

--	--	--	--	--	--	--	--	--	--

Fourth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Manufacturing Process - II

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

1. a. What is Rake angle? Explain the significance of positive and negative rake angles with suitable sketches. (04 Marks)
 b. Derive an expression for the shear angle in orthogonal cutting in terms of rake angle and chip thickness ratio. (08 Marks)
 c. A Lathe turning at a particular speed is cutting MS work piece with HSS tool. The speed – life relationship for the tool is given by $VT^{0.4} = 400$. Determine the percentage increase in the tool life, if the cutting speed is reduced by 20%. (08 Marks)
2. a. Briefly explain the salient points of following cutting tool materials i) HSS ii) CBN. (06 Marks)
 b. What is Coolant? Explain why coolant is used in metal cutting. (06 Marks)
 c. With neat sketch, explain different zones of heat generation in metal cutting. (08 Marks)
3. a. With suitable sketch, explain the typical layout for producing hexagonal bolt and nut on Capstan Lathe. (08 Marks)
 b. A cast iron plate of dimensions 600mm × 300mm × 60mm is to be rough shaped along its wider face. Calculate the machining time, if cutting speed is 9m/min. The return time to cutting time ratio is 1:4 and the feed is 3mm. The clearance at each end is 75mm. (06 Marks)
 c. What are the differences between Planet and Shaper? (06 Marks)
4. a. With neat sketch, explain the spindle drive mechanism in bench drilling machine. (04 Marks)
 b. With sketches, explain the following drilling operations : i) Reaming operation ii) Boring operation iii) Tapping operation and v) Trapping operation. (12 Marks)
 c. What are the advantages and disadvantages of CNC machine? (04 Marks)

PART - B

5. a. Explain briefly how milling machines are classified. (06 Marks)
 b. With suitable sketch, label all the important parts of plain milling cutter. (06 Marks)
 c. List out the differences between conventional milling and climb milling with suitable sketches. (08 Marks)
6. a. Briefly explain different abrasive materials used for making grinding wheel. (06 Marks)
 b. List and explain the factors considered in the selection of grinding wheel. (08 Marks)
 c. What is the function of bonds in grinding wheel? Briefly explain different bonding processes used. (06 Marks)
7. a. What is Broaching? Explain different types of broaching based in method of operation. (05 Marks)
 b. List the advantages and limitations of broaching. (05 Marks)
 c. Explain the following surface finishing processes : i) Honing ii) Buffing. (10 Marks)
8. a. With suitable sketch, explain Abrasive jet machining. What are the advantages and disadvantages of abrasive jet machining? (10 Marks)
 b. List and explain the parameters which affect the cutting rate in the Ultrasonic machining. (06 Marks)
 c. What are the Applications of EDM? (04 Marks)
