

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

Term-End Examination

June, 2017

00984

BME-008 : MACHINING TECHNOLOGY

Time : 3 hours

Maximum Marks : 70

Note : Answer any **five** questions. Use of scientific calculator is permitted.

1. (a) What basic parameters are involved in metal cutting ? How are these provided by the use of machine tools ?
- (b) A carbide tool while machining a mild steel workpiece was found to have a life of 1 hour and 40 minutes when cutting at 50 m/min. Find the tool life if the tool is to operate at a speed 30% higher than the previous one. Also calculate the cutting speed if the tool is required to have a life of 2 hours and 45 minutes. Assume Taylor's component $n = 0.28$.

7+7

2. (a) In what way does the use of a proper cutting fluid help in the performance of a metal cutting operation ? List some of the common cutting fluids.
- (b) Briefly differentiate between orthogonal cutting and oblique cutting. 7+7
3. (a) Explain the characteristics of a grinding wheel.
- (b) How do lapping and honing differ from grinding ? 7+7
4. (a) Finishing operations ensure good dimensional accuracy and surface finish. Why are all the components produced not subjected to the finishing operations ?
- (b) Explain the factors involved in selecting the appropriate type of abrasive for a particular grinding operation. 7+7
5. (a) What are the good characteristics required for surface finishing process ?
- (b) Explain the honing process with a neat sketch. 7+7

6. (a) Write a short note on ultrasonic machining.
- (b) A cylindrical shaft having diameter equal to 50 mm and length equal to 350 mm is to be ground. The shaft speed (N_s) is given as 90 RPM. The grinding wheel diameter is 350 mm, width is 40 mm and down feed adjustment per cycle is 0.15 mm. Take grinding allowance as 0.20 mm and grinding wheel speed as 1350 RPM. Calculate :
- (i) Peripheral speed of the shaft and grinding wheel in m/s
- (ii) Chip thickness 4+10
7. (a) What are the reasons which lead to the development of non-conventional machining process ? Explain.
- (b) Explain electrochemical machining process with a neat sketch. 7+7
8. (a) When do we require metal additive methods ? Discuss the different methods in brief.
- (b) Explain electro discharge machining process with a neat sketch. 7+7
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