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Question Paper Code : X 60844

B.E./B.Tech. DEGREE EXAMINATIONS, NOV./DEC. 2020
Fourth Semester
Mechanical Engineering
ME 2252/ME 1252 A/080120016/10122 ME 403/ME 43 : MANUFACTURING TECHNOLOGY – II
(Common to Mechanical and Automation Engineering)
(Regulations 2008/2010)
(Also Common to PTME 2252 Manufacturing Technology II for B.E. (Part-Time)

Third Semester – Mechanical Engineering – Regulations 2009)

Time : Three Hours Maximum : 100 Marks

Answer ALL questions.

PART – A **(10×2=20 Marks)**

1. What is meant by built up edge ?
2. What are the advantages of diamond tools ?
3. What is the function of apron of a lathe ?
4. State the purpose of providing lead cam in single spindle automatic screw cutting machine, ‘
5. What is a Reamer ?
6. What is straddle milling ?
7. How is the grinding wheel designated ?
8. List the gear generating process.
9. What is meant by numeric control ? State their advantages.
10. State the differences between CNC and DNC.

PART – B **(5×16=80 Marks)**

11. a) i) Draw three views of a single point cutting tool and indicate various angles. **(6)**

ii) During an orthogonal turning operation of C20 steel, the following data were recorded :

Rake angle = 10°; Chip thickness = 0.48 mm; Width of cut = 2.0 mm; Feed = 0.25 mm/rev ;

Tangential cutting force = 1200 N; Feed thrust force = 300 N;

Cutting speed = 2.5 m/s;

Find the value of shear force at the shear plane; find also the kinetic coefficient of friction at the chip-tool interface. **(10)**

OR

b) i) During straight turning of a 24 mm diameter steel bar at 300 r.p.m. with an H.S.S. tool, a tool life of 9 min. was obtained. When the same bar was turned at 250 r.p.m., the tool life increased to 48.5 min. What will be the tool life at a speed of 280 r.p.m.? **(6)**

ii) Discuss briefly about the following tool materials with respect to composition and properties : (1) High speed steel (2) Cemented carbides. **(6)**

iii) The end of a pipe was orthogonally cut with a tool of 20° rake angle. The cut chip length was 85 mm corresponding to uncut chip length of 202 mm. If the depth of cut was 0.5 mm, find the chip thickness and shear plane angle. **(4)**

12. a) i) Discuss the various types of chucks used in lathe.

ii) Illustrate the function of Turret indexing mechanism. **(8+8)**

OR

b) i) Describe the bar feeding mechanism of capstan lathe.

ii) Sketch and explain the salient features of an automatic screw machine. **(8+8)**

13. a) i) With the help of a line diagram, describe the parts of a planning machine. Also explain the working of this machine. **(8)**

ii) Sketch and briefly explain the following operations performed in milling machine :

1) Plain milling
2) Face milling
3) End milling
4) Dovetail milling. **(8)**

OR

b) Sketch the following operations performed in drilling machine :

i) Drilling
ii) Reaming
iii) Boring
iv) Counter boring
v) Counter sinking
vi) Spot facing
vii) Tapping
viii) Trepanning

Add one or two lines of explanation for each. **(8×2=16)**

14. a) i) Classify the grinding machines. **(4)**

ii) Explain the working principle of centreless grinding process. **(12)**

OR

b) i) Describe two types of lapping operations. **(6)**

ii) Explain the principle of operation of gear hobbing process. **(10)**

15. a) Write briefly about machining centers. **(16)**

OR

b) Write briefly about open loop, closed loop and adaptive control systems in CNC machine tool. **(16)**

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