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Fourth Semester B.E. Degree Examination, Dec.2023/Jan.2024 Manufacturing Process – II

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. A seamless tubing 35mm outside diameter is turned orthogonally on a lathe. The following data is available. Rake angle = 35° , cutting speed = 15m/min, feed = 0.10mm/rev length of continuous chip in on revolution = 50.72mm, cutting force = 200N, feed force = 80N. Calculate the coefficient of friction, shear plane angle, velocity of chip along tool face and chip thickness. (10 Marks)
- b. With neat sketches, explain the different types of chips produced during metal cutting process. (10 Marks)

OR

- 2 a. List out different types of cutting tool materials available. Explain any two. (10 Marks)
- b. With neat diagram, explain the zones of heat generation in metal cutting. (05 Marks)
- c. Explain the usage of cutting fluid in metal cutting process. (05 Marks)

Module-2

- 3 a. Explain the Turret lathe with neat diagram. (10 Marks)
- b. Explain at least 5 different operations carried out in lathe with necessary diagrams. (10 Marks)

OR

- 4 a. Explain the constructional features of shaping machine. (10 Marks)
- b. Explain the open and cross belt drive mechanism of a planer with neat sketches. (10 Marks)

Module-3

- 5 a. Differentiate down milling and up milling with diagram. (10 Marks)
- b. With neat diagram, explain the horizontal spindle column and knee milling machine. (10 Marks)

OR

- 6 a. With a neat sketch, explain the constructional features of centerless grinding. (10 Marks)
- b. Explain the following methods of bonding in grinding:
 - i) Vitrified bond
 - ii) Silicate bond
 - iii) Rubber bond. (10 Marks)

Module-4

- 7 a. With a neat sketch, explain drill bit nomenclature. (10 Marks)
- b. Explain radial drilling machine, with neat diagram. (10 Marks)

OR

- 8 a. With neat sketch, explain the constructional features of continuous surface broaching machine. (08 Marks)
b. With a neat sketch, explain the principle of lapping. (06 Marks)
c. With a neat sketch, explain honing process. (06 Marks)

Module-5

- 9 a. With a neat diagram, explain the operation of laser beam machining process. (10 Marks)
b. Explain the working principle of electron beam machining with neat sketch. State its advantages. (10 Marks)

OR

- 10 a. With a neat sketch, explain the working principle of abrasive jet machining process. (10 Marks)
b. Explain the working principle of water jet machining process with neat diagram. (10 Marks)

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