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

Question Paper Code : 72142

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2017.

Fourth/Sixth Semester

Mechanical Engineering

ME 6402 — MANUFACTURING TECHNOLOGY — II

(Common to Mechanical Engineering (Sandwich), Industrial Engineering, Industrial Engineering and Management, Mechanical and Automation Engineering)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. What do you understand by cutting tool signature?

2. Define the term machinability and machinability index.

3. How do specify lathe size?

4. Name the methods of taper turning on lathe.

5. What do you understand by Gang milling?

6. What is gear finishing? Why it is done?

7. What do you mean by duplex broach?

8. Define the terms 'Glazing' and 'Loading' with respect to grinding wheels.

9. Distinguish Mechanisation and Automation.

10. What is the need for micromachining? Mention the four categories of micromachining techniques.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Describe the mechanism of chip formation. (7)

(ii) How are the chips classified? Specify the condition under which they are formed. (6)

Or

(b) (i) What are the three main regions of heat generation in metal cutting? (4)

(ii) Explain the mechanisms associated with progressive tool wear. (9)

12. (a) (i) Discuss any four operations that can be performed in a lathe. (8)

(ii) A hollow workpiece of 50 mm diameter and 200 mm long is to be turned over in 4 passes. If the approach length is 20 mm over travel 10 mm, feed 0.8 mm/rev and cutting speed 30 m/min. Find machining time. (5)

Or

(b) (i) Explain the classification of automatic lathes. (5)

(ii) Describe the features of Swiss type automatic and Bar type automatics. (8)

13. (a) (i) Sketch a twist drill and label. (5)

(ii) With a help of a diagram explain cranck and slotted link mechanism. (8)

Or

(b) Describe any two methods of gear generation that suits mass production.

14. (a) (i) Discuss briefly the standard specification of Grinding wheel. (6)

(ii) What are the factors to be considered during the selection of appropriate Grindy wheel? (7)

Or

(b) (i) Sketch an internal broach tool and label it. (6)

(ii) What are the different types of broaching machines? Explain any two of them. (7)

15. (a) (i) Discuss the different data input devices of NC machine tool. (6)

(ii) Describe the features of a machinery center. Why the machining centers are particularly advantages for the use of NC? (7)

Or

(b) (i) What are the different types of control systems in Numeric Control? (5)

(ii) Explain the following with respect to manual part programming :

(1) M codes and G codes

(2) Program sheet

(3) Canned cycle

(4) Coordinate system. (8)

PART C — (1 × 15 = 15 marks)

16. (a) What are recent trends in micromaching? Explain the sequential steps in manufacturing silicon wafer.

Or

(b) (i) What is useful life of a tool? What are the factors affects the tool life? How these factors are related in Taylor's tool life equation? (8)

(ii) Describe any two gear finishing operation based on plastic deformation. (7)

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