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TRAINER GUIDE

National Vocational Certificate Level 3

Version 1 - November, 2019



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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 *Artificial intelligence data technician* 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 an *Artificial intelligence data technician* 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 internalized 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: Artificial Intelligence Data Technician	Total Course Duration: 3200 hours
Course Overview:	
<p><i>The competency based NVQ has been developed to train the unskilled men and women of Pakistan on the technical and entrepreneurial skills to be employed / self-employed and inevitably set sustainable impact on their lives by increase in their livelihood income generation.</i></p> <p><i>The purpose of these qualifications is to set professional standards for Artificial Intelligence Data Technician, who will serve as key elements enhancing quality of Pakistan's Software Developing Industry.</i></p>	

Module Title and Aim	Learning Units	Duration
Module 16: Apply Work Health and Safety Practices (WHS) Aim: This module aims to develop the knowledge, skills and understanding needed to Apply Work Health and Safety Practices (WHS)	LU1: Implement safe work practices at work place LU2: Participate in hazard assessment activities a work place LU3: Follow emergency procedures at workplace LU4: Participate in OHS consultative processes LU5: Perform data plotting	
Module 17: Identify and Implement Workplace Policy and Procedures Aim: This module aims to develop the knowledge, skills and understanding needed to Identify and Implement Workplace Policy and Procedures	LU1: Identify workplace policy & procedures LU2: Implement workplace policy & procedures LU3: Communicate workplace policy & procedures LU4: Review the implementation of workplace policy & procedures	

Module Title and Aim	Learning Units	Duration
Module 18: Manage Personal Finances Aim: This module aims to develop the knowledge, skills and understanding needed to Manage Personal Finances	LU1: Develop a personal budget LU2: Develop long term personal budget LU3: Identify ways to maximize future finances	
Module 19: Code in Programming Language suitable for AI Aim: This module aims to develop the knowledge, skills and understanding needed to Code in Programming Language suitable for AI	LU1: Perform Python Installation LU2: Create and Execute a Program LU3: Control Flow of Program LU4: Write Modular Programs LU5: Handle Errors and Exceptions LU6: Perform File Handling LU7: Use Package Manager	200hrs
Module 20: Setup Environment Aim: This module aims to develop the knowledge, skills and understanding needed to Setup Environment	LU1: Initialize application program interface LU2: Create and manage specific working environment LU3: Install Packages with Pip	50hrs

Module Title and Aim	Learning Units	Duration
<p>Module 21: Perform Computer Application Skills</p> <p>Aim: This module aims to develop the knowledge, skills and understanding needed to Perform Computer Application Skills</p>	<p>LU1: Prepare In-page documents as per required information</p> <p>LU2: Prepare Spreadsheets as per required information</p> <p>LU3: Use MS Office as per required information</p> <p>LU4: Perform computer graphics in basic applications</p> <p>LU5: Create Email account for communications</p>	

FORMAT FOR LESSON PLAN			
Module13: Use Multimedia Processing			
Learning Unit 1: Manipulate Image for Pre-processing			
Methods	Key Notes	Media	Time
The tools, material and techniques used to manipulate Image for Pre-processing			
Introduction			
This session will introduce learners to the tools, techniques and material used for preparing workstation for winch dyeing, using presentation, demonstration, question and answer, and practical skills development.			
Main Body			
<ul style="list-style-type: none"> • Convert image into specified format using suitable tools • Change resolution to the specified requirements • Crop the image to remove unwanted artifacts using suitable tools • Merge multiple images using suitable tools • Overlay text using suitable tools • Resize the image to specified size using suitable tools • Adjust image orientation to specified requirement using suitable tools • Prepare text-based images for OCR (optical character recognition) using suitable tools 			
Conclusion			
To conclude the session, review the tools, techniques and material used for using IT Fundamentals to operate the computer. Give learners the opportunity to ask questions.			
<u>Assessment</u>			
Question and answer, discussion groups with feedback, observation of practice skills development			

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Module-16

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Trainer's guidelines

Module 16: Apply Work Health and Safety Practices (WHS)			
Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media

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Module-17

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Module 17: Identify and Implement Workplace Policy and Procedures			
Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU1:			
LU2:			
LU3:			
LU4:			

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Module-18

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Module 18: Communicate at Workplace			
Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU1:			
LU2:			
LU3:			
LU4:			

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Module-19

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Module 19: Manage Personal Finances			
Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media
LU1:			
LU2:			
LU3:			
LU4:			

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<p>LU2: Create and Execute a Program</p>	<p>Lead a discussion on how to Create and Execute a Program. Encourage ALL trainees to participate in the discussion. Ensure that the discussion addresses the following points:</p> <ul style="list-style-type: none"> - Open a text document - Code a python program - Save the text file as .py file - Open terminal/cmd application - Navigate to directory containing python program <p>Run the program with python</p> <p>Prepare either:</p> <ul style="list-style-type: none"> • A flip chart • A PowerPoint slide • A handout <p>...showing the key topics about how to Create and Execute a Program. Go through all the key topics briefly and then allocate one key topic to each group.</p> <p>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.</p> <p>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 how to Create and Execute a Program. 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.</p> <p>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.</p> <p>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.</p> <p>Demonstrate the materials needed for how to Create and Execute a Program. Enable learners to practice using the</p>	<p>Practical Classrooms</p> <p>labs,</p>	<p>Learner Guide</p> <p>Handouts</p> <p>Videos</p> <p>Multi-media projector</p>
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<p>LU4: Write Modular Programs</p>	<p>Lead a brainstorm on how to Write Modular Programs. List the brainstorm ideas on a flipchart. If necessary, prompt learners to consider the following:</p> <ul style="list-style-type: none"> - Write a “def” statement to define a function - Write a “class” statement to create a class with multiple functions and data elements <p>Display a flip chart showing the following key question related to how to Write Modular Programs:</p> <p><i>How to write modular programs</i></p> <p>Give each learner a sheet of paper and asked them to write their name at the top. Explain to learners that they will be sharing their work with other learners.</p> <p>Ask learners to write silently for 3-5 minutes answering the question displayed on the flip chart. When learners have completed writing, instruct them to pass their paper to the learner on their left. Each learner will read what their partner has passed to them and write a response. This will also be done silently.</p> <p>After another 2-3 minutes, instruct the learners to pass the paper to their left a second time. Repeat the same procedure, also done in silence.</p> <p>At the end of the activity, ask the learners to return the paper to the original writer. Allow learners a few moments to read over the responses to their writing.</p> <p>Ask learners to work in pairs to reflect on and discuss the responses to the question on the flip chart.</p> <p>When this activity is concluded, collect the papers and make copies for each learner.</p> <p>Demonstrate the materials needed for how to Write Modular Programs. Enable learners to practice using the appropriate materials for how to Write Modular Programs in a controlled environment.</p> <p>Learners must be able to practice and develop their knowledge and skills relating to how to Write Modular Programs in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.</p>	<p>Practical Classrooms</p> <p>labs,</p>	<p>Learner Guide</p> <p>Handouts</p> <p>Videos</p> <p>Multi-media projector</p>
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<p>LU5: Handle Errors and Exceptions</p>	<p>Lead a discussion on how to Handle Errors and Exceptions. Encourage ALL trainees to participate in the discussion. Ensure that the discussion addresses the following points:</p> <ul style="list-style-type: none"> - Define a “try” block - Apply some error prone code in try block - Handle the possible exceptions using “except” block - Apply “finally” block to statements that will always run <p>Prepare either:</p> <ul style="list-style-type: none"> • A flip chart • A PowerPoint slide • A handout <p>...showing the key topics about how to Handle Errors and Exceptions. Go through all the key topics briefly and then allocate one key topic to each group.</p> <p>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.</p> <p>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 how to Handle Errors and Exceptions. 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.</p> <p>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.</p> <p>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.</p> <p>Demonstrate the materials needed for how to Handle Errors and Exceptions. Enable learners to practice using the appropriate materials for how to Handle Errors and Exceptions in a controlled environment.</p>	<p>Practical Classrooms</p> <p>labs,</p>	<p>Learner Guide Handouts Videos Multi-media projector</p>
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LU6: Perform File Handling	<p>Deliver an illustrated presentation on how to Perform File Handling. Ensure that the presentation focuses on the following:</p> <ul style="list-style-type: none"> - Open a python script file - Open a file with “r” flag in read mode using “open” statement - Read the file line by line or all at once into a python variable - Open a file with “w” flag in write mode <p>Display a slide or flip chart with a key question relating to how to Perform File Handling.</p> <p>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.</p> <p>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.</p> <p>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 how to Perform File Handling.</p> <p>Demonstrate the materials needed for how to Perform File Handling. Enable learners to practice using the appropriate materials for how to Perform File Handling in a controlled environment.</p> <p>Learners must be able to practice and develop their knowledge and skills relating to how to Perform File Handling in an appropriate practical setting. Ensure that learners have the opportunity to ask questions to support their understanding.</p>	<p>Practical Classrooms</p> <p>labs,</p>	<p>Learner Guide</p> <p>Handouts</p> <p>Videos</p> <p>Multi-media projector</p>
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<p>LU7: Use Package Manager</p>	<p>Invite an experienced colleague to deliver a presentation about how to Use Package Manager. Ensure that the presentation addresses the following points:</p> <ul style="list-style-type: none"> - Select an appropriate package to install - Open terminal/cmd application - Use “pip install <package name>” command to install the package - Uninstall a package with “pip uninstall <package name>” command <p>Prepare either:</p> <ul style="list-style-type: none"> • A flip chart • A PowerPoint slide • A handout <p>...showing the key topics about how to Use Package Manager. Go through all the key topics briefly and then allocate one key topic to each group.</p> <p>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.</p> <p>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 how to Use Package Manager. 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.</p> <p>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.</p> <p>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.</p> <p>Demonstrate the materials needed for how to Use Package Manager. Enable learners to practice using the appropriate</p>	<p>Practical Classrooms</p> <p>labs,</p>	<p>Learner Guide</p> <p>Handouts</p> <p>Videos</p> <p>Multi-media projector</p>
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<p>LU1: Initialize application program interface</p>	<p>Lead a discussion on how to Initialize application program interface. Encourage ALL trainees to participate in the discussion. Ensure that the discussion addresses the following points:</p> <ul style="list-style-type: none"> - Open terminal/cmd - Change directories - Rename files - Move files from one directory to another - Copy files from one directory to another - Select/delete only particular types of files - Open a file - Open an application - Zip and unzip files/folders - Download files from a source (network location) - Connect to a server using ssh <p>Prepare either:</p> <ul style="list-style-type: none"> • A flip chart • A PowerPoint slide • A handout <p>...showing the key topics about how to Initialize application program interface. Go through all the key topics briefly and then allocate one key topic to each group.</p> <p>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.</p> <p>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 how to Initialize application program interface. 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.</p> <p>Then ask the next group to share their flipchart showing</p>	<p>Practical Classrooms</p>	<p>labs,</p>	<p>Learner Guide Handouts Videos Multi-media projector</p>
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LU2: Create and manage specific working environment	<p>Deliver an illustrated presentation on how to Create and manage specific working environment. Ensure that the presentation focuses on the following:</p> <ul style="list-style-type: none"> - Install virtual environment with pip - Create a virtual environment - Activate a virtual environment - Deactivate a virtual environment - Check if the environment is active for a python/pip version - Install packages in virtual environment - Run scripts in virtual environment <p>Learners need to devise 10 quiz questions with answers based on how to Create and manage specific working environment. They must make sure their questions cover key topics for how to Create and manage specific working environment.</p> <p>Issue each learner with 10 blank cards. Each learner should number the cards and write their name on one side with a question about how to Create and manage specific working environment. On the reverse of the card, they should write an appropriate answer to their question.</p> <p>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.)</p> <p>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.</p> <p>Total the scores at the end of the quiz to see which team won.</p> <p>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.</p>	<p>Practical Classrooms</p> <p>labs,</p>	<p>Learner Guide Handouts Videos Multi-media projector</p>
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<p>LU3: Install Packages with Pip</p>	<p>Lead a brainstorm on how to Install Packages with Pip. List the brainstorm ideas on a flipchart. If necessary, prompt learners to consider the following:</p> <ul style="list-style-type: none"> - Select an appropriate package to install - Open terminal/cmd - Activate a virtual environment if required - Use “pip install <package name>” command to install the package - Import package in a python environment - Uninstall a package with “pip uninstall <package name>” command <p>Prepare a short case study giving background information of the artificial intelligence expert. The information should include:</p> <ul style="list-style-type: none"> • The AI expert’s name • Address of the AI expert’s organisation • How long the AI expert has been practising for • How many staff are employed by the organisation. <p>Discuss the topic of how to : Install Packages with Pip with the invited AI expert. The AI expert needs to prepare a short introduction about their organisation they can deliver to the learners at the beginning of their presentation. Ask the AI expert to bring with him/her materials that will support the presentation, for example relevant resources, photographs, records.</p> <p>A week before the presentation, provide learners with a copy of the case study you have prepared describing the AI expert’s organisation. Hold a discussion with the learners on the key points of how to : Install Packages with Pip. Record these as bullet points on a flipchart and ensure learners make a copy.</p> <p>Ask learners to work in small groups. Each group needs to devise five questions about how to : Install Packages with Pip that they can ask during the presentation. Ensure that learners bring their questions with them for the presentation.</p> <p>On the day of the presentation, introduce the AI expert to the learners. The AI expert needs to deliver the presentation to the learners about their organisation and</p>	<p>Practical Classrooms</p> <p>labs,</p>	<p>Learner Guide Handouts Videos Multi-media projector</p>
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Module-22

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Module 22: 061900930 Perform Computer Application Skills			
Learning Unit	Suggested Teaching/ Learning Activities	Delivery Context	Media

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 8th Grade or equivalent.
4. How can I progress in my educational career after attaining this certificate?	You shall be eligible to take admission in the National Vocational Certificate Level-3 in Artificial Intelligence Data Technician. You shall be able to progress further to National Vocational Certificate Level-4 in Artificial Intelligence Data Technician (Supervisor); 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 3220 hours
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 qualification's 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 (NAVTTTC). These standards are also recognized worldwide as all the standards are coded using international methodology and are accessible to the employers worldwide through NAVTTTC 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 android application development industry which comprises of development of applications for play store as well as testing and optimization of the apps.
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 (NAVTTTC). 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 teaching language of this course is Urdu and English.
19. Is it possible to switch to other certificate programs during the course?	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.
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?	You can start your small business/ software house related to android application development and you can work as freelancer as well after the completion of the course. You may need additional skills on entrepreneurship to support your initiative.

Test Yourself (Multiple Choice Questions)

MODULE Code in Programming Language suitable for AI

Question 1 If Ali has to write a function to choose from a given set of options. Which of the following statements should he use?

- A “If” statement
- B “Switch” statement
- C “While” statement
- D “For” statement

Question 2 You have to display a sequence of numbers. Which statement should you use?

- A “If” statement
- B “Switch” statement
- C “While” statement
- D “For” statement

Question 3 Which of the following is a conditional loop statement?

- A "If" statement
- B "Switch" statement
- C "While" statement
- D "For" statement

Question 4 You are tasked with creating a function which keeps on printing a given integer until one of two conditions are met. Which comparative statement should be used?

- A and
- B or
- C not
- D >=

Question 5 A number 5.6 is changed into an integer with a command `int()`. What value would you get?

A 6

B 5

C 4

D 3

MODULE Setup Environment

Question 6 How do we install packages in python

A Pip.

B Numpy.

C Pandas.

D Clc.

Question 7 Why do we use virtual environments

- A Installing packages in the environment.
- B Installing that environment.
- C Initializing all the variables.
- D Switching to that virtual environment.

Question 8 What does activating an environment mean?

- A An operator
- B Used to rename object
- C A reference is an alias for an object
- D None of these

Question 9 Which library is used for dealing with arrays?

A BeautifulSoup.

B Pandas.

C Numpy.

D Anaconda.

Question 10 What does ssh do?

A Allows you to run a python 2 app in python 3.

B Speed up downloading of files.

C Access a computer over the internet remotely.

D Allocate more ram for the application.

Answers

MODULE	Code in Programming Language suitable for AI		
Question	1	If Ali has to write a function to choose from a given set of options. Which of the following statements should he use?	B Switch" statement
Question	2	You have to display a sequence of numbers. Which statement should you use?	D "For" statement
Question	3	Which of the following is a conditional loop statement?	C "While" statement
Question	4	You are tasked with creating a function which keeps on printing a given integer until one of two conditions are met. Which comparative statement should be used?	B or
Question	5	A number 5.6 is changed into an integer with a command toint(). What value would you get?	B 5

MODULE		Setup Environment	
Question	1	How do we install packages in python	A Pip.
Question	2	Why do we use virtual environments	B Installing that environment.
Question	3	What does activating an environment mean?	D None of these
Question	4	Which library is used for dealing with arrays?	B Pandas.
Question	5	What does ssh do?	C Access a computer over the internet remotely.

