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## Third Semester B.E. Degree Examination, June/July 2024 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. (10 Marks)
- b. What do you mean by tool signature? Explain with respect to single point cutting tool. (10 Marks)

**OR**

- 2 a. Classify Lathes. Briefly explain various parts of lathe, with neat sketch. (10 Marks)
- b. List the operations performed on lathe and explain any four operations with a neat sketch. (10 Marks)

### Module-2

- 3 a. With sketch, write comparison between Up milling and Down milling. (10 Marks)
- b. Sketch and explain Radial drilling machine highlighting its advantages and disadvantages. (10 Marks)

**OR**

- 4 a. With a neat sketch, explain Quick return mechanism of a shaper. (10 Marks)
- b. With sketch, explain the External centreless grinding highlighting the feed mechanism. (10 Marks)

### Module-3

- 5 a. Explain the types of tool wear with necessary sketches. (10 Marks)
- b. A mild steel bar of diameter 50mm is to be turned at over length of 160mm with a depth of cut of 1.5mm, feed of 0.2mm/rev at 230 rpm by HSS tools. If the tool life equation is given  $VT^{0.2} f^{0.3} d^{0.12} = 50$ . Determine how many components may be turned before regrinding the tool. (10 Marks)

**OR**

- 6 a. Explain the properties and functions of cutting fluids. (06 Marks)
- b. Explain the effect of machining parameters on surface finish. (08 Marks)
- c. Explain Machinability and mention its importance. (06 Marks)

### Module-4

- 7 a. What is Forging? Explain the working of board hammer with sketch. (10 Marks)
- b. Give the brief classification of Metal forming. (10 Marks)

**OR**

- 8 a. With a neat sketch, explain the Wire drawing process. (10 Marks)
- b. Explain the various types of Extrusion processes. (10 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.

**Module-5**

- 9 a. Briefly explain the operations that can performed in the sheet metal. (10 Marks)  
b. Explain the variables in drawing process. (06 Marks)  
c. Differentiate between Trimming and Shearing. (04 Marks)

**OR**

- 10 a. Explain the following with respect to bending operations : (12 Marks)  
i) Embossing ii) Coining iii) Progressive die.  
b. With a line diagram, explain Compound and Combination dies. (08 Marks)

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