B. Tech.

(SEM. VI) EXAMINATION, 2006-07

UNCONVENTIONAL MANUFACTURING PROCESS

Time : 3 Hours] [Total Marks : 100

Note : (1) Attempt all questions. There may be choices within.

(2) Marks are indicated therein.

1 Answer any two of the following : 10×2 = 20
   (a) Discuss some basic reasons of developing non-traditional machining process.
   (b) Give a classification scheme for the non-traditional machining processes based on the mechanism of material removal. Mention the energy transfer media in each case.
   (c) What are the main parameters to be considered while selecting a particular unconventional machining process and why?

2 (a) Answer any two of the following : 10×2=20
   (i) Explain, how would you select the best possible abrasive and nozzle materials to be used in abrasive jet machining?
   (ii) Why isn’t ECM as widely used as EDM.
(b) Prove that for maximum power delivered during discharging in EDM (with RC circuit) discharging voltage should be approximately equal to 75% of supply voltage.

(c) Plot and discuss the following relationship for USM:

(i) particle size vs. machining rate
(ii) Particle velocity vs. machining rate
(iii) Frequency vs. material removal rate.

3 Answer any two of the following: 10x2=20

(a) (i) What are advantages of electron beam welding over arc welding.
(ii) What type of laser is best for welding metals? Why is it best?

(b) Write short note on any one of the following:
(i) Ultrasonic welding
(ii) Electron beam welding

(c) Describe the process of plasma arc welding with the help of suitable sketches, mention applications and limitations of it.

4 Answer any two of the following: 10x2=20

(a) Does any melting take place in metal during explosive welding? Explain, why is explosive welding good for joining dissimilar metals? Mention the limitations of explosive welding.
(b) Discuss the following related to metalising in brief:
   (i) Surface preparation
   (ii) Selection of coating materials
   (iii) Selection of metallising process

(c) Write short note on underwater welding.

5 Answer any two of the following: 10×2=20

(a) Explain the process of electromagnetic forming and give its salient characteristics. Plot the relationship between the time and pressure for this process.

(b) Describe the explosive forming process. What will happen if no liquid medium is used? State some of application of explosive forming.

(c) (i) Define the term high velocity forming in terms of probable advantage and operational problem.

   (ii) Briefly discuss electro discharge forming.