



Reg. No. :

Name :

**Fifth Semester B.Tech. Degree Examination, November 2013
(2008 Scheme)
08.505 : MACHINE TOOLS (MN)**

Time : 3 Hours

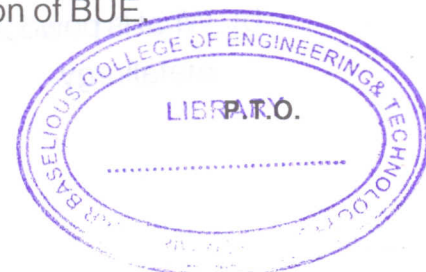
Max. Marks : 100

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

PART – A

(10x4=40 Marks)

- I. 1) What are the important factors affecting tool life in metal cutting ?
- 2) Briefly explain blank and crater wear in metal cutting operation.
- 3) Define the terms machinability and machinability index.
- 4) Define the terms dressing and truing used in grinding operations.
- 5) Briefly describe the functions of rests and mandrels in lathe.
- 6) Differentiate face milling and end milling operations.
- 7) Briefly explain about ceramics, diamonds and cemented carbide tool materials.
- 8) What are the advantages and limitations of using powder metallurgy ?
- 9) Explain the basic working principle of AJM process.
- 10) Define BUE. Name the factors that contribute to the formation of BUE.





PART – B

Module – I

- II. a) What are the important properties needed for cutting fluids ? Name the types of cutting fluids commonly used. 10
- b) How cutting tools are classified ? With sketches explain orthogonal cutting and oblique cutting. 10

OR

- III. a) During an orthogonal machining (turning) operation of C-40 steel, the following data were obtained : chip thickness = 0.45 mm, width of cut = 2.5 mm, feed = 0.25 mm/rev, tangential cut force = 1130 N, feed thrust force = 295 N, cutting speed = 2.5 m/s, Rake angle = + 10°. Calculate shear angle, shear force, kinetic coefficient of friction at the chip tool interface. 10
- b) What is the function of chip breaker ? Explain various types of chips produced in metal cutting. 10

Module – II

- IV. a) With neat sketches explain feed mechanism of engine lathe. 10
- b) Discuss the working of column and knee type milling machine with sketches. 10

OR

- V. a) Explain with sketches the principle of crank and slotted link mechanism in shaper machine. 10
- b) Describe the various types of abrasives used in grinding operation. Why natural abrasives are not preferred in making grinding wheel ? 10

Module – III

- VI. a) Explain EDM process. How is it different from ECM process ? 10
- b) What is Transfer machines ? What are the advantages and disadvantages of Transfer machining ? 10

OR

- VII. a) Explain in detail Explosive forming process with neat sketches. 10
- b) What is powder metallurgy ? Discuss the advantages and drawbacks of powder metallurgy. 10
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