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4E4142

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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)**
