Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(ME) (2011 Onwards E-II) (Sem.–7,8)

NON-TRADITIONAL MACHINING

Subject Code : DE/PE-2.0

M.Code : 72006

Time : 3 Hrs. **Max. Marks : 60**

INSTRUCTION TO CANDIDATES :

1. **SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.**
2. **SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.**
3. **SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.**

SECTION-A

1. Answer briefly :

a) What are the limitations of traditional machining processes?

b) How the developments in the area of materials are partly responsible for evolution of advanced machining techniques?

c) Explain distinction between surface roughness obtained by conventional and non-traditional machining processes.

d) "*Whether abrasive flow machining process has capability to correct large surface irregularities such as deep scratches or large bumps*"? Comment.

e) Name the important factors that should be considered during the selection of an unconventional machining process for a given job.

f) Enumerate the characteristics of dielectric fluids used in EDM process.

g) Enumerate the limitations of laser beam machining process.

h) How the molten material ejects out of the machining zone in PAC?

i) What are the functions of an 'adaptive control system' used for EDM?

j) How a complex shape can be cut using EBM process?

SECTION-B

2. Explain the distinction between Conventional & Non-Traditional Manufacturing Processes.

3. Explain the steps involved in machining using photo-chemical machining process. Show the photo-chemical machining setup and explain its working.

4. Show the elements of USM process. Discuss the following in relation to Ultrasonic machining process :

   a) Functions of slurry, horn transducer, and oscillator in USM;

   b) Types of abrasives used in USM.

5. Explain the mechanism of material removal in laser beam machining processes. Explain the lasing process in Gas Laser process giving neat sketch.

6. With the help of a neat sketch, explain the mechanism of material removal in EDM.

SECTION-C

7. a) Describe the elements of abrasive flow machining giving a neat sketch. Also discuss the tooling and working media used in AFM process.

   b) Describe the following elements of water jet machining process giving a neat sketches :

      i) Intensifier

      ii) Accumulator

      iii) Nozzle.

8. a) Discuss the material removal mechanism in plasma arc machining. Explain the working of air plasma torch giving a neat sketch.

   b) Explain the working principle of electro-chemical machining process and also elaborate the electrochemistry of the ECM process.

9. Write short notes on any two of the following :

   a) Hybrid machining processes and their applications;

   b) Tool materials used in EDM;

   c) Flushing techniques for dielectric fluids in EDM process

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.