

00944

**BACHELOR OF TECHNOLOGY IN  
MECHANICAL ENGINEERING  
(COMPUTER INTEGRATED  
MANUFACTURING)**

**Term-End Examination**

**June, 2010**

**BME-008 : MACHINING TECHNOLOGY**

*Time : 3 hours*

*Maximum Marks : 70*

*Note : . Answer any five of the following questions. Assume any missing data suitably.*

1. (a) Differentiate between orthogonal and oblique cutting. Draw merchant's force circle diagramme, for orthogonal cutting process. Give two examples of oblique cutting. 7
- (b) What is meant by tool signature ? Which tool angle has the maximum effect on the cutting force ? 7
2. (a) Describe the process of grinding and their types. What is plunge cut grinding ? 7
- (b) What are the different performance characteristics of grinding wheel ? Explain. 7

3. Consider the following data for an orthogonal machining operation. 14  
Cutting speed = 90 m/min.  
Feed = 0.15 mm/rev.  
Depth of cut = 5 mm  
Rake angle =  $10^\circ$   
Chip thickness = 0.35 mm  
Clearance Angle =  $8^\circ$   
Tangential force = 220 kgf.  
Feed force = 120 kgf  
Find the chip velocity and specific energy consumption.
4. (a) What is surface integrity ? How the surface integrity is classified ? Explain. 7  
(b) What is a wear ? What are the various theories, which explain the wear ? Describe any one type of wear. 7
5. (a) What are the different methods of application of a cutting fluid ? What is semi-synthetic fluid ? What are emulsions ? 7  
(b) During an orthogonal cutting of steel with a HSS tool having a rake angle of  $20^\circ$ , it was found that at a speed of 45 m/min, a feed of 0.3 mm/rev and a depth of cut of 4 mm, the chip thickness was 0.6 mm. Calculate the shear plane angle and the tool life, making suitable assumptions. 7

6. (a) Define honing. Describe the process capabilities and applications of honing. 7
- (b) Describe the working principle of Magnetic Abrasive Finishing (MAF) and its applications. 7
7. (a) How do you classify the non-conventional machining processes ? Explain any one abrasive machining method in detail. 7
- (b) What is the difference between abrasive water-jet machining and abrasive jet machining ? 7
8. (a) What is the difference between electrochemical machining and electrochemical grinding ? Is metal removal in the same way in both cases ? 7
- (b) Write in brief about production of laser beam and working principle of Laser Beam Machining (LBM). What is diameter to depth ratio of beam divergence. 7
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