

4E4142**4E4142****B.Tech. IVsemester (Main/Back) Examination, June/July - 2015****Mechanical Engg.****4ME3A: Machining & Machine Tools****Time : 3 Hours****Maximum Marks : 80****Min. Passing Marks : 26****Instructions to Candidates:**

Attempt any five questions, selecting one question from each unit. All questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly.

Units of quantities used/calculated must be stated clearly.

Unit - I

1. a) Explain the concept of generatrix and directrix. (8)
- b) Explain tool geometry of milling cutter and drills. (8)

OR

1. a) Explain geometry of single point cutting tool with significance of tool angles. Explain various tool nomenclatures and their interrelationship. (8)
- b) Explain mechanics of metal cutting and discuss various theories of metal cutting. (8)

Unit - II

2. Write short notes on:

- a) Machinability
- b) Tool life and tool wear (16)

OR

2. a) Define cutting fluid and their roles. What are the types of cutting fluids used while machining. And what properties machinist looking into cutting fluids while selecting them. (8)

- b) Explain different materials, along with their properties, that can be used for making the cutting tools. (8)

Unit - III

3. Define special purpose machine tool with examples. And write a short note on any two

- a) capstan and turret lathe machine tool
b) tracer attachment in machine tools
c) Swiss automatic

(16)

OR

3. a) Make a comparison between machine tools and machines. Discuss specifications of the following machine tools:

- i) lathe
ii) drilling
iii) milling
iv) shaper

(8)

b) Sketch a broaching tool and discuss various broaching operations. (8)

Unit - IV

4. How grinding wheels are specified. And discuss various abrasives and bonding materials used for making of grinding wheels. (16)

OR

4. Discuss various methods of thread manufacturing with sketches. (16)

Unit - V

5. a) Enlist various gears finishing processes and testing methods and explain any two of each. (8)

b) Enlist various high velocity forming methods and explain any two with sketch. (8)

OR

5. a) Enlist various gears manufacturing process and explain any two. (8)
- b) Enlist various precautions to be taken by operators for safe working on different machine tools. (8)