

| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|

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)

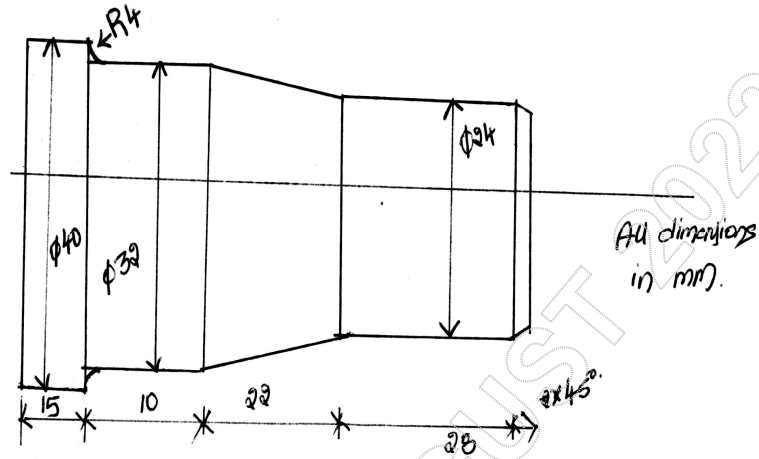
OR

- 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)

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

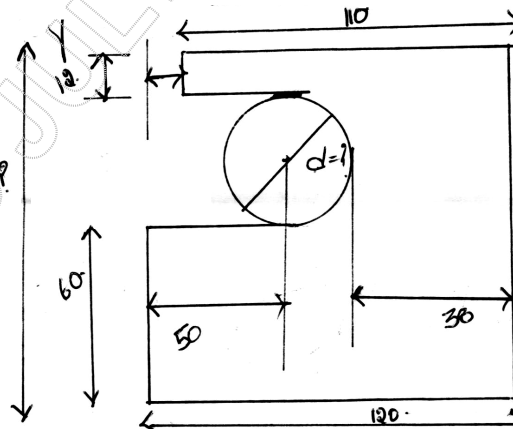


All dimensions in mm Fig Q7(b)

(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)
