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BME-003

00419

BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

December, 2010

BME-003 : MANUFACTURING TECHNOLOGY

Time : 3 hours *Maximum Marks : 70*

Note : *All the questions are **compulsary.** Use of calculator is allowed.*

1. Answer ***any eight*** questions : **8x5=40**

(a) Why induction furnaces are popular for melting of non-ferrous metals ?

(b) What should be the properties of good moulding sand ?

(c) Discuss the effect of pre-heating of the mould.

(d) What do you understand by the theory of plasticity ? How plastic deformation differs from elastic deformation ?

(e) What is forging of metals ? How forging processes are classified ?

(f) Describe the care that should be taken while removing phosphorus in electric furnace.

(g) What is distortion in welding ? Write four ways to control distortion in the base metal.

(h) Discuss the advantages and limitations of Gas Tungster Arc Welding Process.

(i) Why arc length is considered to be an important factor in arc welding ? How the heat developed by an arc is related with arc voltage, arc current and welding time ?

(j) Explain the purpose of keeping difference in the diameter of punch and die in a shearing process.

2. Attempt ***any two*** questions : **10x2=20**

(a) During orthogonal cutting a bar of 90 mm diameter is reduced to 87.6 mm. If the mean length of the cut chip is 88.2 mm and rake is 15°, calculate :

(i) Cutting ratio

(ii) Shear angle

(b) A hole of 30 mm diameter and 75 mm depth is to be drilled. The suggested feed is 1.3 mm per revolution and the cutting speed is 62 m/min. Assuming tool approach and tool overtravel as 6 mm, calculate :

(i) Spindle rpm

(ii) Feed speed

(iii) Cutting time

(iv) Material removal rate.

(c) A cup of diameter 10 cm is to be drawn from a blank of diameter 40 cm. Determine the number of steps necessary. Assume mean coefficient of drawing = 2.0. If the initial thickness of the sheet is 1.5 mm and final height of the cup is 40 cm, determine the final wall thickness of the cup

3. Write short notes on ***any two*** of the following : 10

(a) Specifications and Testing of Moulding sand

(b) Centrifugal casting

(c) Economics of Machining

(d) Single point cutting tool geometry
