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**BME-003**

# B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

01890

## BTCLEVI/BTMEVI/BTELVI/BTCSVI/BTECVI

## Term-End Examination

## June, 2014

## BME-003 : MANUFACTURING TECHNOLOGY

*Time : 3 hours* *Maximum Marks : 70*

***Note :*** *All questions are* ***compulsory****. Use of scientific calculator is allowed.*

**1.** Answer any ***eight*** questions : *8×5=40*

(a) Why does distortion occur in welding ? Describe four types of distortions in welding.

(b) What is sheet metal forming ? How can sheet metal forming processes be classified ?

(c) List the various forging operations. Explain any two with the help of neat sketches.

(d) Distinguish between pore water and free water. Explain their effects on the green strength of the sand.

(e) What are the basic requirements of a proper moulding sand ?

(f) Distinguish between drawing and extrusion processes.

(g) Discuss the mechanism of metal flow in rolling.

(h) What are elastic and plastic bending ? Explain spring-back in bending.

(i) What is the function of the flux ? Give different types of flux used in Submerged Arc welding.

(j) List various Arc cutting processes. Explain Carbon Arc cutting.

**2.** Answer any ***two*** of the following questions : *2×10=20*

(a) Determine the force required for blanking a circular disc of 30 mm diameter from C-20 steel sheet whose thickness is 1·5 mm. Also determine the die and punch sizes for blanking the circular disc. Shear strength of annealed C-20 steel is 294 $N/mm^2$.

(b) For drilling operation, derive the relation for drilling time and material removal rate.

(c) During orthogonal machining with a cutting tool having a 12° rake angle, the chip thickness is measured to be 0·44 mm, the uncut chip thickness being 0·18 mm.

Determine :

(i) Chip thickness ratio

(ii) Shear plane angle

(iii) Shear strain

3. Write short notes on any ***two*** of the following : *2×5=10*

(a) Effects of process parameters on the cutting force

(b) Reverberatory furnaces

(c) Principal ingredients of moulding sands

(d) Types of forging dies

(e) Submerged Arc welding