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Question Paper Code : 60850

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Fourth Semester

Mechanical Engineering

ME 2252/ME 43/ME 1252 A/080120016/10122 ME 403 – MANUFACTURING TECHNOLOGY – II

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

(Regulations 2008/2010)

(Also Common to PTME 2252/10122 ME 403 Manufacturing Technology II for B.E. (Part-Time) Third Semester Mechanical Engineering – Regulations 2009/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Draw a single point cutting tool and mark any four angles.

2. What is meant by machinability index?

3. The tool moves perpendicular to the axis of the work to produce ————.

4. Compare the parallel action and progressive action in multi spindle automatic lathes.

5. Write down the formula for calculating the number of strokes and passes required in a shaper.

6. What are the differences between upmilling and down milling?

7. State any four advantages and disadvantages of centreless grinding.

8. List the gear generating process.

9. Draw the simple configuration of CNC.

10. Differentiate NC and CNC machines.

PART B — (5 × 16 = 80 marks)

11. (a) Derive $\beta = \tan^{-1}\left[\frac{\gamma \cos\alpha}{1-\gamma \sin\alpha}\right]$ for orthogonal cutting. (16)

Or

(b) During a metal cutting test under orthogonal conditions it was found that cutting force is 1100N and feed 700N, when cutting at 165 m/min. The rake angle of tool is 10° and shear plane angle was found to be at 19°. Determine the following

(i) Shearing velocity (6)

(ii) Chip flow velocity (6)

(iii) Work done per min in shearing the metal and work done against friction. (4)

12. (a) Explain with a neat sketch Geneva mechanism of turret indexing. (16)

Or

(b) Write short notes on the following lathes.

(i) Tool room lathe (4)

(ii) Automatic lathe (4)

(iii) Special purpose lathe and (4)

(iv) Copying lathe. (4)

13. (a) With a neat sketch, indicate the various parts of an arbor assembly. (16)

Or

(b) With the help of a neat sketch, discuss the working of continuous surface broaching machine and write its advantages and limitations. (16)

14. (a) Explain the working principle rough grinders and discuss any two in brief. (16)

Or

(b) Explain the principle of operation of gear hobbing operation. What are the advantages of gear hobbing? (16)

15. (a) Discuss about the following with neat sketch and with suitable example.

(i) Closed loop system and Open loop system. (8)

(ii) Straight line system and Continuous system. (8)

Or

(b) Write short notes on :

(i) NC machine tool classification (4)

(ii) APT programming structure (4)

(iii) G and M codes (4)

(iv) CNC machine Vs Conventional machine. (4)

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