

2101260

BACHELOR OF VOCATION
Tool and Die Manufacturing
Subject: Fundamentals of CNC Machines
Subject Code: CBME-103
Semester: First
January 2021
Theory (External): 70 Marks
Time: 03 Hours

Instructions to the Students

1. This Question paper consists of two Sections. All sections are compulsory.
2. Section A comprises 10 questions of objective type in nature. All questions are compulsory. Each question carries 2 marks.
3. Section B comprises 8 essay type questions out of which students need to do any 5. Each question carries 10 marks.
4. Read the questions carefully and write the answers in the answer sheets provided.
5. Do not write anything on the question paper.
6. Wherever necessary, the diagram drawn should be neat and properly labelled

Roll Number

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SECTION –A (SHORT/OBJECTIVE TYPE QUESTIONS)

(10x2=20 Marks)

A CNC machines are not normally operated. They are controlled by means of a

- (a) Programme (b) Operator
(c) CAM (d) Followers

B Which one of the following is not the advantage of CNC machine

- (a) Reduce inspection time (b) High initial cost
(c) Reduces tooling time (d) Higher rate of production

C The following is(are) the function(s) of a jig

- (a) Holding (b) Locating
(c) Guiding (d) All of the above

D 18:4:1 in high speed steels represents respectively

- (a) Chromium, tungsten, vanadium
(b) Vanadium, chromium, tungsten
(c) Tungsten, Chromium, Vanadium
(d) Tungsten, chromium, vanadium

E Which one of the following is the hardest tool material

- (a) Ceramics (b) Cemented carbide
(c) Boron Nitride (d) Diamond

F Number of degree of freedom of a workpiece in space is equal to

- (a) 10 (b) 12
(c) 14 (d) 16

G The depth that the tool is plunged into the surface is called as

- (a) Feed
- (b) depth of cut
- (c) Depth of tool
- (d) working depth

H In CNC machines.....type of tool changer is used with either side mounted or back mounted tool magazines.

- (a) Pivot insertion
- (b) Multi-axis
- (c) Turret head
- (d) Automatic tool changer

I Which of the following feedback devices are used in CNC

- (a) Resolver
- (b) Rotary encoder
- (b) Both (a) and (b)
- (d) None of the above

J The type of tool magazines used in CNC machines are

- (a) Drum
- (b) Chain
- (c) Egg box
- (d) All of the above

SECTION -B (ESSAY TYPE QUESTIONS)

(5x10=50 Marks)

- Q1 Explain how cutting tool can be classified on the basis of cutting tool material
- Q2 Write and explain various components of a CNC system.
- Q3 What are the various features to be taken care of while designing a CNC tool?
- Q4 Write the characteristics of work holding devices used in CNC and explain with a neat sketch various work holding devices used in CNC machine.
- Q5 Explain in detail the stages of tool change cycle in automatic tool changer (ATC)?
- Q6 Define the term stick-slip motion and with a neat sketch explain the method through which it can be reduced in a CNC machine.
- Q7 Write and explain the factors which affect the tooling for CNC machines.
- Q8 Write the short note on:
(a) Application of CNC machine
(b) Programmable logic controllers

*******END OF THE PAPER*******