

Code No: 156DC

**R18**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**

**B. Tech III Year II Semester Examinations, August - 2022**

**UNCONVENTIONAL MACHINING PROCESSES**

(Common to ME, MCT)

Time: 3 Hours

Max.Marks:75

**Answer any five questions**  
**All questions carry equal marks**

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- 1.a) Discuss the basic limitations of conventional machining process and justify the need of conventional machining process in now a days.
- b) What is ultrasonic machining? Briefly explain about the mechanisms involved in material removal by USM process in detail. [7+8]
- 2.a) Differentiate the conventional and unconventional machining processes in terms of principles in detail.
- b) Discuss the recent developments in ultrasonic machining process in detail. [8+7]
- 3.a) What is the fundamental principle of abrasive jet machining? Briefly explain with a neat diagram, the AJM process.
- b) Explain the mechanism of material removal during ECG and how is different from ECM. [7+8]
- 4.a) Describe the principle of ECG and ECH. Discuss about the process parameters that influences the ECM. List their applications and advantages.
- b) Calculate the metal removal rate in  $\text{mm}^3/\text{min}$  in Electrochemical machining of a material having density  $8500 \text{ kg/m}^3$ , atomic wt 56, valence 2 when current used is 1100 A and Faraday constant is 96500 coulomb/mole. [7+8]
- 5.a) Explain the working principle, elements and characteristics of wire EDM process in detail.
- b) Explain in detail the process parameters in electric discharge grinding process and state its advantages and limitations. [7+8]
- 6.a) With neat sketch, explain any two power circuits used in EDM process in detail.
- b) What are the basic requirements of tool materials used in EDM process? Explain any four tool materials in detail. [7+8]
- 7.a) Explain the thermal features of Laser beam machining. Discuss the performance of various types of Lasers.
- b) Explain with neat sketch construction, working principle of the Electron Beam Machining Process in detail. [7+8]
- 8.a) With the help of a neat sketch, explain the construction of shaped electrolyte tube machining?
- b) State the principle of Chemical Machining process. Why maskants are required in chemical machining process? Explain. [7+8]

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