Code: ME5T2

III B.Tech - I Semester – Regular Examinations - November 2014

METAL CUTTING & MACHINE TOOLS
(MECHANICAL ENGINEERING)

Duration: 3 hours   Marks: 5x14=70

Answer any FIVE questions.   All questions carry equal marks

1. a) Categorize the three types of chips. What is BUE.   7 M

   b) Explain the geometry of a single point cutting tool angles.
                                                                7 M

2.   Describe the constructional features of speed gear box and
     feed gear box.   14 M

3. a) What are the different types of lathes.   7 M

   b) Describe the characteristic features of single and multi
      spindle automatic lathes.   7 M

4. a) How the quick return motion is incorporated in a shaping
      machine.   7 M

b) A hydraulic shaper is used for shaping a plane surface of 30X250 mm with a cutting speed of 60 m/min and feed of 0.6mm per stroke. Calculate the machining time and material removal rate if the depth of cut is 3mm. Also calculate the power consumed in the process.   7 M

5.   Describe the operations performed and working principle of a slotting machine.   14 M

6. a) Explain the twist drill geometry with the help of neat sketch.   7 M

   b) Explain about the tool holding and work holding devices in drilling operation.   7 M

7. a) What is a dividing head. Differentiate between simple and compound indexing.   10 M

   b) Differentiate upmilling and downmilling.   4 M

8. a) Featurise the characteristics of various abrasive processes.   7 M

   b) Classify the grinding machines based on the type of surface produced.   7 M