

B 2340

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2007.

Fifth Semester

Mechanical Engineering

ME 334 — MACHINE TOOLS

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. How lathes are specified?
2. What are the requirements for tool material?
3. A shaft of 25 mm diameter is turned at a cutting speed of 50 m/mt. Find the rpm of the shaft.
4. What is draw cut shaper?
5. What is the significance of grit in a grinding wheel?
6. What is glazing? How will you rectify this?
7. What do you mean by progressive broaching?
8. What are the importances of chip breakers in machining process?
9. List the factors which will affect the life of tool.
10. Differentiate between orthogonal and oblique cutting process.

PART B — (5 × 16 = 80 marks)

11. (a) (i) What are the advantages of automats as compared to engine lathes? (4)
(ii) Explain the mechanisms used for headstock driving arrangement in a lathe. (12)

Or

- (b) (i) Explain the difference between turret and engine lathe. (8)
- (ii) State and explain any four types of work holding devices for rotating work pieces. (8)

12. (a) Draw sketch of a crank shaper, mark the important parts and explain their functions. Explain how quick return mechanism works.

Or

- (b) (i) What are the operations that can be done on drilling machines? Explain them with simple sketches. (6)
- (ii) Explain with a neat sketch of a continuous broaching machine. (10)

13. (a) (i) Explain the factors considered in selecting a grinding wheel and also explain the standard specification system used for grinding wheels. (12)
- (ii) Distinguish between lapping and honing. (4)

Or

- (b) (i) Explain the principle of working of centreless grinding machine. (8)
- (ii) What are 'Through Feed', 'In Feed', and 'End Feed' in centreless grinding operations? (8)

14. (a) Explain the following milling operations with sketches :

- (i) Straddle Milling, (ii) Gang Milling, (iii) Form Milling, (iv) End Milling.

Or

- (b) (i) Explain the working principle of gear hobbing operation. (8)
- (ii) Enumerate the generation of straight bevel gears with sketches. (8)

15. (a) (i) Explain the structure of cam controlled automats. (6)
- (ii) Describe the working principle of Swiss type automats with suitable sketches. (10)

Or

- (8) (b) (i) Explain the types of chips produced in cutting processes. (6)
- (8) (ii) Explain the different types of forces acting on a cutting process (4)
- ain (iii) During orthogonal cutting process, a chip length of 75 mm was obtained with an uncut chip length of 195 mm and the rake angle used was 20° with depth of cut 0.45 mm. Calculate the shear plane angle and chip thickness. (6)
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