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

Question Paper Code : 20853

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

Fourth Semester

Mechanical Engineering

ME 8451 — MANUFACTURING TECHNOLOGY – II

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

(Regulations 2017)

Time : Three hours | Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What are the requirements of cutting tool?
2. Differentiate between orthogonal and oblique cutting.
3. How do you specify the lathe machine?
4. List the commonly used attachments on lathe.
5. List any two primary differences between planer and shaper.
6. Specify the precautions to be followed in drilling operation.
7. What are the advantages of using centre less grinding?
8. What are the applications of continuous type of broaching machine?
9. Give the classification of CNC machines.
10. What is meant by water machining?

PART B — (5 × 13 = 65 marks)

11. (a) With the help of neat sketch, explain the nomenclature of a single point cutting tool. (13)

Or

(b) What do you understand by the term 'Tool life'? List the factors influence the life of a cutting tool. Explain the same in detail. (13)

12. (a) Discuss any two type of taper turning methods with sketches. (13)

Or

(b) Sketch and name the parts of a turret lathe. Describe the operations performed on the turret lathe. (13)

13. (a) A C.I. plate measuring 300 mm × 100 mm × 40 mm is to be rough shaped along its wider face. Calculate the machining time approach = 25 mm, over travel = 25 mm, cutting speed = 12 m/min, return speed = 20 m/min, allowance on either side of the plate width = 5 mm and feed per cycle = 1 mm. (13)

Or

(b) Explain the construction and working of gear milling method with neat sketch. (13)

14. (a) Discuss the selection of grinding wheel according to I.S. specification and specify the precautions to be taken before mounting of grinding wheel. (13)

Or

(b) With the help of neat sketches, explain horizontal pull broaching operation and the vertical push broaching operation. (13)

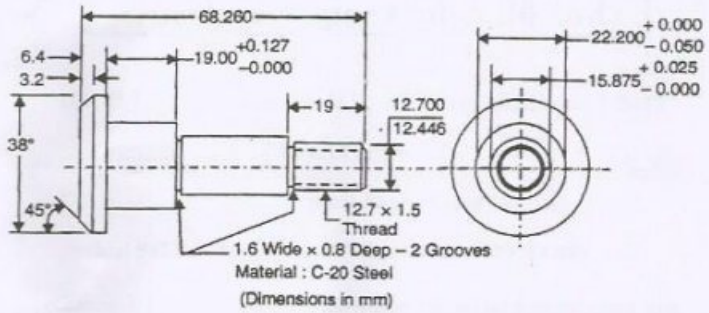
15. (a) What is micromachining? Explain the features, advantages and applications of micromachining. (13)

Or

(b) Summarize the use of control systems in the CNC machine. (13)

PART C — (1 × 15 = 15 marks)

16. (a) Draw the tool layout for the component shown in the figure. Also, mention the sequence of operations performed on it. (15)



Or

(b) The orthogonal cutting of steel is done with 12° rake tool a depth of cut of 2 mm and feed rate of 0.20 mm/rev. The cutting speed 200 m/min. The chip thickness ratio 0.31. The vertical cutting force is 1200 N and the horizontal component cutting force is 650 N. Calculate from Merchant's theory, work done in the metal cutting and shear stress. (15)

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