

B.Tech 5th Semester Exam., 2017

MACHINE TOOLS AND MACHINERY

Time : 3 hours

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Full Marks : 70

Instructions :

- (i) The marks are indicated in the right-hand margin.
 (ii) There are **NINE** questions in this paper.
 (iii) Attempt **FIVE** questions in all.
 (iv) Question No. 1 is compulsory.

1. Answer any seven of the following questions :

2×7=14

- (a) What is the function of clapper box in shaper? akubihar.com
 (b) Define tool life.
 (c) Name three main components of NC system.
 (d) Define interference fit.
 (e) Name four locating elements.
 (f) What is built-up edge?
 (g) Describe floating point zero.

- (h) What do you mean by trueing of grinding wheels?
 (i) Name any four tool materials.
 (j) Name various types of indexing.

2. (a) List down the differences between turret and capstan lathe. 7
 (b) State the purpose of grinding and describe centerless grinding with neat sketches. akubihar.com 7
 3. (a) Name any five milling cutters and compare up milling with down milling. 7
 (b) Describe in brief the various tool materials used in industry. 7
 4. (a) Discuss wear mechanism of cutting tool. akubihar.com 7
 (b) The useful tool life of a 18-4-1 HSS lathe cutting tool while cutting at a speed of 18 m/min in 3 hours. Calculate the tool life when the cutting speed is (i) 24 m/min and (ii) 30 m/min. [Take $n = 0.125$] 7

(3)

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5. (a) Discuss the geometry and angles of a single point cutting tool with a neat sketch. 7
- (b) What is oblique cutting? Differentiate oblique cutting from orthogonal cutting. 7
6. (a) Define NC, CNC and DNC system. Write advantages of using CNC manufacturing over conventional manufacturing. 7
- (b) Write a short note on computer aided manufacturing. 7
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7. (a) Differentiate between Jig and Fixture. Also mention the main elements of any fixture and jig used in machining shop. 7
- (b) Explain the 3-2-1 principle with a neat sketch. 7
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8. (a) Briefly describe the need to specify tolerance on components. Distinguish between tolerance and allowance. 7
- (b) Discuss three-wire method to measure the pitch diameter of threads. 7

(4)

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9. Write short notes on any two of the following : 7×2=14
- (a) Cutting fluids
- (b) Types of chips
- (c) Limit gauges

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