductor

C Pressed and varnished cloth

D Positive voltage conductor

Question 5 Wire gauge standards are designed to give information about different physical sizes of the cables, What does S.W.G. stands for?

A Standard Western Gauge

B Swiss Wire Gauge

C Swiss Western Gauge

D Standard Wire Gauge

MODULE 3

Question 6 RG-59 is a type of coaxial cable which has fixed resistance and capacitance which makes it suitable for certain applications, RG-59 is used in

A Radio

B Thick Ethernet

C Thin Ethernet

D Cable TV

Question 7 Twisted pair cable in which metal casing improves penetration of noise or crosstalk is called

A insulated twisted pair cable

B Shielded twisted pair cable

C Unshielded twisted pair cable

D Both A & B

Question 8 Which switch is used to control multiple LNBs?

A DiseqC

B AC

C DC

D Coaxial

Question 9 What are the four main types of coaxial cables?

A SDI,CCTV,VIOC,MP3

B TIVE,RG69,PLAYER,CATV

C BOID,CCTV,CATV,CoaxialCable

D CCTV,SDI,CATV,Quad-Shielded CATV

Question 10 When was the coaxial cable invented?

A 1939

B 1929

C 1987

D 1880

MODULE 4

Question 11 What is the wavelength of Super high frequency (SHF) especially used in Radar & satellite communication?

A 1 m – 10 m

B 1 cm – 10 cm

C 10 cm – 1 m

D 0.1 cm – 1 cm

Question 12 For which band/s is the space wave propagation suitable over 30 MHz?

A VHF

B SHF

C UHF

D All of the above

Question 13 INTELSAT stands for_____, an international company which provide satellite communication services and equipment.

A Intel Satellite

B International Telephone Satellite

C International Telecommunications Satellite

D International Satellite

Question 14 What is the approximate path loss from satellite-to-earth station?

A 100 db

B 150 db

C 175 db

D 200 db

Question 15 A satellite contains a big collection of electrical and communication devices, Repeaters inside communications satellite are known as____.

A Trancievers

B Transponders

C Transducers

D BTS

Answers

Questions	Answer	Questions	Answer
1	C	11	B
2	C	12	D
3	C	13	C
4	A	14	D
5	D	15	B
6	D		
7	B		
8	A		
9	D		
10	D		

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