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Question Paper Code : X 20837

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2020

Fourth Semester

Mechanical Engineering

ME 6402 – MANUFACTURING TECHNOLOGY – II

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

(Also Common to PTME 6402 – Manufacturing Technology – II for B.E. (part-time) –
Third Semester – Mechanical Engineering – Regulations 2014)
(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A

(10×2=20 Marks)

1. Write a short note on Heat zones in cutting.
2. Write a short note on any two modern tool materials.
3. What are the differences between automatic lathe and capstan lathe ?
4. Give a sketch illustrating the principle of operation of Swiss type automatic lathe.
5. Make a comparison between gear shaping and gear hobbing.
6. What is gear finishing.
7. How do you specify a grinding wheel ?
8. What are the three methods of external cylindrical centreless grinding ?
9. Distinguish Mechanisation and Automation.
10. What is the need for micromachining ?

PART – B

(5×13=65 Marks)

11. a) i) With neat sketches briefly describe the different types of chips that occur in metal cutting. (8)
ii) State the conditions under which use of positive and negative rake angles are recommended. (5)
- (OR)
- b) i) Explain the different types of tool wear that occur in metal cutting. (8)
ii) Explain briefly the effect of cutting speed, feed and depth of cut on the surface finish obtainable. (5)



12. a) i) Enumerate the purpose of various attachments used on a centre lathe. (7)
ii) Explain with a neat sketch single spindle automatic lathe. (6)
(OR)
- b) i) Describe a Universal type milling machine. (6)
ii) Explain the salient features of an automatic screw machines. (7)
13. a) i) Sketch a twist drill and label. (5)
ii) With a help of a diagram explain crank and slotted link mechanism. (8)
(OR)
- b) Describe any two methods of gear generation that suits mass production.
14. a) i) List out various abrasives used in grinding wheel. Explain any three. (7)
ii) Explain with neat sketches the three methods of external cylindrical centreless grinding. (6)
(OR)
- b) i) Explain with neat sketches Horizontal pull broaching operation and Vertical push broaching operation. (7)
ii) List out various types of bonding materials used in grinding wheel. Explain any three. (6)
15. a) i) Explain the advantages and limitations of NC machines. (6)
ii) Describe four main features of CNC machines, which distinguish them from conventional machine tools. (7)
(OR)
- b) Explain the various types of statements used in APT language, with suitable examples.



PART – C

(1×15= 15)

16. a) 2500 pieces of hollow hexagonal headed mild steel bolts as shown in Fig. 2 are to be produced by machining. Select a suitable lathe and blank for machining. Identify and list the various elementary machining operations involved. Prepare an operation chart indicating tools, tool positions and the machining conditions. Also, draw a tool layout for machining the given job in an appropriate lathe machine.

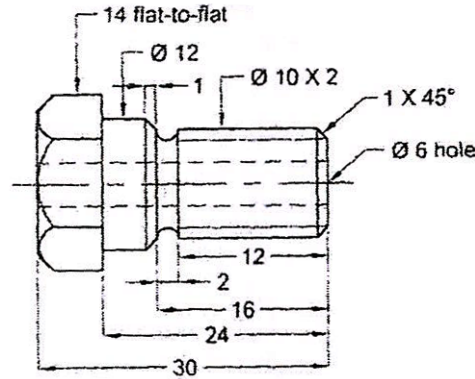


Fig. 2 Hollow hexagonal headed mild steel bolt

(OR)

- b) A blank 180 mm long and 7 mm diameter is to be machined in a lathe to 175 mm long and 60 mm diameter. The work piece rotates at 450 rpm, the feed rate is 0.3 mm/rev; and the maximum depth of cut is 2 mm. For turning operation, the approach plus over distance is 6 mm. Assuming that the facing operation is done after the turning, calculate the machining time.
