Code: ME5T2

III B.Tech - I Semester – Regular Examinations - November 2015

METAL CUTTING & MACHINE TOOLS
(MECHANICAL ENGINEERING)

Duration: 3 hours   Max. Marks: 70

Answer any FIVE questions.   All questions carry equal marks

1. a) What are the various types of chips formed during metal cutting?   6 M

   b) What is the difference between orthogonal cutting and oblique cutting?   8 M

2. a) What are desirable properties for tool materials? What is the most common nonferrous tool material used?   6 M

   b) During turning process with 7-α-6-6-8-30-1 mm (ASA) tool the undeformed chip thickness of 0.2 mm and with of cut of 2.5mm were used. The side rake angle of the tool was chosen such that machining could be approximated to be orthogonal cutting. The tangential cutting force and thrust force were 1177N and 550N respectively.   8 M
   Calculate: (i) The side rake angle,
   　　　　　　(ii) Co efficient of friction at the rake face,
   　　　　　　(iii) The dynamic shear strength of the work material.

3. a) What is tumble gear mechanism? 6 M

   b) What is the difference between lathe accessories and
   attachment? 8 M

4. a) What is stroke length in shaper and how can one adjust the
   stroke length in shaper? 7 M

   b) What are the different work holding devices used in
   shaper? 7 M

5. a) What are the different types of planing machines and
   explain one of them with schematic diagram? 6 M

   b) What is meant by specification of a machine tool? What
   are the specifications of slotting machine? 8 M

6. a) Describe the classification of Boring Machines. 5 M

   b) With the help neat schematic diagram describe the various
   parts of radial drilling machine and their functionality.
   9 M

7. a) What is the difference between upward milling and
   downward milling? 7 M

   b) What is indexing? Briefly discuss about compound
   indexing with suitable example. 7 M

8. a) How can one designate grinding wheel? 6 M

b) Why does vertical honing machine is preferred than horizontal one? 8 M