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Total number of printed pages – 2

B. Tech
CPME 6308 (Old)

Sixth Semester (Back) Examination – 2013

MANUFACTURING SCIENCE - II

BRANCH : MECH

QUESTION CODE : B361

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
- What is the use of a chip breaker ?
 - Differentiate between negative and positive rake angle.
 - Name the main four functions performed by the machine tool.
 - Differentiate “forming” and “generating”.
 - How drills are held in a drilling machine ?
 - What is the principle of EDM ?
 - What is the purpose of a chemical milling ?
 - How the size of a planner expresses ?
 - Name the abrasive and carrier gases used in abrasive jet machining.
 - Differentiate planner and shaper.
2. (a) The cutting and the thrust components of the machining force during orthogonal machining of aluminium with rake angle of 10° are found to be 312 N and 185 N respectively. 10
- Estimate the co-efficient of friction between the tool and chip.
 - If the rake angle is reduced to 0° , keeping all the other parameters the same, and if the coefficient of friction also remains unchanged, estimate the new value of cutting and thrust components, using Merchant’s first solution.

P.T.O.

3. (a) A taper pin of length 84 mm has a taper length of 52 mm. The larger diameter of taper is 88mm and the smaller diameter is 78 mm. Determine :
- (i) Taper in mm/meter and in degrees. 5
- (ii) The angle to which the compound rest should be set up. 5
- (iii) The tail stock setting over. 5
- (b) Briefly explain the different parts of a horizontal shaper and their functions with neat diagram. 5
4. (a) Sketch and describe the vertical milling machine. 5
- (b) Define grinding wheel. What is meant by “grade” and “structure” of a grinding wheel ? Explain the process of dressing and truing of grinding wheel. 5
5. (a) Describe the mechanism of speed transmission from motor to spindle and speed reversal mechanism of lathe. 5
- (b) Explain the different tool and job holding methods of milling machine. 5
6. (a) Explain in detail with neat diagram the working of electro chemical machining process. 10
7. (a) Explain the ultrasonic machining with its advantages and disadvantages. 5
- (b) Compare the laser beam machining and plasma arc machining with respect to their principle of operation, application and advantages. 5
8. Write short notes on any **two** : 5×2
- (a) Tool Dynamometer
- (b) Quick return mechanism
- (c) Capstan and Turret lathe
- (d) Wire EDM.

