

# CBCS SCHEME

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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.  
i) Cutting speed ii) Depth of cuts iii) Metal Removal Rate (MRR) iv) Feed (08 Marks)  
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.

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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