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BME-010

BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

December, 2013

BME-010 : TOOL ENGINEERING AND MANAGEMENT

Time : 3 hours *Maximum Marks : 70*

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

1. (a) Name the important tool materials. Describe their distinguishing features. 7

   (b) Explain and sketch the geometry of single point cutting tool. 7

2. A carbide tipped tool of designation 0-10-5-5-8-90-1mm (ORS) is used to turn a steel work piece of 50 mm dia. with a cutting speed of 240 m/min and feed of 0.25mm/rev. The data obtained shows the cutting force = 180kg, feed force = 100kg and chip thickness = 0.32mm. Calculate the shear angle, shear force, normal force acting on shear plane, friction force, coefficient of friction, friction angle and chip flow velocity. 14

3. (a) What is location of work pieces ? Explain the different location methods. 7

(b) What is meant by idle time ? State what steps are taken when designing jigs and fixtures in order to reduce idle time. 7

4. (a) Differentiate between a compound die and progressive die with the help of diagram. 7

(b) What precautions must be observed when designing small diameter piercing punches ? What is the purpose of a backing plate when used with piercing punches ? 7

5. (a) Describe a systematic procedure for designing a circular form tool with the help of suitable example. 10

(b) Explain various types of container used in foundry. 4

6. (a) Discuss the different-methods of laying out-of centre Holes. 7

(b) Discuss the various safety norms followed in the industry to avoid accident. 7

7. (a) What is the importance of slide-ways in machine tool design ? Describe the main types of slide-ways used in machine tools. 7

(b) What are the advantages of CNC machine? Explain in detail. 7

8. Write short notes on **any four** of the following : **3½x4=14**

(a) General purpose machine tool

(b) Chip removal methods

(c) Milling fixture

(d) Blanking and punching

(e) Flexible manufacturing system

(f) Process planning