| BME-010 |

# BACHELOR OF TECHNOLOGY IN MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

01519

## Term-End Examination
## December, 2010

### 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. Assume suitable data if any missing.*

1.  Discuss the factors that have to be considered **10** when cutting tools are designed. Explain the factors with specific reference to the design of single point-cutting tools. Sketches should be given to supplement your answer.

2.  (a)  What is the difference between Single Point **5** cutting tool and Multi Point cutting tool ? Discuss.

    (b)  (i)  Distinguish between Tungsten **5** Carbide and Coated Carbide tools. Explain in detail.

    (ii)  List four important characteristics of Ceramic tool materials.

3. In orthogonal turning of a 50 mm dia mild steel bar on a lathe the following data were obtained ; **10**

Rake angle = 15°

Cutting speed = 100 m/min,

Feed = 0.2 mm/rev,

Cutting force = 1765 N,

Feed force = 588 N,

Chip thickness = 0.3 mm.

Calculate :

(i) Shear plane angle

(ii) Co efficient of friction

(iii) Cutting power

(iv) Chip flow velocity

(v) Shear force

4. (a) What essential factors will you consider while designing a drill jig ? Discuss. **5**

   (b) What is the difference between a Jig and a fixture ? Discuss in brief the working of milling fixture. **5**

5. (a) Explain in brief the main purpose of the following in die design. **6**

   (i) Pilot     (ii) Stripper

   (b) What is the difference between a Progressive die and a Combination die ? Discuss with sketches. **4**

6. Discuss the graphical method of determining the profile of circular form tool. Explain each step in a systematic manner. Discuss the applications of form tools. **10**

7. (a) What is sand slinger and how does it differ from other moulding machines ? Discuss with figure. **5**

   (b) Explain various types of Gating System in a sand mould. **5**

8. (a) How do you layout the hole locations, slots and radius ? Discuss with neat sketch. **5**

   (b) List various layout accessories with their uses. Explain with figure. **5**

9. (a) Write a descriptive note on "Tool management in Flexibly Automated Processes". Discuss the role and utility of information system in tool Engineering. **5**

   (b) What main characteristics the machine tool bed should possess ? What are spindle bearings ? Why are they used ? **5**

10. (a) Describe the Principle of Numerical control of machines. What factors lead to the need for X and development of Numerical control ? Name some typical applications of NC ? **5**

(b) Differentiate between bidirectional 5
information flows with unidirectional
information flow. Explain

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