

Faculty of Engineering & Technology
Fourth Semester B.E. (Mechanical Engg.) C.B.S.
Examination

MACHINING PROCESS

Time : Three Hours]

[Maximum Marks : 80

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve Question No. 1 **OR** Question No. 2.
- (3) Solve Question No. 3 **OR** Question No. 4.
- (4) Solve Question No. 5 **OR** Question No. 6.
- (5) Solve Question No. 7 **OR** Question No. 8.
- (6) Solve Question No. 9 **OR** Question No. 10.
- (7) Solve Question No. 11 **OR** Question No. 12.
- (8) Due credit will be given to neatness and adequate dimensions.
- (9) Assume suitable data wherever necessary.
- (10) Diagrams and chemical equations should be given wherever necessary.
- (11) Illustrate your answers wherever necessary with the help of neat sketches.
- (12) Use of non-programmable calculator is permitted.

1. (a) During turning operation of mild steel work piece with a single point cutting tool, following observations were made :

$\alpha = 10^\circ$, Shear stress = 600 MPa, $b = 10$ mm,
 $v = 30$ m/min, $\mu = 0.9$.

Determine chip thickness ratio, shear angle, shear force, friction angle, cutting force, power at cutting tools.

Assuming $f = 0.25$ mm/rev, $t_c = 0.45$ mm. 7

- (b) Explain with neat sketch geometry of single point cutting tool and explain the importance of various angles of single point cutting tool. 7

OR

2. (a) Describe different types of chip formed in metal cutting. 6

(b) What is tool wear ? Explain its types. 5

(c) What are various types of coolants ? 3

3. (a) Explain the constructional features of simple Lathe with neat sketch. 5

(b) Describe the sliding gear mechanism used in all geared head stock of Lathe machine. 6

(c) Explain in short the function of Chuck in Lathe. 2

OR

4. (a) Differentiate between Capstan and Turret Lathe. Describe with neat sketch Capstan Lathe. Also give application of Capstan Lathe. 7
- (b) How are Lathe classified ? Describe in brief the different types of Lathe. 6
5. (a) Explain principal parts of Shaper machine with neat sketch. 6
- (b) Explain with neat sketch Whitworth Quick return mechanism. 7

OR

6. (a) Draw a neat sketch of Planer and explain the parts. 5
- (b) State the main difference between Shaper and Planer. 4
- (c) How the size of Planer specified ? Discuss. 4
7. (a) Draw a neat sketch of Column and Knee type horizontal spindle milling machine. Explain and label its main parts. 6
- (b) Draw a neat sketch of plain milling cutter and state its angles. 7

OR

8. (a) What do you mean by indexing ? What are the various methods of indexing ? 7
- (b) Explain up milling and down milling with neat sketch. 6

9. (a) Explain the working principle of centreless grinding and give various methods of feeding on it. 7

(b) What are surface grinders ? Explain with neat sketch the relative wheel and table movement on different surface grinders. 6

OR

10. (a) What are grit, grade and structure of abrasive particles used in grinding wheel ? Explain. 6

(b) What do you mean by super finishing process ? Explain any two types of super finishing operation. 7

11. (a) Draw a neat sketch of Radial drilling machine and explain its main parts. 7

(b) What are principal parts of drill ? Show the various parts of a drill with neat sketch. 7

OR

12. (a) What is boring ? Describe vertical boring machine with neat sketch. 7

(b) Explain Drilling, Reaming and Boring operation. How do they differ from each other ? 7

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