

CBCS SCHEME

18ME35A/MEA305

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Third Semester B.E. Degree Examination, July/August 2021

Metal Cutting and Forming

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions.

- 1 a. Sketch and explain Tool signature of Single point cutting tool. (07 Marks)
b. Determine the Shear Plane angle of Single Point cutting tool. (10 Marks)
c. What are the types of chips? (03 Marks)
- 2 a. Sketch and explain the parts of an Engine Lathe. (10 Marks)
b. What are the Lathe Operations? (05 Marks)
c. Differentiate between Engine Lathe and Capstan and Turret Lathe. (05 Marks)
- 3 a. Sketch and brief about the various Milling Operations. (10 Marks)
b. What are the methods of Indexing? (05 Marks)
c. Note the differences between drilling , boring and reaming operations. (05 Marks)
- 4 a. What are the differences between Shaper, Planar and Slotter? (08 Marks)
b. Sketch and explain Surface Grinding machine. (12 Marks)
- 5 a. What are the effect of Process Parameters on tool life? Explain. (10 Marks)
b. What are the functions of cutting fluids? (05 Marks)
c. What are the effect of Machining Parameters on Surface finish. (05 Marks)
- 6 a. What is Machinability and Machinability Index? Explain. (08 Marks)
b. The following equation for tool life is given for a turning operation $(VT^{(0.13)} f^{(0.77)} d^{(0.37)} = C)$. A 60min tool life was obtained while cutting at $V = 30\text{m/min}$, $f = 0.3\text{mm/rev}$ and depth of cut $d = 25\text{mm}$. Calculate the change in tool life, if the cutting speed , feed , depth of cut are increased by 25%, Individually and also taken together. What will be their effect on tool life? (12 Marks)
- 7 a. Sketch and explain different forging equipments. (12 Marks)
b. Write a note on different forging defects. (08 Marks)
- 8 a. Sketch and explain the types of Rolling Mills. (12 Marks)
b. What are the variables in drawing process? (08 Marks)
- 9 a. Sketch and explain Sheet Metal Cutting Operation. (12 Marks)
b. Brief out the different variables in drawing process. (08 Marks)
- 10 a. Explain : i) Drawing Ratio ii) Thickness Ratio iii) Drawing Force
iv) Blank holding force v) Ironing. (10 Marks)
b. Explain with neat sketches, Progressive and Combination dies. (10 Marks)

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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.