Code: ME5T2

III B.Tech - I Semester – Regular/Supplementary Examinations October 2018

METAL CUTTING AND MACHINE TOOLS
(MECHANICAL ENGINEERING)

Duration: 3 hours   Max. Marks: 70

PART – A
Answer *all* the questions.   All questions carry equal marks
$$11x\ 2 = 22\ M$$

1. a) What is crater wear and flank wear?

   b) How is tool life affected by variations in the feed rate and depth of cut?

   c) Write the advantage of multiple start threads compared to single start threads.

   d) Why lathe beds are made of cast iron?

   e) Differentiate between shaper and planer.

   f) How to adjust the length of stroke in shaper?

   g) Write the advantages of carbide tipped drill.

   h) Explain lapping operation.

   i) What is the term grade and grit of a grinding wheel?

   j) Define the term cutting speed as applied to milling operations.

   k) List any four accessories of millling machine.

PART – B

Answer any ***THREE*** questions.   All questions carry equal marks.   3 x 16 = 48 M

2. a) Derive an expression to show the relationship between chip thickness ratio, shear angle and rake angle.   8 M

   b) A high speed steel tool is used for machining a workpiece of mild steel. While machining at a cutting speed of 30m/min, the tool life is found to be 1 hour. What will be the tool life if the same tool is used to cut at a speed of 40 m/min. Assume n=0.12.   8 M

3. a) Draw a neat diagram of engine lathe. Describe and mark its main parts and controls.   8 M

   b) Explain the working of turret indexing and stop drum mechanisms used on turret and capstan lathes.   8 M

4. a) Explain the working of automatic table feed mechanism of a shaper.   8 M

   b) Describe the belt drive mechanism used for driving the table of a planer.   8 M

5. a) With the help of a neat sketch, show the different angles of a drill and explain them.   8 M

b) Describe the construction and working of a universal
tool and cutter grinder.   8 M

6. a) Classify and explain the various types of milling cutters.
                                                     8 M

b) With the help of a neat sketch, explain the working of a
universal dividing head.   8 M