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Question Paper Code : 90856

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 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. Mention the impact of "build up edge" in metal cutting.
2. What is the rake angle in single point cutting tool recommended for machining Brass? Why?
3. State the difference between thread chaser and chasing dial.
4. Provide the essential difference between progressive action and parallel action in multi spindle automatics.
5. Why do we use gear honing process?
6. Write the need for clapper box in a mechanical shaper.
7. What is the difference between Dressing and Truing of a grinding wheel?
8. Mention how creep feed grinding is different from conventional grinding.
9. Which is better AC or DC drive? How?
10. Mention an example of parametric programming.

PART B — ($5 \times 13 = 65$ marks)

11. (a) Explain the procedure to draw the merchant force diagram. State the assumptions made in the developments of such a diagram.
Or
(b) Derive the analytical relationship for the temperature rise in Metal cutting.
12. (a) Show with neat sketch the constructional features of a capstan lathe.
Or
(b) Draw the neat sketch of typical transmission in Swiss type automatic lathe machine and explain.
13. (a) Describe the setup that one can use for milling cams in a milling machine.
Or
(b) Describe the construction of dividing head, stating the application of gear cutting for which it can be used.
14. (a) Explain factors you would consider for selection of grinding wheel.
Or
(b) Explain about the configuration of broaching tool.
15. (a) Enumerate the series of process steps involved in wafer slicing from the boule.
Or
(b) Enumerate the general scheme for computer aided part programming.

PART C — ($1 \times 15 = 15$ marks)

16. (a) The following data from the orthogonal cutting test is available rake angle 10° chip thickness ratio 0.35, uncut chip thickness 0.51 mm, width of cut 3 mm, and yield shear stress of work material 285 N/mm^2 , mean friction coefficient on tool force 0.65. Determine:
- (i) Cutting force F_c (3)
 - (ii) Radial force (4)
 - (iii) Normal force N (4)
 - (iv) Shear force on the tool F_s . (4)
- Or
- (b) Write the procedure for selecting the appropriate insert for CNC turning operations normally chosen from manufacturer's catalogue.