

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

Term-End Examination

June, 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) Why High Carbon Steel cannot be totally eliminated from the family of cutting tool materials ? Discuss. 4
- (b) In an orthogonal turning operation on a lathe the following data were obtained: Cutting force=120kg, Feed force=30 kg, Back rake angle=15°, Feed rate=0.2 mm/rq, chip thickness=0.3mm, cutting speed= 100m/min, workpiece diameter=120mm, depth of cut=0.4mm. Calculate chip thickness ratio, shear angle, coefficient of friction, friction angles and shear stress. 10

2. (a) What do you understand by the term 'tool signature' ? Explain. 4
- (b) What provision can be made for easy handling of heavy jigs and workpieces ? Explain with the help of suitable sketches. 10
3. (a) Discuss the variation of cutting force during various stages of shearing of metal. 4
- (b) Name the different types of blanking and piercing dies. Explain briefly the principles of die design with fig. 10
4. (a) Which type of moulding machine is suitable for ramming of the sand for large moulds ? Explain. 4
- (b) Give a systematic procedure for designing a circular form tool. Explain each step with an example. 10
5. (a) Discuss the various safety norms in the Industry. 4
- (b) How do you layout the hole locations using test and proof circles ? Explain with figure. 5
- (c) What is the difference between prick punch and center punch ? Explain with fig. 5

6. (a) Give three reasons why cast iron is the materials mainly used for the production of machine Beds. Explain briefly. 4
- (b) Explain the significance of setup planning in process planning. 5
- (c) Discuss the challenges and opportunities of STEP-NC. 5
7. Write short notes on **any four** : $3\frac{1}{2} \times 4 = 14$
- (a) Stifness and rigidity of machine tool
- (b) Die wear
- (c) Chip control
- (d) Single point cutting tools
- (e) Milling fixture
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