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Reg. No. : .....

Name : .....

Fifth Semester B.Tech. Degree Examination, November 2014
(2008 Scheme)
08.505 : MACHINE TOOLS (MN)

Time : 3 Hours Max. Marks : 100

Instructions : *Answer* ***all*** *questions from Part – A and* ***one*** *question from* ***each*** *Module of Part –* ***B.***

PART – A **(10×4=40 Marks)**

I. 1) Explain briefly with sketches orthogonal cutting and oblique cutting.

2) Define the term machinability, what do you mean by machinability index ?

3) Define the following terms in grinding (a) glazing (b) loading.

4) Briefly explain how knurling and forming operations are done using lathe.

5) Draw the Kinematic diagram of crank and slotted link mechanism of shaper machine.

6) Differentiate upmilling and down milling operations.

7) Explain the basic working principle of WEDM process.

8) What are the functions of chip breaker ? Name the types of chips produced in metal cutting.

9) What do you mean by high energy rate forming process ?

10) What is the difference between a turret lathe and an engine lathe ?

P.T.O.

PART – B

Module – I

II. a) Name the tool materials commonly used for metal cutting. Briefly describe the properties and application of any two of them. 10

b) Explain with sketches tool nomenclature and tool angles of a single point cutting tool. 10

OR

III. a) In orthogonal cutting operation following data have been observed : Uncut chip thickness = 0.127 mm, width of cut = 6.35 mm, cutting speed = 2 m/s, rake angle = 10° cutting force = 567 N, thrust force = 227 N, chip thickness = 0.228 mm. Determine shear angle, the friction angle, shear force and chip velocity. 10

b) Illustrate with merchant circle's diagram determine the relationship between cutting forces and angles. 10

Module – II

IV. a) Sketch and explain plain column and knee type milling machine showing its important parts. 10

b) Name the commonly used work holding devices in a centre lathe. With sketches explain the function of any two of them. 10

OR

V. a) Explain with sketches external centreless grinding and internal centreless grinding operations. 10

b) Draw the block diagram of horizontal shaper and write about its important parts. 10

Module – III

VI. a) Describe the essential parts of turret lathe with neat sketches. Differentiate capston and turret lathes. 10

b) Explain EBM process. What are the important characteristics of EBM process ? 10

OR

VII. a) What do you mean by Automatic machine tools ? Describe the construction and operation of single spindle automatic machine. 10

b) Explain electromagnetic forming process with neat sketches. Name the applications of electromagnetic forming process. 10
