

B.Tech IV Year I Semester (R15) Regular Examinations November/December 2018

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) List the important requirements of modern manufacturing methods.
- (b) Name any two classifications of rapid prototyping methods.
- (c) Mention the process parameters that affect the performance of ultrasonic machining (USM).
- (d) Write any two applications of Abrasive jet machining process.
- (e) Give the limitations of electrochemical machining (ECM) process.
- (f) How the Declogging can be done in electrochemical grinding (ECG) process?
- (g) Write the working principle of wire electric discharge machining system.
- (h) Write the two types of ARC modes in Plasma Arc cutting system.
- (i) What are the broad two classifications of electron beam machining process?
- (j) Mention the important applications of laser beam machining (LBM) process.

PART – B

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

UNIT – I

2 Name important factors that is to be considered during the selection of a modern manufacturing methods for machining of a given job.

OR

3 What is rapid prototyping and explain about different steps involved in rapid prototyping technology? Describe the benefits and limitations of rapid prototyping.

UNIT – II

4 Explain with the help of a schematic diagram, principle of operation of an ultrasonic machining (USM) process.

OR

5 Discuss the important process variables and cutting parameters that affect the material removal rate during abrasive jet machining (AJM).

UNIT – III

6 Draw the schematic layout of electrochemical machining (ECM) setup and explain the major elements in it. Write the advantages and limitations of ECM process.

OR

7 Explain the principle of metal removal in ECM process. Discuss the function of electrolyte in this process.

UNIT – IV

8 With the help of a neat sketch, explain the mechanism of material removal in electric discharge machining (EDM) process?

OR

9 Can you machine electrically non-conductive materials by PAM. Discuss?

UNIT – V

10 Explain the working principle of electron beam machining (EBM) process. Make the necessary sketch.

OR11 Laser beam machining (LBM) and electric discharge machining (EDM) both are thermal processes. However it is found that the first one results in more thermal damage to the machined component than the second one. Is it true? Justify your answer.