SE - sem-IV (old) Mech - PP-II 15/12/16
Production Process-II

Q. P. Code : 554502

(3 Hours) [Total Marks: 100]

N.B.:

1) Question No. **1** is **compulsory**.
2) Attempt any **four** from remaining **six** questions.
3) **All** questions carry **equal** marks.
4) Missing data can be **suitably** assumed.

1. Attempt any four:- 20
   a) Write a note on defects in sheet metal rolling process.
   b) How are jigs and fixture classified?
   c) What are the characteristics of an ideal cutting tool material?
   d) What is the function of a chip breaker?
   e) What are the purposes of gear finishing?
   f) Write a note on lathe tool mechanical type tool dynamometer.
2. a) What is meant by angular location? Explain it for locating connecting rod for machining. 10
   b) What error is caused by the improper orientation of 'V' location? 10
3. a) Derive the following relationship for the shear angle (ø): 10

$$\emptyset = tan^{-1} \frac{[r \cos \propto]}{1 - r \sin \propto}$$

   Where, r = chip thickness ratio
   $\propto$ = Tool rake angle.
   b) Explain briefly the regions of heat generation in metal cutting. 10
4. a) Name and explain different cutting tool material. 10
   b)In orthogonal cutting operation, the following data have been observed : 10
   i. Un cut chip thickness t = 0.127 mm ii. Width of cut b= 6.35 mm
   iii. Cutting speed V = 2 m / s iv. Rake angle $\alpha = 10^0$
   v. Fc. = 567 N. vi. Thrust force Ft.= 227 N.
   vii. Chip thickness, t_c = 0.228 mm.
   Determine the following:
   Shear angle, the friction angle, shear stress along the shear plane and power for the cutting operation.
5. a) Differentiate between a 'drop-and 'inverted' blanking die. 10
   b) Explain with sketch progressive die. With advantages and limitations. 10
6. a) Name different methods of gear finishing and explain briefly any two of them. 10
   b) Sketch the internal round broach and write briefly on the following elements. 10
   I. Rake and relief angles
   II. Depth of cut per teeth
   III. Width of land.
7. Attempt any four:- 20
   a) Explain briefly the ring rolling.
   b) What are the functions of cutting fluid?
   c) What are the difference between jigs and fixtures?
   d) What is 'chip thickness ratio'?
   e) On what factors do the tool life depends.

182