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10ME/AU/TL45

**Fourth Semester B.E. Degree Examination, June/July 2013**  
**Manufacturing Process – II**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer FIVE full questions, selecting at least TWO questions from each part.**

**PART – A**

- 1 a. Briefly explain the different types of chips produced during metal cutting with neat sketches. (06 Marks)  
b. In an orthogonal cutting operation, following data have been observed. Un cut chip thickness = 0.127 mm; Width of cut = 6.14 mm; Cutting speed = 2.6 m/sec; Rake angle = 20°; Cutting force = 589 N; Thrust force = 225 N; Chip thickness = 0.226 mm. Determine shear angle, friction angle and chip velocity. (08 Marks)  
c. With a neat sketch, explain crater wear and flank wear. (06 Marks)
- 2 a. List the desired properties of cutting tool materials and explain any four. (10 Marks)  
b. List the techniques to measure tool-tip temperature and explain tool-work thermocouple technique with a neat sketch. (10 Marks)
- 3 a. With a neat sketch, explain the constructional features of a Capstan lathe. (10 Marks)  
b. Explain hydraulic driving mechanism of a shaper with a neat sketch. (10 Marks)
- 4 a. With a neat sketch, explain the constructional features of a radial drilling machine tool. (08 Marks)  
b. With neat sketches, explain the following operations:  
i) Drilling ii) Boring iii) Counter sinking iv) Trepanning. (08 Marks)  
c. Write a note on CNC machines. (04 Marks)

**PART – B**

- 5 a. With a neat sketch, explain the constructional features of horizontal spindle column and knee milling machine. (08 Marks)  
b. Differentiate up milling and down milling with a neat sketch. (06 Marks)  
c. List the methods of indexing and explain any one. (06 Marks)
- 6 a. Explain the types of abrasives used in grinding wheel. (04 Marks)  
b. With a neat sketch, explain the constructional features of a centreless grinding machine. (08 Marks)  
c. Explain the factors to be considered while selecting a grinding wheel. (08 Marks)
- 7 a. What are the advantages and limitations of broaching process? (08 Marks)  
b. Explain the principle of lapping with a neat sketch. (06 Marks)  
c. Explain the principle of honing with a neat sketch. (06 Marks)
- 8 a. Explain laser beam machining with a neat sketch. (10 Marks)  
b. Explain ultrasonic machining with a neat sketch. (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.