

(3 Hours)

Total Marks: 80

Note:

1. Question No. 1 is compulsory.
2. Attempt any **THREE** out of the remaining **FIVE** questions.

- Q1. Answer any four of the following 20**
- A Explain any one type of dynamometer
  - B Give specification of grinding wheel
  - C Differentiate compound die and combination die
  - D Explain principle of location
  - E Discuss water jet machining
  - F List the benefits of additive manufacturing
- Q2. 10**
- A Derive an expression for shear plane angle with assumptions made
  - B Draw neat sketch of single point cutting tool and explain terminologies associated **10**
- Q3. 10**
- A Explain concept of speed, feed, and depth of cut in case of lathe, and how the tool life is affected
  - B Give classification of presses and explain any one kind press **10**
- Q4. 10**
- A Differentiate jig and fixtures, list clamping devices with sketch
  - B Explain working principle of EDM with merits and demerits **10**
- Q5. 10**
- A Explain i) Machinability ii) Cutting fluids
  - B Explain Photo Polymerization w.r.t principle of operation, process, advantages and disadvantages. Explain its application in relevance CMET (Tokyo) and 3D systems (US) **10**
- Q6. 10**
- A Classify additive manufacturing systems and explain any one of them
  - B While machining C-40 with HSS cutting tool with feed rate of 0.2 mm/min and depth of cut of 2mm following information is noted
    - i) Tool life of 90 minute with cutting velocity of 25 m/min
    - ii) Tool life of 20 minute with cutting velocity of 20 m/min **10**
 Determine n and C in Taylors tool life equation, and recommend cutting speed for tool life of 60 minute

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