

**7E7018**

Roll No. \_\_\_\_\_

Total No of Pages: **3****7E7018****B. Tech. VII Sem. (Main / Back) Exam., Nov. – Dec. - 2018****Mechanical Engineering****7ME6.3A CNC Machines and Programming****Common with ME, PI****Time: 3 Hours****Maximum Marks: 80****Min. Passing Marks: 26***Instructions to Candidates:*

*Attempt any **five questions**, selecting **one question** from **each unit**. All questions carry **equal marks**. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.*

*Units of quantities used/calculated must be stated clearly.*

*Use of following supporting material is permitted during examination.  
(Mentioned in form No. 205)*

1. NIL \_\_\_\_\_2. NIL \_\_\_\_\_**UNIT- I**

Q.1 (a) With the help of a neat diagram, explain various elements of a NC Machine and also advantages and disadvantages of NC Machine. [8]

(b) Describe the comparison of NC and Conventional Machines. [8]

**OR**

Q.1 (a) Describe the short notes:-

(i) Automation of NC system. [4]

(ii) Application of NC & CNC Machine. [4]

(b) Define the NC, CNC and DNC system with help of diagrams clearly indicating difference in these system. [8]

## UNIT- II

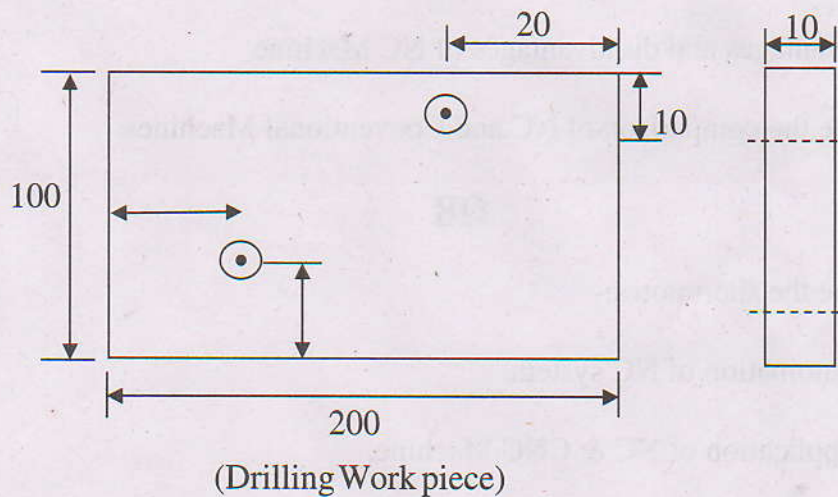
- Q.2 (a) Explain the mechanical element and guide way element of CNC system. [8]  
(b) Describe the coolant system and lubrication system. [8]

**OR**

- Q.2 (a) Explain the short notes in detail:-
- (i) Control loops. [4]
  - (ii) Interpolators [4]
  - (iii) Sensors [4]
  - (iv) Spindle unit [4]

## UNIT- III

- Q.3 (a) What do you mean by APT language, give examples of few commands with program. [8]
- (b) For work piece shown in figure given below write down manual part programming of NC to, Drill two holes using drilling machine. The dimension of work piece are  $(200 \times 100 \times 10)$  mm. The hole diameter is 1000 rpm. Assume target point of tool is at  $(-20,-20,10)$  [8]



**OR**

- Q.3 (a) What do you mean by computer aided part programming and NC part programming. [8]
- (b) Describe the Automatic part programming generation. [8]

**UNIT- IV**

- Q.4 (a) Define the CAPP system by the 5 axis programming of machine. [8]
- (b) Define the basic component of a robot system and law of robotics. [8]

**OR**

- Q.4 (a) Explain the kinematic simulation and volumetric simulation. [8]
- (b) What is a NC simulation and explain the application of volumetric NC simulation. [8]

**UNIT- V**

- Q.5 (a) What is Adaptive control and off – line adaptive control. [8]
- (b) Define the difference between Hardware Based AC and Software Based AC (Adaptive control). [8]

**OR**

Q.5 Discuss the following short notes:-

- (a) Die sinking [4]
- (b) CAM (Computer Aided Manufacturing system) [4]
- (c) FMS (Flexible Manufacturing system) [4]
- (d) Rapid product development. [4]

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