

# CBCS SCHEME

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18ME821

## Eighth Semester B.E. Degree Examination, July/August 2022 CNC Machine Tools

Time: 3 hrs.

Max. Marks: 100

**Note:** Answer any FIVE full questions, choosing ONE full question from each module.

### Module-1

- 1 a. Define CNC. Briefly explain the evolution of CNC Technology. (10 Marks)  
b. Write Advantages, limitations and applications of CNC machines. (10 Marks)

OR

- 2 a. What is control system in CNC machine Tools? Briefly discuss the different types of CNC controllers. (10 Marks)  
b. Write a short note on the following :  
i) Interpolators  
ii) Computer Aided Inspection. (10 Marks)

### Module-2

- 3 a. Explain the important constituent parts to be considered while designing the CNC machine tool. (10 Marks)  
b. With a neat sketch, explain the elements used to convert the rotary motion to linear motion in CNC machine tool. (10 Marks)

OR

- 4 a. Define Torque. Explain the torque transmission elements in CNC machine tools. (10 Marks)  
b. Briefly explain the following ; (10 Marks)  
i) Hydrostatic Guideways  
ii) Aerostatic Guideways

### Module-3

- 5 a. Write the difference between AC and DC servometers. (05 Marks)  
b. Define Servomotor and write a short note on servo principle. (05 Marks)  
c. With a neat sketch, explain 3 phase AC induction motor. (10 Marks)

OR

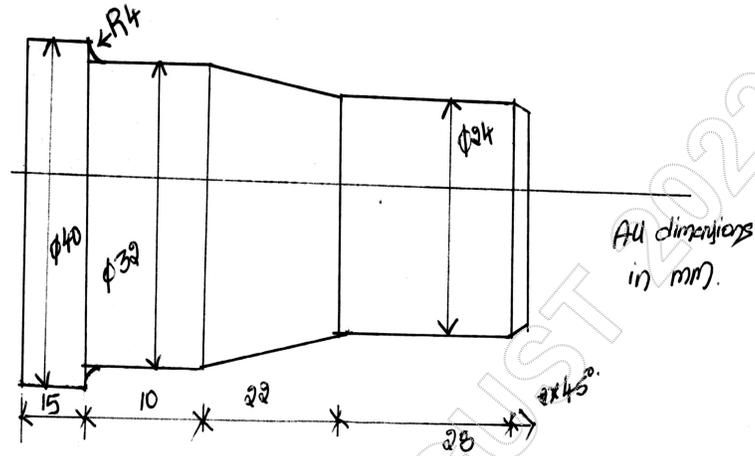
- 6 a. Differentiate open loop control system with closed loop control system. (05 Marks)  
b. Briefly discuss the working principle of DC shunt motor. (05 Marks)  
c. With a neat sketch explain LASER interferometer. (10 Marks)

### Module-4

- 7 a. Write a short note on the following :  
i) Cutter compensation  
ii) Automated tool changer  
iii) Absolute and Incremental co-ordinate system. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

- b. Write manual part program for the turning profile shown in Fig Q7(b). Assume any missing data.

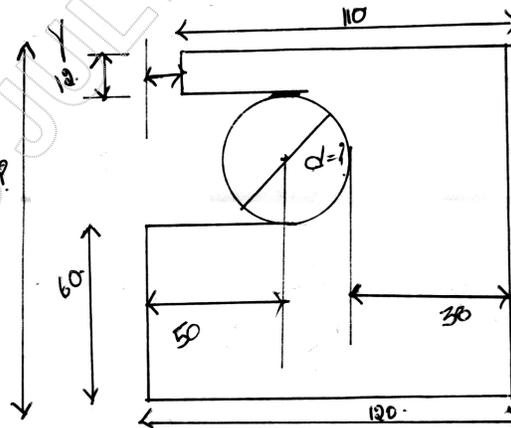


All dimensions in mm Fig Q7(b)

(10 Marks)

OR

- 8 a. Briefly explain the steps involved in computer Aided part programming. Also discuss the need for computer aided part programming. (10 Marks)
- b. Write computer Aided part programming for the milling profile. Show in Fig Q8(b), calculate any missing data.



All dimensions are in mm Fig Q8(b)

(10 Marks)

### Module-5

- 9 Briefly discuss the following :
- Work holding devices for rotating and fixed work pieces
  - Modular fixtures
  - Economies of CNC
  - Maintenance of CNC machine.

(20 Marks)

OR

- 10 a. Define Cutting Tool. What are the desirable properties of cutting tool materials? (10 Marks)
- b. Write short notes on following cutting tool materials
- Carbides
  - Ceramics
  - CBN

(10 Marks)

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