Reg. No. : | | | | | | | | | | |

P 1341

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Fourth Semester

Mechatronics Engineering

MF 131 — MACHINE TOOLS AND PROCESSES

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the function of chip breaker?

2. List the types of chips produced in cutting.

3. List any two machining operations that can be performed on a lathe.

4. How is drill life determined?

5. List the factors that contribute to broaching force.

6. Differentiate between planning and shaping?

7. What is an abrasive?

8. What are super abrasives?

9. Name any four cutting tool material.

10. List the functions of cutting fluid.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Is there any advantage of built up edge. Explain. (8)

(ii) List the factors that contribute to poor surface finish in cutting. (8)

Or

(b) (i) Name the techniques used for measuring tool wear. Describe their advantage and limitations. (8)

(ii) What are the consequences of allowing temperature to rise to high levels in cutting? (8)

12. (a) (i) Explain how you would go about producing a tapered shape on a work piece by turning. (8)

(ii) List and explain factors that contribute to poor surface finish in the machining process. (8)

Or

(b) (i) Explain the functions of the saddle on a lathe. (8)

(ii) Explain the functions of different angles on a single point lathe cutting tool. (8)

13. (a) (i) Describe the relative characteristics of climb milling and up milling. (8)

(ii) What are the differences in planing and shaping operations and their application? (8)

Or

(b) (i) Why is the axis of the hob tilted with respect to the axis of the gear blank? (8)

(ii) Describe the features of a broach and explain their function. (8)

14. (a) (i) Explain the characteristic of each type of bond used in bonded abrasives. (8)

(ii) Explain why there are so many different types and sizes of grinding wheels. (8)

Or

(b) (i) Explain the factors involved in selecting the appropriate type of abrasive for particular grinding operation. (8)

(ii) Describe the structure of the grinding wheel. (8)

15. (a) (i) Why were tools coated? What are the common coating materials? (8)

(ii) Explain how cutting fluid penetrate the cutting zone. (8)

Or

(b) (i) Why does temperature have such an important effect on the life of cutting tools? (8)

(ii) Ceramic and cermet cutting tools have certain advantages over carbide tools. Why then are they not completely replacing carbide tools? (8)
