

Roll No.

Total Pages : 03

MT/D-21

49106

NON-CONVENTIONAL MACHINING

MTIP-109A

Time : Three Hours]

[Maximum Marks : 60

Note : Attempt *Five* questions in all. Q. No. **1** is compulsory. Attempt *four* more questions remaining eight questions, selecting *one* question from each Unit. All questions carry equal marks. Assume any missing data.

1. (i) Compare conventional and non-conventional machining processes. **3**
- (ii) What are the desirable properties of the abrasives used in abrasive jet machining ? **3**
- (iii) Mention any *two* advantages and disadvantages of water jet machining. **3**
- (iv) Discuss the applications of wire EDM. **3**

Unit I

2. Explain, how the following parameters influence the metal removal rate in abrasive jet machining process : **12**
 - (i) Nozzle tip distance
 - (ii) Velocity of abrasive

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- (iii) Abrasive flow rate
 - (iv) Gas pressure.
3. Explain with the help of a neat diagram the principle of operation of ultrasonic machining. **12**

Unit II

4. (i) Discuss the process capabilities of electrochemical machining. **6**
- (ii) Calculate the machining rate and the electrode feed rate when iron is electrochemically machined using copper electrode and sodium chloride solution. The following data are given as :
- Specific resistance of NaCl = 5 ohm cm
 - Supply voltage = 18 V.D.C.
 - Current = 5000 amp
 - Tool-work gap = 0.5 mm
 - Current efficiency = 100%
 - Atomic weight of iron = 56
 - Valency of iron = 2
 - Density = 7.87×10^6 g/m³. **6**
5. Explain the operating principles of electrochemical grinding with the help of a neat sketch. **12**

Unit III

6. Explain with the help of neat sketches, the mechanism of metal removal in EDM process. Discuss any *two* types of flushing methods used in EDM. **12**

7. (i) Explain briefly the rotary pulse generator in the EDM process with a neat sketch. **6**
- (ii) Describe with a neat diagram, the traveling wire EDM. **6**

Unit IV

8. Explain with the help of a neat sketch the material removal mechanism in LBM process. **12**
9. Explain, how the electron beam is generated in EBM process. State the advantages, disadvantages and applications of EBM process. **12**