

**B.Tech. MECHANICAL ENGINEERING  
(COMPUTER INTEGRATED  
MANUFACTURING)**

**00713 Term-End Examination**

**June, 2018**

**BME-010 : TOOL ENGINEERING AND MANAGEMENT**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Answer any **seven** questions. All questions carry equal marks. Marks for subdivisions of questions are as indicated. Use of scientific calculator is allowed.*

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1. (a) Distinguish between special purpose and general purpose machine tools.
- (b) A hole of 25 mm diameter and 60 mm depth is to be drilled in a mild steel component. The cutting speed can be taken as 65 m/min and the feed rate as 0.30 mm/rev. Calculate the machining time. Assume  $\gamma = 59^\circ$ . 5+5=10

2. (a) State clamping principle. List various types of clamps with appropriate applications.
- (b) In an orthogonal cutting operation, the cutting velocity is 40 m/min and chip velocity is 20 m/min. If the rake angle of the tool is  $15^\circ$ , calculate the shear angle and shear velocity.  $5+5=10$
3. (a) Discuss with the help of a neat sketch, the different parts of a simple cutting die.
- (b) Briefly describe various types of forming tools with neat sketches.  $5+5=10$
4. (a) Discuss the various problems in set-up planning.
- (b) What is set-up time and economic batch size (EBS)?  $5+5=10$
5. (a) Explain in detail, STEP-NC enabled intelligent control.
- (b) What are the challenges and opportunities for the future of STEP-NC?  $5+5=10$
6. (a) State briefly the preparation of surface for a layout. How can you lay parallel lines to an edge?
- (b) Explain laying out center holes. State the various steps involved in laying out a center hole using a center head.  $5+5=10$

7. (a) Briefly explain about tool fault detection system.
- (b) State advantages and disadvantages of Tool Storage Policy 2.  $5+5=10$
8. (a) What are the limitations of conventional CNC machines ? Explain.
- (b) What are the various causes of accidents ? Discuss the various safety norms in the industry.  $5+5=10$
9. (a) How do you design a punch ? Explain the design of plain punch with a neat diagram.
- (b) Explain the principle of working of a compound die, with a neat diagram.  $5+5=10$
10. (a) What are the various types of hand tools used in foundry ? Explain.
- (b) Briefly describe the working principle of Roll-over Machine, with a neat diagram.  $5+5=10$
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