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Fourth Semester B.E. Degree Examination, June/July 2014

Manufacturing Process – II

Time: 3 hrs. Max. Marks: 100

> Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART - A

With suitable sketches, explain different types of chips produced during machining.

(07 Marks)

Discuss the causes for tool failure. b.

(07 Marks)

In an orthogonal cutting the following observations were made: Feed = 0.25 mm/rev

Chip thickness = 0.8 mm

Depth of cut = 2 mm

Length of chip-tool contact = 0.5 mm

Working rake angle = 0°

Cutting force $= F_c = 1800 \text{ N}$

Axial thrust = 900 N

Determine:

i) The mean angle of friction of tool face.

ii) The mean shear strength of the work material.

iii) The maximum frictional stress on tool face.

(06 Marks)

- Draw the sketches showing sources of heat and heat distribution to various elements during metal cutting.
 - Discuss the effect of temperature on hardness for different cutting tool materials. (06 Marks)
 - List and explain the characteristic features of a good cutting tool material.

(04 Marks)

What are the difference between a capstan lathe and a turret lathe?

(06 Marks)

- Find the time required for taking a complete cut on a plate 600 mm length × 300 mm width if the cutting speed is 9 m/min. The return time to cutting time ratio is 1:4 and the feed is (06 Marks) 3 mm. the clearance at each end is 75 mm.
- List out the differences between shaper and planer.

(08 Marks)

- With suitable sketches, explain the following operations using drilling machine:
 - i) Trepanning
 - ii) Tapping
 - iii) Boring
 - iv) Reaming

(12 Marks)

Define x, y and z axes on a NC drill machine.

(04 Marks)

c. Explain point-to-point positioning control system of tools in NC system.

(04 Marks)

PART - B

- With suitable sketches, explain the following milling machine operations:
 - Form milling i)

Gang milling

(08 Marks)

Draw the neat sketch showing all the elements of plain milling cutter and label all parts.

(06 Marks)

Name various work holding devices used in milling machine and indicate their uses.

(06 Marks)