



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**
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