

794171

No. of Printed Pages : 4

BME-010

**B. TECH. MECHANICAL  
ENGINEERING (CIM)**

**Term-End Examination**

**December, 2019**

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

*Time : 3 Hours*

*Maximum Marks : 70*

---

*Note : Attempt any seven questions. Assume any  
suitable data, if missing. Use of scientific  
calculator is allowed.*

---

1. (a) What do you understand by tool signature ?

With a neat sketch, explain single point  
cutting tool geometry.

5

- (b) State the important characteristics of the following tool materials : 5
- (i) High Speed Steel (HSS)
  - (ii) CBN
2. (a) State locating principle. Describe various types of locators. 5
- (b) List different types of fixtures. Explain working of milling fixture. 5
3. (a) Differentiate between the following : 5
- (i) Blanking and Punching
  - (ii) Turning and Facing
- (b) Would a carbide-tipped cutting tool be a wise choice for cutting a piece of copper ? Justify your answer. 5
4. (a) What are the various types of moulding machines ? Describe any *two* of them. 5
- (b) Describe various types of containers used in foundry. 5

5. (a) Explain the desirable properties of tool materials. 5
- (b) In an orthogonal cutting operation, the cutting velocity is 40 m/min. and the chip velocity is 20 m/min. Take the rake angle of the tool as  $15^\circ$ . Calculate the shear angle and shear velocity. 5
6. (a) List the different components of a die. Explain the principle of working of compound die. 5
- (b) Draw a neat sketch of simple cutting die and name the parts. 5
7. (a) What is setup planning in machining operation ? Describe some factors and constraints in setup planning. 5
- (b) Explain the two viewpoints of setup planning. 5
8. (a) Explain in detail STEP-NC enabled intelligent control. 5
- (b) What are the challenges and opportunities for the future STEP-NC ? 5

9. (a) What do you understand by Web-based Virtual Medicine Tool Operation (WVMT) ? Explain. 5
- (b) What are the limitations of conventional CNC machine ? Explain. 5