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BME-003

**B.Tech. MECHANICAL ENGINEERING
(COMPUTER INTEGRATED
MANUFACTURING)
BTCLEVI/BTMEVI/BTELVI/BTCSVI/BTECVI
Term-End Examination
December, 2015**

BME-003 : MANUFACTURING TECHNOLOGY

Time : 3 hours

Maximum Marks : 70

*Note : Answer any **seven** questions. All questions carry equal marks. Use of scientific calculator is allowed.*

1. Describe the steps involved in Cupola operation with the help of a suitable sketch. Also state its advantages and disadvantages. 10

2. (a) What are the basic requirements of a good moulding material ? 5

- (b) Enlist the important applications of shell moulding and investment casting. 5

3. (a) What are the advantages and disadvantages of hot working? 5
- (b) Why does cold shut occur in forging? 5
4. (a) Discuss the mechanism of metal flow in rolling. 5
- (b) How is the proper alignment between the punch and the die ensured? 5
5. Sketch a single-point cutting tool showing its different parts. What is tool signature? 10
6. During orthogonal turning operation, the following data were observed :
undeformed chip thickness, $t_u = 0.15$ mm,
deformed thickness, $t_c = 0.25$ mm,
cutting velocity, $v_c = 0.150$ m/min, back rake angle,
 $\alpha = 12^\circ$, width of cut, $b = 7.0$ mm, cutting force,
 $F_c = 400$ N and tangential force, $F_T = 150$ N.
Calculate the percentage of total energy consumed in friction at the tool-chip interface. 10
7. Derive an equation for tool life for minimum cost per component using the equation for optimum feed rate for minimum cost per component. 10

8. (a) What are the criteria for classifying the welding processes ? 5
- (b) Explain the role of electrode covering in SMAW. 5
9. (a) What advantages does pulsed current show over continuous current for Tungsten Inert Gas Arc welding ? 5
- (b) Explain Plasma arc welding. 5
10. Explain Oxy-fuel gas cutting with a suitable sketch. Give the advantages, limitations and applications of the process. 10
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