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BME-010

01245

BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

June, 2012

BME-010 : TOOL ENGINEERING AND MANAGEMENT

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any seven** questions. Use of calculator is allowed. Marks for sub - divisions of questions are as indicated.*

1. (a) Explain the different types of cutting tools, with suitable examples. 5+5

   (b) A hole of 40 mm diameter and 80mm depth is to be drilled in a mild steel component. The cutting speed can be taken as 50m/min and feed rate as 0.30 mm/rev. Calculate the machining time.

2. (a) In an orthogonal cutting operation, the cutting velocity is 30 m/min and the chip velocity is 20 m/min. if the rake angle of the tool is 20° calculate the shear angle and shear velocity. 5+5

   (b) State clamping principle. List various types of clamps with appropriate applications.

3. (a) What is the purpose of a stripper ? What are the different types of strippers ? Describe any one of them. 5+5

(b) What is a die ? What are the different types of dies ? Describe any one of them in detail.

4. (a) Briefly describe various types of forming tools with neat sketches. 5+5

(b) Discuss the graphical method of determing the profile of circular form tool.

5. (a) What is the purpose of laying out the work piece ? Also describe the working of centre punch and surface gauge. 5+5

(b) Why do we use cutting fluids ? Explain in brief various cutting fluids used in metal cutting.

6. (a) Discuss various steps involved in laying out centre hole using centre head. 5+5

(b) How do you layout the locations of holes, slots and radii ? Explain.

7. (a) Describe the automatic tool-changing mechanism on turning centre. 5+5

(b) Explain the following:

(i) Tool handling system

(ii) Tool fault detection system.

8. (a) What is tool storage policy ? Explain advantages and disadvantages of tool storage Policies. 5+5

(b) What are the various functions of guide ways ? Explain the principle of sliding friction

9. (a) What are principle parameters in designing slide ways ? Design the slide ways for machine tool. 5+5

(b) What are the functions and requirements of spindle ? Design the spindle for machine tool.

10. (a) What is process planning ? Explain the significance of setup planning in process planning. 5+5

(b) Explain in brief, the working of Web-based Virtual Machine Tool operation (WVMT).