

CBCS SCHEME

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18ME45A/18MEA405

Fourth Semester B.E. Degree Examination, Feb./Mar.2022

Metal Cutting & Forming

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain the following: (i) Orthogonal cutting (ii) Oblique cutting (06 Marks)
b. Explain the mechanism of chip formation. (04 Marks)
c. With a neat sketch, explain the merchant circle diagram. (10 Marks)

OR

- 2 a. With a neat diagram, describe the parts of lathe machine. (10 Marks)
b. Briefly explain the following operation carried out on Lathe machine:
(i) Taper turning
(ii) Thread cutting
(iii) Facing (10 Marks)

Module-2

- 3 a. Differentiate between 'Up milling' and 'down milling'. (07 Marks)
b. What is milling? Explain the classification of milling machines. (08 Marks)
c. What do you mean by Boring operation? Explain any one of them. (05 Marks)

OR

- 4 a. Sketch and explain the Quick Return motor mechanism of a Shaper machine. (10 Marks)
b. Write the classification of Grinding Machines. (05 Marks)
c. With a neat diagram, explain the "Centreless Grinding". (05 Marks)

Module-3

- 5 a. Define Tool life. List and explain the parameters affecting the tool life. (08 Marks)
b. What is tool wear? Explain the tool wear form. (08 Marks)
c. Write a short note on cutting fluids. (04 Marks)

OR

- 6 a. A lathe running at a speed of 30 m/min cuts a mild steel rod of 160 mm diameter with a HSS tool. The life of the tool under this condition was observed to be 2.1 hours. When the cutting speed was reduced to 25 m/min the tool life was observed to be 5.2 hours. Calculate the value of the constant C and the exponent n in the tool life equation. (06 Marks)
b. List and explain the machining parameters that affects the surface finish. (10 Marks)
c. Write a short note on economics of machining process. (04 Marks)

Module-4

- 7 a. Give the brief classification of metal forming process. (05 Marks)
b. Compare hot working with cold working process. (05 Marks)
c. With a neat sketch, explain the types of rolling mills. (10 Marks)

OR

- 8 a. Define drawing process. Explain the process of pipe drawing. (10 Marks)
b. Explain the various types of extrusion process. (10 Marks)

Module-5

- 9 a. Briefly explain the,
(i) Embossing
(ii) Coining (08 Marks)
b. Sketch and explain the
(i) Progressive dies.
(ii) Compound dies
(iii) Combination die. (12 Marks)

OR

- 10 a. Describe the different variables considered in drawing process. (05 Marks)
b. With a neat sketch explain the : (i) Piercing (ii) Trimming (iii) Shearing (15 Marks)

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