BME-008

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING) / (BTMEVI)

Term-End Examination

□1□□□   June, 2016

BME-008 : MACHINING TECHNOLOGY

Time : 3 hours   *Maximum Marks : 70*

Note : *Attempt any five questions. All questions carry equal marks. Use of scientific calculator is permitted.*

1. (a) Define Orthogonal Cutting. Draw Merchant's force circle diagram for the orthogonal cutting.   7

    (b) What are the different types of chips obtained during a machining process ? Discuss the conditions desired in each type of chip formation.   7

2. During a metal removing process the following observations are made :

   (a) Cutting operation = Orthogonal

   (b) Cutting tool Rake Angle = 10°

   (c) Tool chip contact length (l) = 1·25 mm

   (d) Tool chip contact lenght (l_1) = 0·75 mm

   (e) σ_{max} = 2200 kg/cm^2

   (f) τ_{max} = 800 kg/cm^2

   Calculate the average value of the coefficient of friction and the resultant force for an 8 mm wide cut. *14*

3. (a) What do you understand by grinding wheel dressing, truing and balancing ? *7*

   (b) How will you specify a grinding wheel ? Explain each information given as the specification on a grinding wheel. *7*

4. (a) How do you define the tool life ? Explain the factors/parameters that affect the tool life of a single point cutting tool. *7*

   (b) With the help of a neat sketch, differentiate the waviness and roughness of the surfaces. *7*

5. (a) Discuss the process parameters and characteristics of Electron Beam Machining. *7*

   (b) What is micro-machining ? What are the different processes of micro-machining ? Explain any one in detail. *7*

6. (a) Explain the principle and working of Abrasive Flow Machining process. List the advantages of it.   7

(b) Draw a schematic diagram of Electric Discharge Machining process. Explain the mechanism of material removal.   7

7. (a) What are the differences between the Electrochemical Machining and Electric Discharge Grinding ?   7

(b) A cylindrical impression of dia 10 mm and a depth of 2 mm is to be made. Suggest the suitable metal removing process and explain it in detail.   7

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

$$4\times3\frac{1}{2}=14$$

(a) Role of Cutting Fluid during Machining

(b) Application of Cemented Carbide Tools

(c) Abrasive Jet Machining

(d) Machinability

(e) Abrasives used for making a Grinding Wheel

(f) Creep Feed Grinding Process

(g) Friction, Wear and Lubrication