| **BME-010**

B.Tech. MECHANICAL ENGINEERING (COMPUTER INTEGRATED MANUFACTURING)

Term-End Examination

□□722   December, 2017

BME-010 : TOOL ENGINEERING AND MANAGEMENT

Time : 3 hours   *Maximum Marks : 70*

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

1. (a) Define the basic elements of Single-Point Cutting Tool geometry. What do you understand by Tool Signature ? Illustrate with an example.

    (b) State some of the important characteristics of the following tool materials :

    (i) High Speed Steel (HSS)

    (ii) Cubic Boron Nitride (CBN)   *5+5=10*

2. (a) Differentiate between the following :

   (i) Facing and Turning

   (ii) Blanking and Punching

   (b) What is Milling ? Explain the milling operations with the help of a neat sketch. *5+5=10*

3. (a) Briefly describe the working of turning and grinding fixtures.

   (b) Explain the working of compound die. *5+5=10*

4. (a) State Locating Principle. Describe various types of locators.

   (b) List different types of fixtures. Explain the working of milling fixture. *5+5=10*

5. (a) What are the various types of moulding machines ? Describe any one of them.

   (b) Describe various types of containers used in a foundry. *5+5=10*

6. (a) Why is it important to provide a means of venting gases from the mould cavity ?

   (b) Do you think the process of casting is competitive when compared with machining and metal forming processes ? Justify your answer. *5+5=10*

7. (a) Briefly describe laying out of internal and external radii.

   (b) How do you lay out the hole locations, slots and radii ? *5+5=10*

8. (a) What is Test and Proof circle ? Where and how do you use these circles ?

   (b) The vast majority of robots are used in automobile fabrication for welding. What kind of welding is routinely done robotically and why ? *5+5=10*

9. (a) How are Guideways classified ? Explain with figures, guideways with sliding friction.

   (b) Explain the design criteria for selection of material for a machine tool structure. *5+5=10*

10. (a) What are the various components of a tool handling and management system ?

    (b) What do you understand by Web-based Virtual Machine Tool (WVMT) operation ? *5+5=10*

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