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FURNITURE TECHNICIAN

TRAINER GUIDE

National Vocational Certificate Level 4

Version 1 - June, 2019

NAVTTC

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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 *(Furniture 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 a *(Furniture 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 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: <*Furniture Technician*>	**Total Course Duration:** 1200 Hrs
Course Overview:	
The purpose of these qualifications is to set high professional standards for furniture industry. • Improve the professional competence of the trainees • Shift from informal and non-formal to formal technical and vocational training • Provide opportunities for recognition of skills attained through non-formal or informal pathways • Improve the quality and effectiveness of training and assessment for furniture sector • Enable the existing workforce to capacitate themselves in new technologies and methods	

Module	Learning Unit	Duration
Module 1: Develop drawings of furniture products manually **Aim:** The aim of this module to be develop knowledge, skills and understanding to develop drawings of furniture products manually.	**LU1:** Develop component and size chart **LU2:** Prepare 2D Multiview drawing of Furniture **LU3:** Prepare 2D Multiview drawing of Furniture Components **LU4:**	140 hours

Module	Learning Unit	Duration
Module 2: Prepare wooden components of the furniture **Aim:** The aim of this module to be develop knowledge, skills and understanding of preparing wooden components of the furniture.	**LU1:** Cut wood logs into Planks **LU2:** Prepare templates for furniture components **LU3:** Cut wood planks into furniture components **LU4:** Cut board/ panels into furniture components **LU5:** Plain surfaces of wooden components **LU6:** Finalize the size of wooden components	60 hours
Module 3: Make Furniture Joints **Aim:** The aim of this module to be develop knowledge, skills and understanding of making different types of joints being used for furniture manufacturing.	**LU1:** Perform Cutting **LU2:** Perform Plaining **LU3:** Prepare joints as per design / drawing **LU4:** Assemble joints	200 hours
Module 4: Apply surface aesthetics **Aim:** The aim of this module to be develop advanced knowledge, skills and understanding to apply surface aesthetics on the furniture.	**LU1:** Perform profiling of components **LU2:** Perform turning of components **LU3:** Perform Carving Manually **LU4:** Perform Marquetry/Parquetry Manually	100 hours
Module 5: Assemble Furniture Products **Aim:** The aim of this module to be develop basic knowledge, skills and understanding required to assemble the furniture products.	**LU1:** Pre-Assemble Furniture Products parts **LU2:** Assemble Furniture Products parts **LU3:** **LU4:**	20 hours

Module	Learning Unit	Duration
Module 6: Perform Finishing Operations on Furniture **Aim:** The aim of this module to be develop advanced knowledge, skills and understanding required to perform finishing operations on furniture.	**LU1:** Prepare the surfaces **LU2:** Perform staining on surfaces **LU3:** Perform sealing **LU4:** Perform top finishing **LU5:** Apply powder coating on metal furniture	120 hours
Module 7: Perform Upholstery **Aim:** The aim of this module to develop advanced knowledge, skills and essential understanding of materials, techniques needed to perform upholstery on furniture.	**LU1:** Apply Tapestry on the furniture **LU2:** Apply Canning on the furniture **LU3:** **LU4:**	100 hours
Module 8: Prepare Metal Furniture Products **Aim:** The aim of this module to be develop advanced knowledge, skills and essential understanding required to prepare metal furniture products	**LU1:** Cut required components from raw material **LU2:** Prepare furniture components as per design **LU3:** Assemble the furniture components using welding **LU4:** Assemble the furniture components using Knockdown method	110 hours
Module 9: Handle Logistics **Aim:** The aim of this module to develop basic knowledge, skills and understanding needed to handle the logistics at warehouse	**LU1:** Pack the furniture **LU2:** Load the furniture for delivery and transportation **LU3:** **LU4:**	20 hours

Module	Learning Unit	Duration
Module 10: Develop drawings of furniture products using CAD/CAM **Aim:** The aim of this module is to develop advanced knowledge, skills and understanding needed develop drawings of furniture products using CAD/CAM.	**LU1:** Draw 2D Multiview drawing of Furniture Components on CAD **LU2:** Develop 3D model of Furniture Components **LU3:** Convert CAD drawing into CAM Code	140 hours
Module 11: Apply surface aesthetics using CNC Machines **Aim:** The aim of this module to develop advanced knowledge, skills and understanding needed to apply surface aesthetics using CNC machines	**LU1:** Perform Turning of components on CNC Turning Centre **LU2:** Perform Carving on CNC Machining Centre **LU3:** Perform Marquetry/Parquetry on CNC Laser Machine	190 hours

FORMAT FOR LESSON PLAN			
Module: Develop drawings of furniture products using CAD/CAM			
Learning Unit> 12			
Learning Outcomes>			
Methods	Key Notes	Media	Time
	Introduction		
	Preparing drawing on the CAD platform is a bit easier than manual drawings. Using CAD support you to make deletions and repetitions, check results, symbols, hatching, rendering and plot previews extremely easy. The drawings are then converted to G-codes to make the machine work accordingly. The result of which can be simulated after selecting the appropriate tool as per machine process.		
	Main Body		
	Overview of the CAD interface. Importance of the CAD programs In-depth knowledge of the tools related to various works including various functions, Views, Units, Scales, 2D tools, 3D tools, solids, material library, render, plotting etc. Converting CAD drawing to CAM codes (G or M Codes) Selection of appropriate tools in the CAM software Performing simulation to check the authenticity of the program & selected tool parameters	Multimedia Slides White board Practice	60
	Conclusion		
	The students acquire knowledge about CAD program to draw various components or articles of the furniture in 2D or 3D views as per requirement. The drawings are then converted to CAM codes and simulation is performed to see the results before take it the CNC machines to practically perform on furniture components. The lessons are judged practically & have some written assessment.		
	<u>Assessment</u> Describe the important tool bars Write down the 3D commands used to prepare part or article. Prepare a drawing of a furniture component and plot it after rendering. Convert the drawing to CAM code and simulate as per drawing given.		
			Total time:

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Module-1

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Trainer's guidelines

Module 1: 072200898 Prepare Furniture drawing Using CAD/CAM software			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
LU1: Draw 2D Multiview drawing of furniture components on CAD	This session is about: P1. Develop component and size chart of the furniture as per product design P2. Prepare drawing canvass in CAD software P3. Draw 2D Multiview of the components as per required measurements P4. Apply Hatches on the drawing to identify component material and Upholstery P5. Draw symbols on the drawing to identify hardware P6. Mention all dimensions on the drawing Begin this session with an illustrated presentation about the following • Introduction to CAD • Understanding of the CAD limits, units, scales, views and layers. • Introduction to tools, commands and short keys in CAD • Introduction to dimensions, symbols, hatch patterns in CAD	Classroom (Multimedia presentation) Workshop/Lab	Computer System (As per software requirements) Software CD's Multimedia Projector Projection Screen

Module 1: 072200898 Prepare Furniture drawing Using CAD/CAM software			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	Deliver a presentation to practice the learners with the following • Practice drawing with basis shapes • Setting of limits, units and scales • Completion of a 2D drawing Mark each drawing for various steps completed. Guide the learners about their week points step by step. Focus on step so learning becomes easy.		

Module 1: 072200898 Prepare Furniture drawing Using CAD/CAM software			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
LU2: Develop 3D model of Furniture components	This session is about: P1. Extrude component drawings into 3D models P2. Save CAD drawings in required file format P3. Print CAD drawings as per required scale Deliver a detailed presentation on the following topics covering all aspects step by step • Introduction & importance of 3D drawings • Introduction to 3D drawing tools & commands in CAD • Introduction to 3D shapes • Introduction & application of render • Projection of various views • Introduction to plotting/printing Practice this session by converting simple 2D geometrical drawings to 3D. Move to session two with medium floor plans to extrude walls. Practice this with various designs. Lead towards material application and render from various views. Practice the plot settings & print the drawing. Mark the printed drawing. Guide the learners about their shortcomings.	Classroom (Multimedia presentation) Workshop/Lab	Plotter Laser Printer Drawing sheets Drawing Roll

Module 1: 072200898 Prepare Furniture drawing Using CAD/CAM software			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
LU3: Convert CAD drawing into CAM code	This session is about: P1. Create a Layer in your DWG file for CNC paths and copy the relevant geometry onto it P2. Prepare drawing for CAM (Flatten, Overkill, convert splines and ellipses into arcs and polylines etc.) P3. Extract the CAD drawing to CAM or CNC programme as per process requirements P4. Select appropriate machining tools in CAM module P5. Run simulation of CNC program to ensure desired results P6. Save CNC program in desired format. Deliver a detailed presentation on the various furniture products and components • Introduction to CAM/CNC • Introduction to layer creation • Introduction to G-codes • Selection of Tools as per process • Introduction to simulation • Executing simulation	Classroom (Multimedia presentation) Workshop/Lab	Unassembled furniture components (Table, Stool, Beds, Chair, Racks)

Module 1: 072200898 Prepare Furniture drawing Using CAD/CAM software			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	Practice this session guiding each & every step closely to the learners on CNC/CAM software from layer formation, tool credentials, g-coding and simulation. Execute various simulations from simple to complex to master the process of CAM/CNC. Have a close look while practicing to avoid complex problems. Devise each student a drawing with processes to complete on that product. Advise them to prepare drawing, assign layers, select tools/bits, and convert to codes and execute. Mark it after simulate as per correctness/quality. Guide again to weak learners till they are perfect with the whole procedure and can develop the file with authority.		

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Module-2

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Module 2: 072200899 Apply surface aesthetics using CNC machines			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
LU1: Perform turning of components on CNC	This session is about: P1. Equip CNC Turning Centre with required tools P2. Align work piece on the machine P3. Execute machine program from control panel for required operation P4. Unload work piece from machine after work completion P5. Clean the work piece, check quality and store at designated place Begin this session with an illustrated presentation about the following • Introduction to CNC turning center • Understanding of the required additional safety precautions • Introduction to parts, tools and chucks of the machine • Introduction to piece alignment, limits and workability of the machine	Classroom (Multimedia presentation) Workshop/Lab	CNC turning Centre Wooden blocks Turning tools (bits, wheel etc.)

Module 2: 072200899 Apply surface aesthetics using CNC machines			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	Practice this session by separate task for each learner after 1st task of practical work by the instructor. Guide the learners each & every step from chuck, tool loading, safety and finalization. Mark each job considering from the program generated by the learners and the finished result of the wooden component.		

Module 2: 072200899 Apply surface aesthetics using CNC machines			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
LU2: Perform Carving on CNC Machining Centre	This session is about: P1. Equip CNC Machining Centre with required tools (Bits, profile cutters etc.) P2. Align work piece on the machine P3. Execute machine program from control panel for required operation P4. Unload work piece from machine after work completion P5. Clean the work piece, check quality and store at designated place Begin this session with an illustrated presentation about the following • Introduction to CNC machining centre • Understanding of the required additional safety precautions • Introduction to parts, tools and clampls of the machine • Introduction to various axis • Introduction to capabilities, piece alignment, limits and workability of the machine	Classroom (Multimedia presentation) Workshop/Lab	Product pieces CNC workstation along with all accessories Profiles & Bits Cutters Aggregates Dust collection unit with all accessories

Module 2: 072200899 Apply surface aesthetics using CNC machines			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	• Introduction to calibration and homing Practice this session by separate task for each learner after 1st task of practical work by the instructor. Instructor may select a job with multiple processes utilizing various tools or select various jobs to show use of different tools/bits/profiles/aggregate. Guide the learners each & every step from tool/bit/profile/aggregate loading, calibration, homing, safety, piece loading and finalization. Mark each job considering from the program generated by the learners and the finished result of the wooden component. Guide learners about extra care and safety while working and entrust them with additional marks.		

Module 2: 072200899 Apply surface aesthetics using CNC machines			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
LU3: Perform Marquetry/Parquetry on CNC Laser Machine	This session is about: P1. Align multiple veneer sheets as per machine capacity P2. Execute machine program from control panel for required operation P3. Unload work piece from machine after work completion P4. Clean the work piece, check quality and store at designated place Begin this session with an illustrated presentation about the following • Introduction to CNC laser machine • Understanding of the required additional safety precautions for laser • Introduction to parts, laser tube and clamps of the machine • Introduction to various axis • Introduction to capabilities, piece alignment, limits and workability of the machine • Introduction to calibration and homing	Classroom (Multimedia presentation) Workshop/Lab	Product pieces CNC Laser Machine Laser Tube

Module 2: 072200899 Apply surface aesthetics using CNC machines			
Learning Unit	**Suggested Teaching/ Learning Activities**	**Delivery Context**	**Media**
	Practice this session by separate task for each learner after 1st task of practical work by the instructor. Guide the learners each & every step from material loading, calibration, homing, safety and finalization. Mark each job considering from the program generated by the learners and the finished result of the wooden component. Guide learners about extra care and safety while working and entrust them with additional marks.		

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 National Vocational Certificate Level-3 in Furniture Technician (Finisher, Upholster, Metal Fabricator).
4. How can I progress in my educational career after attaining this certificate?	You shall be able to progress further to a level-5, DAE or equivalent course in relevant trade. 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 330 hrs. (approx. 2.5 months)

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 leather products making companies in the functions of digital pattern making for leather gloves and garments.
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 languages of this course are 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 of computerized pattern designing. You may need additional skills on entrepreneurship to support your initiative.

Short Question & Answers

What is meant by CAD?	CAD states for Computer Aided Drawing or drafting. Various software's are used to prepare drawing in the computer.
Which CAD software is popular among the enthusiasts?	AutoCAD is the most popular software of all times. It serves the industry well from the very old to times now as well. Various versions are being introduced from time to time as and when required.
What kind of drawing can be made in CAD software?	Almost every kind of drawing can be made in the CAD software's. It also covers the various fields as well e.g., Electrical, Mechanical, Electronics, Civil, Furniture, Plumbing etc. Two and three dimensional drawing are easy to work in it. Latest versions also supports the animation, lighting, rendering and real time live tour around or inside the drawing.
Which CAM codes are used mostly?	G- code is the most favorite style of coding. However M code is also utilized.
Is it possible to use CAD software for animation?	Yes the latest versions of some CAD software have a support to make animations. It helps in creating real time tours of the drawing or else.

Short Question & Answers

What is meant by CAM	CAM states for Computer Aided Manufacturing. The manufacturing is controlled by computer.
What is meant by CNC?	CNC stands for Computer Numerical Controlled machines. The various parameters of machine functions are fully controlled with the help of computer software called CAM software. Due to which manufacturing becomes extremely easy after setting the file for first time.
What is meant by ATC?	ATC stands for the Automatic Tool Changer. The latest versions of CNC machining Centre's are equipped with ATC's. A machining centre can perform lot of operations on an object utilizing various tools available in its socket. It can pick the desired tool as per instructions.
How many axis a CNC machine can work?	CNC machine can work for how much axis it is made for. Generally 3-5 axis machines are utilized in the woodworking industry. However the milling machines are available up to 9 axis.
What is difference between CNC machine and CNC machining centre?	Any manual machine may have its CNC version to work for single or multi operation. A CNC machining centre however on the

	other hand can handle lot of operations of various machine single handedly e.g., boring, trimming, profiling, cutting, beveling, grooving, rabbeting, inlay, engraving, embossing, making curves, edge banding subject to the availability of tools for desired operations.

Test Yourself (Multiple Choice Questions)

MODULE 1

Question 1 F8 is the short key for

A Artho on

B Grid on

C Display on

D None of the above

Question 2 CAD stands for

A Computer aided drafting

B Computer added drawing

C Computer assisted drawing

D All of the above

Question 3 Copy object in a specified distance is attained by

A Array

B Copy

C Multiple copy

D None of the above

Question 4 Extrude is used to develop

A 2d objects

B 3d objects

C Render objects

D None of the above

Question 5 CAM stands for

A Computer aided manufacturing

B Computer added manufacturing

C Computer assisted manufacturing

D None of the above

MODULE 2

Question 1 CNC stands for

A Computer Normal Controlled

B Computer Numerical Controlled

C Computer National Controlled

D None of the Above

Question 2 CNC machine can perform

A Carving

B Turning

C Boring

D All of the Above

Question 3 CNC is utilized to impart

A Quality & Quantity

B Quality & Repetition

C Accuracy & Repeatability

D None of the above

Question 4 ATC stands for

A Automatic Tool Changer

B Automatic Tool Charger

C Automatic Tool Collector

D None of the above

Question 5 CO_2 Laser is used for

A Cutting

B Engraving

C Marking

D All of the above

Answers

Module 1

Q1. A

Q2. A

Q3. A

Q4. B

Q5. A

Module 2

Q1. B

Q2. D

Q3. A

Q4. A

Q5. D

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