

( 3 Hours )

[Total Marks : 80]

Please check whether you have got the right question paper.

- N.B.:**
- 1) Question No 1. is compulsory.
  - 2) All questions carry equal marks.
  - 3) Attempt any 3 out of the remaining 5 questions.

1. Attempt any four (20)
  - a) Describe one RP process with a neat sketch.
  - b) Describe the factors affecting MRR in AJM.
  - c) What is meant by dressing, trueing and balancing of grinding wheel.
  - d) Describe features and mechanism of a compound die.
  - e) What are the conditions under which different types of chips are formed in metal cutting?
2.
  - a) What are the factors determining MRR in EBM? (10)
  - b) Describe chip formation in orthogonal cutting process. (10)
3.
  - a) Describe the process of finding center of pressure (10)
  - b) State the principles of location w.r.t. Jigs and Fixtures. (10)
4.
  - a) What is the nomenclature for expressing the cutting tool signature in MRS. Draw a sketch also. (10)
  - b) Describe the process of photo-polymerization with a neat labelled sketch. (10)
5.
  - a) In an orthogonal cutting operation, the rake angle is  $5^\circ$ , chip thickness before the cut = 0.2mm and width of cut = 4mm. The chip thickness ratio is 0.4. (10)
    - i. Determine the chip thickness after the cut.
    - ii. Determine shear angle
    - iii. Determine friction angle
    - iv. Determine co-efficient of friction
    - v. Determine shear strain
  - b) Determine the parentage change in cutting speed required to give 50% reduction in tool life. Take  $n = 0.2$  (10)
6. Attempt all of the following (20)
  - a) Draw a neat labelled sketch of a typical twist drill.
  - b) Differentiate between Transferred and non-transferred plasma arc machining process.
  - c) Describe the dynamometer used in Milling Machine.
  - d) Classify various locators used in Jigs and Fixtures.
  - e) How does a welding fixture differ from a machining fixture?