(OLD COURSE)   QP Code : **14418**

(3 Hours)   [Total Marks : 100

N. B. : (1) Question No. **1** is **compulsory**.
   (2) Attempt any **four** questions from remaining questions.
   (3) **Figures** to the **right** indicate **full marks**.
   (4) Missing data may be suitably assumed.

1. Write a short not on any **four** :-   **20**
   (a) What is the six point locating principle?
   (b) Write a note on centre of pressure in die design.
   (c) Mechanical type tool dynamometer.
   (d) Drilling bush.
   (e) Types of coolants' and explain any one.

2. (a) How the lathe fixture are mounted on lathe spindle.   **10**
   (b) Compare the jigs and fixture and explain twelve degree of freedom of work piece.   **10**

3. (a) A bar of outside diameter 35mm was turn orthogonally on a lathe. The following   **12**
      data available, rake angle 10°' cutting speed 15 m/min, feed 0.10mm/ rev, length
      of continuous chip in one revolution 50.72 mm cutting force 200kg, feed force
      80 kg. calculate coefficient of friction, shear angle, velocity of chips along the
      tool face and chip thickness.
   (b) Explain with neat sketch the orthogonal rake system (ORS) of describing a single   **8**
      point cutting tool geometry.

4. (a) Name different types of jigs and explain one of them with neat figure.   **8**
   (b) Explain with diagram the Marchants circle in metal cutting operation.   **7**
   (c) Write applications of forging and extrusion.   **5**

5. (a) Discuss the different types of tool material with their relative advantages and   **10**
      limitations.
   (b) Discuss the method of avoiding sticking of blanks to the punch in case of very   **10**
      small size punches.

6. (a) What factors should be considered for selecting appropriate press for given job?   **6**
   (b) Prove that $2\varphi + \beta - \gamma = \pi/2$ holds well in orthogonal cutting, where φ = shear   **9**
      angle, β = friction angle and γ = rake angle.
   (c) Explain thread rolling.   **5**

LM-Con. 10569-14.   **[TURN OVER**