

20/1/24

Code No.: ME511PE

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CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III-B.TECH-II-Semester End Examinations (Supply) - January- 2024
UNCONVENTIONAL MACHINING PROCESSES
(MECH)

[Time: 3 Hours]

[Max. Marks: 70]

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A

(20 Marks)

1. a) What are the various types of energy sources used in non-traditional machining techniques? [2M]
- b) Identify the mechanism of material removal, transfer media and energy source for EDM. [2M]
- c) List the applications of WJM process. [2M]
- d) Write the basic principle of abrasive jet machine? [2M]
- e) What are the basic requirements of dielectric fluid used in EDM? [2M]
- f) What is the effect of capacitance in EDM? [2M]
- g) What are the emission lines? [2M]
- h) What are the limitations of Electron Beam Machining? [2M]
- i) What is a key application of plasma in machining processes? [2M]
- j) Name a commonly used maskant in chemical machining and provide its purpose. [2M]

PART-B

(50 Marks)

2. Explain the reasons for the development of Unconventional Machining Process. Discuss about the criteria recommended in selection of these processes. [10M]
- OR**
3. Explain how high-frequency vibrations aid in the erosion of materials and the factors that influence the efficiency of this process. [10M]
4. Discuss how the addition of abrasive particles enhances the cutting efficiency and versatility of this machining technique. [10M]
- OR**
5. Discuss the factors influencing the metal removal rate in Electrochemical Machining (ECM) [10M]
6. What are the important process parameters that control the material removal rate in EDM? Explain any four factors [10M]
- OR**
7. Explain the working principle, elements and characteristics of wire EDM. [10M]

8. Provide a comparison between thermal and non-thermal machining processes. What are the advantages and limitations of each? [10M]

OR

9. What is the general principle behind laser beam machining, and what are its primary applications? [10M]

10. Discuss the critical process parameters in plasma machining and their impact on the machining outcome. [10M]

OR

11. Examine the thermal features of laser beam machining. How does the process manage heat, and what factors influence cutting speed and accuracy of cut? [10M]
