USN | | | | | | | | | | |

10ME665

Sixth Semester B.E. Degree Examination, June/July 2013
Non-Traditional Machining

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Justify the need of unconventional manufacturing process in todays industries. **(06 Marks)**

b. Distinguish between conventional and unconventional manufacturing process. **(04 Marks)**

c. What are the basic factors upon which the unconventional manufacturing processes are classified? Explain. **(10 Marks)**

2 a. Explain with help of a neat sketch the working principle of ultra sonic machining process, and also mention its advantages. **(10 Marks)**

b. Explain how various process parameters influence the material removal rate in ultrasonic machining process. **(10 Marks)**

3 a. Explain how the following parameters influence the metal removal rate in abrasive jet machining process: i) Nozzle tip distance; ii) Velocity of abrasive; iii) Abrasive flow rate; iv) Gas pressure. **(10 Marks)**

b. Explain the desired properties of abrasive materials used in abrasive jet machining. **(05 Marks)**

c. Which are the abrasive materials used in water jet machining? **(05 Marks)**

4 a. With suitable sketches, explain the metal removal mechanism in electro chemical grinding. **(08 Marks)**

b. Why are chemical machining and electro chemical machining considered as chipless machining? Explain the mechanisms of metal removal on both cases and compare it with conventional grinding process. **(12 Marks)**

PART – B

5 a. Explain in brief the following in chemical machining process:
i) Maskants; ii) Etchants. **(08 Marks)**

b. With the help of neat sketches, explain the different steps involved in chemical blanking. **(12 Marks)**

6 a. Discuss the factors influencing the choice of electrode material in EDM. **(05 Marks)**

b. Explain with help of a neat sketches any two types of flushing. Methods used in EDM. **(05 Marks)**

c. Explain with help of neat sketches, the mechanism of metal removal in EDM process, and also mention its advantages and disadvantages. **(10 Marks)**

7 a. With a neat sketch, explain the plasma arc machining (PAM) process and also mention its applications. **(10 Marks)**

b. Which are the important considerations are to be made in the design of plasma torch? **(06 Marks)**

c. Mention any two advantages and disadvantages of plasma arc machining. **(04 Marks)**

8 a. With a neat sketch, explain the mechanism of metal removal in LBM process. **(08 Marks)**

b. State the advantages, disadvantages and application of EBM. **(06 Marks)**

c. Explain how the electron beam is generated in electron beam machining (EBM) process. **(06 Marks)**

* * * * *