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18ME35A

Third Semester B.E. Degree Examination, Jan./Feb. 2021 Metal Cutting and Forming

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. With a neat sketch explain the types of chips formed during metal cutting. (06 Marks)
- b. Explain the following machining factors. (08 Marks)
 - i) Cutting speed ii) Depth of cuts iii) Metal Removal Rate (MRR) iv) Feed
- c. While machining a mild steel rod on the lathe, following results are obtained:
Width of cut = 2.5mm, uncut chips thickness = 0.27mm, chip thickness = 0.7mm,
Rake angle = 0 degree, cutting force = 900N. Thrust force = feed force = 450N. Determine:
 - i) Chip thickness ratio ii) Chip reduction co efficient
 - iii) Shear angle iv) Coefficient of friction. (06 Marks)

OR

- 2 a. With neat sketch, how is the size of lathe determined. (06 Marks)
- b. List and briefly explain the any four operations carried out on lathe. (10 Marks)
- c. Differentiate between turret and capstan lathe. (04 Marks)

Module-2

- 3 a. Explain the following operations in milling machine:
 - i) Plain milling ii) Face milling
 - iii) Angular milling iv) Key slot and groove milling (08 Marks)
- b. With a neat sketch explain any one type of drilling machine. (06 Marks)
- c. With a neat sketch explain the operation of Boring, Reaming and Counter Sinking. (06 Marks)

OR

- 4 a. With a neat sketch explain the hydraulic mechanism of a shaper. (08 Marks)
- b. Mention the advantage and disadvantages of planer. (06 Marks)
- c. With a neat sketch, explain the plain cylindrical grinding. (06 Marks)

Module-3

- 5 a. What are the factors affecting the tool life. (08 Marks)
- b. List and explain the types of cutting fluids. (06 Marks)
- c. List and explain the any two cutting tool materials. (06 Marks)

OR

- 6 a. Briefly explain the economical of metal machining process. (08 Marks)
- b. Define tool wear. Explain the various form of tool failure. (08 Marks)
- c. Briefly explain the machinability. (04 Marks)

Module-4

- 7 a. Explain the hot and cold working processes, mention its advantages and disadvantages. (14 Marks)
- b. Differentiate between press forging and drop forging. (06 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.



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OR

- 8 a. Explain the various defects in forging. (06 Marks)
b. List the types of rolling mills. Explain any two types of rolling mills. (08 Marks)
c. With a neat sketch explain the wire drawing and tube drawing process. (06 Marks)

Module-5

- 9 a. With a neat sketch explain the blanking and punching (piercing). (06 Marks)
b. With a neat sketch explain the steps in shearing process. (08 Marks)
c. Differentiate between compound die and progressive die. (06 Marks)

OR

- 10 a. With a neat sketches explain the embossing and coining operation. (08 Marks)
b. With a neat sketches, explain the following dies,
a) Combination die. b) Progressive die. (12 Marks)

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