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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fourth Semester, B.E. - Mechanical Engineering

Semester End Examination; May / June - 2019

Manufacturing Process - II

Time: 3 hrs *Max. Marks: 100*

Note: *i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.*
ii) Missing data, if any, may be suitably assumed.

UNIT - I

1 a. Briefly explain the mechanism and types of chip formation with neat sketches. 10

b. The following data were obtained during orthogonal turning of a certain work piece material :

Chip thickness = 0.54 mm, Width of cut = 3.2 mm, Feed = 0.30 mm/rev,

Cutting force = 115 kg, Thrust force = 30.5 kg,

The cutting speed was 150 m/min and the rake angle was 10°. Calculate the following : 10

i) Chip thickness ratio

ii) Shear angle

iii) Velocity of the chip along the tool face

iv) Frictional force along the tool face

v) Shear stress

2 a. List and explain the desirable properties of cutting tool materials. 10

b. Write short notes on the following : 10

i) HSS ii) CBN iii) Ceramics

UNIT - II

3 a. Define tool life and explain the factors which affect the tool life. 10

b. A 50 mm bar of steel was turned at 284 rpm and tool failure occurred after 10 min. The speed was changed to 232 rpm and the tool failed in 60 min of cutting time. What cutting speed should be used to obtain 30 min of tool life? 10

4 a. Explain with neat sketches flank wear and crater wear. 10

b. Describe functions and desirable properties of cutting fluids. 10

UNIT - III

5 a. Explain with a neat sketch turret lathe and lable the parts. 10

b. With a neat sketch, explain any three operations performed on a shaper. 10

6 a. Explain with neat sketch double housing planner machine. 10

b. Explain with neat sketch open and cross belt driving mechanism in planer. 10

UNIT - IV

7 a. Explain with neat sketch of vertical milling machine. 10

b. Explain with neat sketch any three operations that can be done on milling machine. 10

Contd…2

8 a. What is Indexing? Explain simple and compound indexing. 10

b. Difference between up milling and down milling. Show the chip cross-section with figure for both the operations. 10

UNIT - V

9 a. Explain the twist drill nomenclature :
Flutes, flank, face, land, lip, body clearance with neat sketch. 10

b. Sketch and explain Radial drilling machine. 10

10 a. Explain with neat sketch cylindrical grinding machine. 10

b. Explain the following with neat sketches :
i) Lapping
ii) Honing 10

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