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BME-010

00435

BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

June, 2010

BME-010 : TOOL ENGINEERING AND MANAGEMENT

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any seven** questions. Use of calculator is allowed.*

1. (a) What is milling ? Explain the milling operations with the help of neat sketch. **5+5=10**

(b) A 120 mm diameter cutter having 10 teeth cuts steel bar with a width of 100 mm and feed rate 180 mm/min. The depth of cut is taken as 6 mm. Find the minimum and maximum chip thickness in face milling operation.

2. (a) State some of the important characteristics of following tool materials. **5+5=10**

(i) High speed steels

(ii) Ceramics

(b) In an orthogonal cutting operation, the depth of cut is 4 mm, width is 16 mm, cutting speed is 0.7 m/s and the rake angle is 0°. The cutting force and thrust force are 1100 N and 800 N respectively. Shear angle is 45°. Calculate coefficient of friction between the chip and the tool. Calculate power required in Watt. Calculate length of shear plane.

3. (a) State locating principle. Describe various types of locators. **5+5=10**

(b) List different types of fixtures. Explain working of milling fixture.

4. (a) Discuss with the help of a neat sketch the different parts of a simple cutting die. **5+5=10**

(b) Briefly describe various types of forming tools with neat sketches.

5. (a) What are the various types of moulding machines ? Describe any two of them. **5+5=10**

(b) Describe various types of containers used in foundry.

6. (a) What are the various causes of accidents ? Discuss the various safety norms in the industry. **5+5=10**

(b) Discuss various steps involved in laying out center hole using centre head.

7. (a) What is the purpose of laying out the workpiece ? **5+5=10**

(b) Discuss briefly the preparation of surface for layout. How do you lay parallel line to an edge ?

8. (a) How are the guideways classified ? Explain with figures the guideways with sliding frictions. **5+5=10**

(b) Explain the design criteria for selection of material for machine tool structure.

9. (a) Discuss the various problems in setup planning. **5+5=10**

(b) What is setup time and economic batch size (EBS) ?

10. (a) Explain in detail STEP-NC enabled intelligent control. **5+5=10**

(b) What are the challenges and opportunities for the future STEP-NC ?