

CBCS SCHEME

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15MEB305/15ME35B

Third Semester B.E. Degree Examination, June/July 2018 Machine Tools and Operations

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Write comparison between central lathe, capston lathe and turret lathe. (08 Marks)
b. Sketch and explain Radial drilling machine. (08 Marks)

OR

- 2 a. Sketch and explain Horizontal boring machine. (08 Marks)
b. Write the types and classification of Milling machine. (08 Marks)

Module-2

- 3 a. Sketch and explain following boring operations :
(i) Facing (ii) Counter boring (iii) Counter sinking (iv) Trl panning. (08 Marks)
b. Write comparison of up and down milling. (04 Marks)
c. Explain the working and auxillary cutting motions in machine tool. (04 Marks)

OR

- 4 a. List the operations performed in lathe and drilling machines. (08 Marks)
b. With suitable sketch explain Milling arbor. (04 Marks)
c. Explain lathe setting. (04 Marks)

Module-3

- 5 a. Give expression for feed, speed, depth of cut and machining time for grinding. (08 Marks)
b. In a turning operation following data is observed, $D = 100$ mm, $l = 400$ mm, cutting speed = 600 mm/sec, feed = 0.4 mm/rev, calculate the machining time? What will be effect of machining time if cutting speed is increased by 50%. (08 Marks)

OR

- 6 a. Write the factors affecting feed for turning. (04 Marks)
b. Write a note on feed for milling operations. (04 Marks)
c. A solid cylinder is to be ground longitudinally on a cylindrical grinding machine. The length and diameter of cylinder are 220 mm and 50 mm respectively. The allowance per side is 0.3 mm. The grinding wheel diameter and width is 600 mm and 63 mm respectively. The cutting speed is 30 m/min. Determine machining parameters. (08 Marks)

Module-4

- 7 Explain the system of forces acting during cutting and show how they are brought together in Merchant's circle diagram. (16 Marks)

OR

- 8 a. With sketches explain the difference between orthogonal and oblique cutting. (08 Marks)
b. Discuss briefly the different types of chips encountered in metal cutting. (06 Marks)
c. Explain shear zone. (02 Marks)

Module-5

- 9 What is Tool life? List and explain the factors affecting the tool life along with relevant equations. (16 Marks)

OR

- 10 a. Explain the economics of metal machining. (10 Marks)
b. Explain cutting speed and tool life for minimum cost and maximum production. (06 Marks)

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