Registration No. : | | | | | | | | | | |

Total number of printed pages – 2

B. Tech

PCME 4304

Fifth Semester (Back/Special) Examination – 2013

MACHINING SCIENCE AND TECHNOLOGY

BRANCH : MECH

QUESTION CODE : D 302

Full Marks – 70

Time : 3 Hours

*Answer Question No. **1** which is compulsory and any **five** from the rest.*

The figures in the right-hand margin indicate marks.

1. Answer the following questions : 2×10

   (a) Name the two systems of designating the cutting tool and how they differ from each other.

   (b) How does the rake angle affect the life of the cutting tool ?

   (c) What are the significant characteristics of HSS ?

   (d) Name the common dielectric fluids used in EDM.

   (e) What are the main functions of cutting fluid ?

   (f) Define electron beam.

   (g) What is the function of saddle in lathe ?

   (h) Differentiate planner and shaper.

   (i) Compare group drive and individual drive.

   (j) Name the factors that contribute to flank wear.

2. A mild steel bar of 100mm is being turned with a tool having ASA tool signature as: 6° -10° -5° -7° -10° -30° -0.5 mm. Determine various components of the machining force and the power consumption. Consider : Depth of cut = 2.5 mm, feed = 0.125 mm/rev, turning speed of job = 300 rev/min, co-efficient of friction at tool-work interface = 0.6, ultimate shear stress of the work material = 400 Mpa. 10

3. (a) Discuss Taylors relationship for cutting speed- tool life. 5

(b) Discuss the various types of cutting fluid and their characteristics. 5

4. (a) Draw the block diagram of a vertical milling machine and explain its major parts. 6

(b) Differentiate pull and push type broaches with their relative advantages and disadvantages. 4

5. (a) Briefly discuss about the different centreless grindings. 5

(b) Describe the mechanism of speed transmission from motor to spindle and speed reversal mechanism of lathe. 5

6. Explain, in detail, with neat diagram the working of wire EDM and state its advantages, disadvantages and applications. 10

7. (a) Explain the principle of quick return mechanism. 5

(b) Describe the working of turret lathe and how it differ from normal machine lathes ? 5

8. Write short notes on any **four** of the following : 2.5×4

(a) Crater wear

(b) Lathe tool dynamometer

(c) Gear hobbing machine

(d) Machinability criteria

(e) Copying lathe.