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Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019 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. Explain the principle of working of a lathe. Draw neat sketch of lathe show the principle parts. (08 Marks)
- b. What factors govern the classification of lathe? (04 Marks)
- c. How is the size of lathe determined? (04 Marks)

OR

- 2 a. What are the basic elements of drilling machine? Explain the function of each. (08 Marks)
- b. What are advantages and disadvantages of shaping machines? (08 Marks)

Module-2

- 3 a. Explain the working and auxiliary cutting motions in machine tool. (08 Marks)
- b. Explain with example working motion for following machine tool:
(i) Lathe (ii) Milling (iii) Drilling (iv) Planning (08 Marks)

OR

- 4 a. With the help of suitable sketches, describe construction and working of milling arbors. (08 Marks)
- b. Explain following drilling operations :
(i) Boring (ii) Counter Boring (iii) Countersinking (iv) Spot facing. (08 Marks)

Module-3

- 5 a. What are the different types of cutting fluid? Explain it briefly. (08 Marks)
- b. What are functions of cutting fluid? (04 Marks)
- c. What are the important factors to be considered while selecting cutting fluids? (04 Marks)

OR

- 6 a. Explain different types of cutting tool materials. (08 Marks)
- b. Explain factors affecting surface finish. (08 Marks)

Module-4

- 7 a. How machining time is given for shaping operation? (08 Marks)
- b. Give expression for feed, speed and depth of cut for grinding. (08 Marks)

OR

- 8 a. Write a short note on feed for milling operation. (04 Marks)
- b. Which factors affect machining time for milling? (04 Marks)
- c. For the rough grinding operation, determine the machining time with following data:
Stock to be removed = 0.40 mm Depth of cut = 0.02 mm
Cutting speed = 30 m/min Diameter of work = 40 mm
Face width of wheel = 60 mm Length of work = 210 mm (08 Marks)

Module-5

- 9 a. Explain Basic elements of machining. (04 Marks)
- b. Write a note on American Standards Association (ASA) system of tool signature. (04 Marks)
- c. Draw Merchant's circle diagram to show cutting forces acting on cutting tool. (08 Marks)

OR

- 10 a. What are the possible causes of tool failure? Explain in detail. (08 Marks)
- b. What are the factors affecting the tool life? (08 Marks)

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