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**Fourth Semester B.E. Degree Examination, July/August 2022**  
**Manufacturing Process – II**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, choosing ONE full question from each module.**

**Module-1**

- 1 a. Explain different types of chips formed in machining process. (08 Marks)
- b. The following data were obtained during orthogonal turning of a certain workpiece material chip thickness = 0.45mm, width of cut = 2.5mm, Feed = 0.25mm/rev, cutting force = 113Kg, Thrust force 29.5Kg. The cutting speed was 150m/min and the rake angle was  $10^\circ$ . Calculate following :
- Chip thickness ratio
  - Chip reduction coefficient
  - Shear angle
  - Velocity of the chip
  - Frictional force along the tool face
  - Shear stress.
- (12 Marks)

**OR**

- 2 a. A tool life of 80 minutes is obtained at a speed of 30mpm and 8 minutes at a 60mpm. Determine the tool life equation and cutting speed for 4 minutes tool life. (08 Marks)
- b. Explain desirable properties of cutting fluids used in machining process. (04 Marks)
- c. Explain various zones of heat generation in metal cutting process. (08 Marks)

**Module-2**

- 3 a. Explain constructional features of turret lathe with neat sketch. (10 Marks)
- b. Explain operations performed on lathe with neat diagram. (10 Marks)

**OR**

- 4 a. Explain difference between shaper and planer. (05 Marks)
- b. A shaper makes 36 complete strokes per minute and the stroke length is 30cm. The shaper has a cutting stroke to return stroke ratio of 3:2. Determine the cutting speed in m/min, without considering clearance. (05 Marks)
- c. Explain constructional features of double housing planer. (10 Marks)

**Module-3**

- 5 a. Explain constructional features of vertical milling machine. (08 Marks)
- b. Explain difference between up milling and down milling. (06 Marks)
- c. Explain the following :
- End milling
  - Slot milling
  - Gang milling.
- (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 6 a. Explain principle of centreless grinding with neat sketches. (10 Marks)  
b. Explain bonding process in i) Resinoid bond ii) Rubber bond. (10 Marks)

**Module-4**

- 7 a. Write the classification of drilling machine and explain radial drilling machine. (12 Marks)  
b. Explain twist drill nomenclature with neat sketch. (08 Marks)

OR

- 8 a. Explain broach tool with neat sketch. (08 Marks)  
b. Explain principle of lapping. (06 Marks)  
c. Explain principle of honing. (06 Marks)

**Module-5**

- 9 a. Explain Ultrasonic machining. (10 Marks)  
b. Explain principle, equipment, advantages, and disadvantages of Abrasive jet machining. (10 Marks)

OR

- 10 a. Explain Electrochemical machining with neat diagram along with advantages and limitations. (10 Marks)  
b. Explain plasma arc machining with neat diagram along with advantages and disadvantages. (10 Marks)

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