

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

**Term-End Examination**

**December, 2018**

00423

**BME-008 : MACHINING TECHNOLOGY**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Answer any seven questions. All questions carry equal marks.*

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1. (a) Why is hot hardness of a cutting tool material an important property ? Explain. 5
- (b) Explain the role of cutting fluid in machining and discuss its effect on tool life. 5
2. (a) Explain the various bonding materials used in a grinding wheel. 6
- (b) A grinding wheel carries the following marking :  
"39 - C - 120 - K - 4 - V"  
What does this signify ? 4

3. In orthogonal turning operation with  $+10^\circ$  back rake angle tool, the following observations were made :

Cutting speed = 160 m/min,

width of cut = 2.5 mm,  $F_c = 180$  kgf,

$F_t = 50$  kgf, deformed chip thickness = 0.27 mm,

tool chip contact length = 0.63 mm and feed rate = 0.20 mm/rev.

Determine the following :

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- (a) Chip thickness ratio
  - (b) Shear angle
  - (c) Friction angle
  - (d) Resultant force
  - (e) Shear force
  - (f) Shear strain
4. (a) Briefly explain the special features of the creep feed grinding. 4
- (b) Explain the working principles of honing, lapping and superfinishing operations. 6
5. What do you mean by 'cut-off length' ? What cut-off length will you recommend when measuring surface roughness after
- (i) AJM,
  - (ii) PAC, and
  - (iii) ECM ? 10

6. (a) Compare the mechanism of honing with that of burnishing and shot peening. 5
- (b) What is 'Cascade type' effect? Explain with the help of a figure. 5
7. With neat sketch, explain the working principle of "Abrasive Flow Machining". 10
8. Write in brief about production of Laser Beam and working principle of LBM. Write at least four applications of LBM. 10
9. (a) With the help of neat sketch, differentiate between waviness and roughness. 5
- (b) During ECM of Iron using aqueous solution of NaCl as electrolyte, what are the possible reactions at anode and cathode? 5
10. (a) Write brief note on polishing and buffing operations. 4
- (b) Write short note on Ion Beam Machining 6
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