

**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. NIL2. 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:- [ersahilkagyan.com](http://ersahilkagyan.com)
- (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

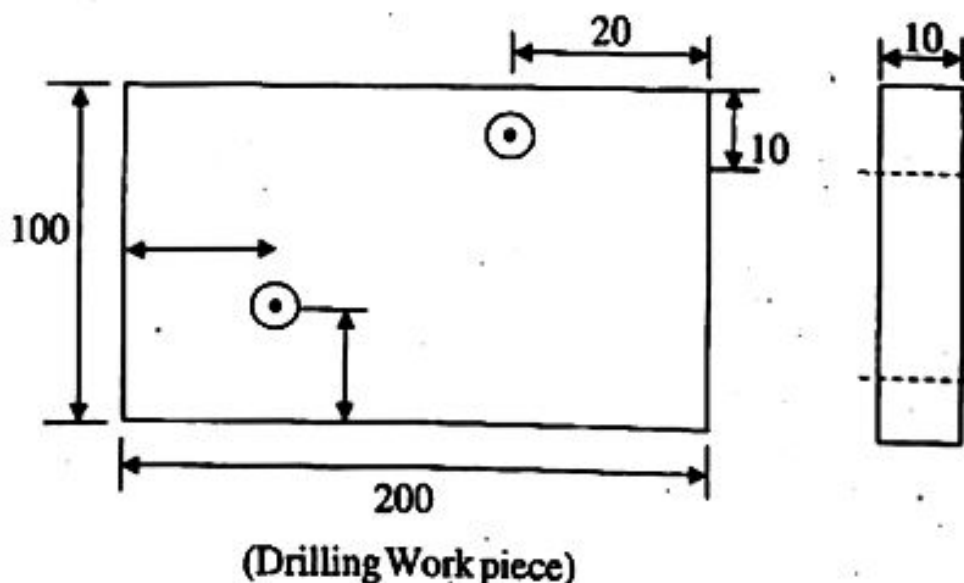
- Q.2 (a) Explain the mechanical element and guide way element of CNC system. [8]  
(b) Describe the coolant system and lubrication system. [8]

### 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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