B.Tech IV Year II Semester (R13) Regular Examinations April 2017

MODERN MANUFACTURING METHODS

(Mechanical Engineering)

Time: 3 hours Max. Marks: 70

PART – A

(Compulsory Question)

*****

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

(a) With a neat sketch, explain the working principle of stereo lithography process.
(b) Enlist the requirement that demands the use of advanced machining process.
(c) What are the magnetostrictive materials employed in USM?
(d) Explain any three parameters on working accuracy and metal removal rate in AJM.
(e) Explain the process variables in ECM process.
(f) What are the limitations of Chemical Machining process?
(g) Write down the process characteristics of Plasma Arc Machining.
(h) Explain the working principle of Wire cut EDM process.
(i) What are the gases commonly used on laser and explain the characteristics of laser beam?
(j) What are the advantages and limitations of a EBM process?

PART – B

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

UNIT – I

2 (a) Explain the need of modern manufacturing methods.
(b) Give a short on Precision and Lean manufacturing.

OR

3 (a) Write the classification of Rapid prototyping methods.
(b) With a neat sketch explain the working of Fused Deposition Method and explain its various applications of it.

UNIT – II

4 Explain the mechanics of metal removal and process parameters of Ultrasonic Machining process and also give their applications, limitations.

OR

5 With a neat sketch explain the construction and working of WJM system and also explain their process variables.

UNIT – III

6 Give a brief note on economic aspects of ECM and also explain their Metal removal rate, process variable and applications of it.

OR

7 (a) Explain the principle of metal removal in maskants, etchants and process variable of a chemical machining process.
(b) What are the advantages of chemical machining process?

UNIT – IV

8 (a) With a neat sketch explain the construction and working of an Electric Discharge Grinding process.
(b) Explain the choice of parameters for improved surface finish and accuracy for EDM process.

OR

9 (a) With a neat sketch explain the principle of metal removal rate in Plasma Arc machining process.
(b) Describe the process and equipment of Plasma Arc Machining process.

UNIT – V

10 Write a short note on process parameters and performance characterization of Laser Beam Machining processes.

OR

11 With a neat sketch explain the construction and working of an Electron Beam Machining Process and explain the theory of mechanics of metal removal in EBM.

*****