Code: 13A03807 **R13**

B.Tech IV Year II Semester (R13) Regular & Supplementary Examinations April 2018

MODERN MANUFACTURING METHODS

(Mechanical Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

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1 Answer the following: (10 X 02 = 20 Marks)

(a) Illustrate and compare various nontraditional machining processes.
(b) List the classification of RP systems.
(c) List the applications and limitations of USM.
(d) What is the relation between MRR and abrasive grain size in AJM process?
(e) Explain the use of maskants and etchants in electro chemical machining process.
(f) What are the characteristics (requirements) of a good ECM tool?
(g) What is an arc gap? How is the arc gap controlled in EDM?
(h) What is the principle of plasma arc machining? What are the two stages in which the process of material removal is affected?
(i) Discuss the type of energy used in LBM.
(j) In electron beam machining, why is a high vacuum created in the apparatus?

PART – B

(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 What is the necessity for unconventional machining processes? Explain the classification of unconventional machining according to major energy source employed.

OR

3 Narrate fuse deposition method with neat sketch.

UNIT – II

4 (a) State the working principle of USM equipment with neat sketch.
(b) Explain the abrasives used in USM process

OR

5 With a neat sketch, explain the process of AJM? Explain the process control measures to be taken to control quality and MRR.

UNIT – III

6 Describe the principle of ECG and ECM. Discuss about the process parameters that influences the ECM. List their applications and advantages.

OR

7 Briefly explain the following with respect to chemical machining:
(a) Characteristics of cut peel maskants.
(b) Selection of maskants.
(c) Limitations of chemical machining.

UNIT – IV

8 What are the important process parameters that control the material removal rate in EDM? Explain any four factors.

OR

9 Define plasma. What are the gases used in PAM? What is the main industrial application of plasma cutting systems? Discuss the advantages and limitations of plasma arc welding.

UNIT – V

10 Explain the features of EBM unit. Explain the effect of increasing the acceleration potential on MRR.

OR

11 Explain the production of laser beam and working principle of LBM. What are the unique characteristics a laser machining technique possesses that make it the only choice for the job?