

**B.Tech. – VIEP – MECHANICAL ENGINEERING
(BTMEVI)**

Term-End Examination

December, 2015

**BIMEE-001 : UNCONVENTIONAL MANUFACTURING
PROCESSES**

Time : 3 hours

Maximum Marks : 70

Note : Answer any five questions. All questions carry equal marks. Use of scientific calculator is permitted.

1. (a) Give in detail the classification of non-conventional machining processes. Draw suitable sketches wherever necessary. 10
- (b) Explain the limitations of conventional machining processes. 4
2. (a) Why is non-conventional machining process needed ? Enlist the advantages and applications of non-conventional machining processes. 7
- (b) Explain the principle of ultrasonic machining and describe the components used in the machining process with a suitable schematic diagram. 7

3. (a) In an ECM process, for machining of iron, a metal removal rate of $1 \text{ cm}^3/\text{min}$ is desired. Determine the current required. Assume the atomic weight of iron to be 56, its valency 2, and density 7.8 g/cm^3 . Faraday constant may be taken as 96,540 Coulombs. 7
- (b) Enumerate the elements of ECM. Explain any two of them. 7
4. (a) Explain the principle of electrical discharge machining (EDM) with a suitable diagram. 7
- (b) Discuss the effect of various process parameters on EDM. 7
5. (a) Draw a neat sketch of an electron beam gun and explain its elements. 7
- (b) Give the advantages and limitations of laser beam machining (LBM). 7
6. (a) Explain the 'explosive welding' process. Discuss its principle of working with the help of a suitable sketch. 7
- (b) Compare the processes of electromagnetic forming and electro-discharge forming. 7
7. Explain the principle and operation of plasma arc welding with a labelled diagram. Also describe the elements of plasma arc welding in detail. 14