

B.Tech IV Year II Semester (R13) Advanced Supplementary Examinations July 2017

**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)
- What is rapid prototyping? Give its applications.
  - Write the applications of non-traditional machining processes.
  - What are the process parameters of ultrasonic machining process?
  - With a neat sketch explain the principle of abrasive water jet machining process.
  - Explain the principle of electrochemical grinding.
  - Explain the principle of metal removal of etchants in chemical machining process.
  - Explain the basic principle of spark erosion EDM process.
  - Explain the principle of plasma arc machining process.
  - Give the applications and limitations of EBM process.
  - Give the process parameters of an LBM process.

**PART – B**

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

**UNIT – I**

- 2 Classify non-traditional machining process and explain their selection for processing of different materials and the range of applications of it.

**OR**

- 3 Explain the principles of rapid prototyping and give their various applications with respect to industrial usage.

**UNIT – II**

- 4 Explain the principle of abrasive jet machining and also the process characteristics. Comment on the depth of material removed from a metal surface by abrasive jet machining.

**OR**

- 5 With a neat sketch, explain the working principle of ultrasonic machining process and theory behind mechanics of cutting.

**UNIT – III**

- 6 Explain ECM process and write down advantages and limitations of ECM.

**OR**

- 7 Give a brief note on chemical machining process and their applications with respect to industrial environment.

**UNIT – IV**

- 8 (a) How the metal removal rate is controlled in plasma arc machining process? Explain in detail.  
(b) Give a brief note on scope of applications and the process limitations of plasma arc machining process.

**OR**

- 9 Briefly explain the mechanics of machining, process parameters, selection of dielectric fluids of EDM process and also give their applications of different processes.

**UNIT – V**

- 10 (a) Explain the process parameters and characteristics of the electron beam machining.  
(b) Give a brief note on comparison of thermal and non-thermal process of EBM.

**OR**

- 11 Give a brief note on capabilities, features, advantages, applications and limitations of LBM process.

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