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BME-003

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BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination
June, 2012

BME-003 : MANUFACTURING TECHNOLOGY

Time : 3 Hours *Maximum Marks : 70*

Note : *Answer **any seven** questions. Use of calculator is allowed. Assume suitable data if any missing.*

1. (a) Name the properties of Green. Sand state the effects of clay and moisture on permeability of moulding sand. **5+5**

   (b) What are the factors to be considered during the selection of a furnace in a casting operation ? What is inoculation ?

2. (a) Briefly discuss the steps with fig in sequence for producing casting from shell molding processes. **5+5**

   (b) Explain the effects of various additives used in moulding sand.

3. (a) Distinguish between elastic and plastic deformation of a material. What are advantages and disadvantages of hot working ? **5+5**

(b) Define the following for a forging die with the help of a sketch.

(i) Flash (ii) Cutter

(iii) Draft (iv) Parting line.

4. (a) Describe the method of calculating 5+5

(i) Cutting force (Shearing) force in Blanking and Punching.

(ii) The variation of cutting force with various stages during shearing of metals.

(b) What is scrap strip Layout ? State the factors which affect clearance between the punch and die.

5. (a) Name the parameters of a single point cutting tool in their proper sequence. Briefly explain with figure. 5+5

(b) What important role the Chip Breakers play during machining of metals ? Discuss.

6. (a) A mild steel bar is turned on a lathe at a rotational speed of 200 rpm over its 120 mm length using 0.5 mm feed per revolution . If the cutting force is 180 kg, diameter of the bar = 50mm calculate . 5+5

(i) Power consumed in cutting

(ii) The total amount of Heat generated during cutting.

(b) What are different ways of applying cutting fluids ? How does cutting fluid improve the tool life ?

7. (a) Explain the terms'cutting speed: 'feed; and 'Depth of cut; as applicable to metal cutting. 5+5

(b) In a plain milling operation on a mild steel block the following data are collected, cutting speed =30m/min, feed rate =72mm/min diameter of cutter =70 mm, no. of teeth in cutter = 8, width of cut = 80mm and depth of cut = 5mm, take the average cutting force for the given material =375kg.

(i) Calculate the rotational speed of cutter.

(ii) Maximum chip thickness.

8. (a) Explain the principle of shielded metal Arc welding with fig. What is the function of coating on electrode ? 5+5

(b) Why is the deposition rate high in submerged Arc welding ? State the disadvantages of submerged Arc welding.

9. (a) What are the factors affecting the distortion in welding ? Explain different methods to control distortion ? 5+5

(b) Explain oxyfuel welding with figure.

10. (a) Discuss the principle and operation of carbon arc cutting process. 5+5

(b) What is gouging ? State the advantages and disadvantages of plajma arc cutting.