

Code No: 156DC

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**B. Tech III Year II Semester Examinations, July - 2023****UNCONVENTIONAL MACHINING PROCESSES****(Common to ME, MCT)****Time: 3 Hours****Max. Marks: 75****Note:** i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART - A**(25 Marks)**

- 1.a) What are the limitations of ultrasonic machining? [2]
- b) Give the classification of modern machining processes. [3]
- c) What are the applications of water jet machining? [2]
- d) List out the economic aspects of ECM. [3]
- e) Give the applications of electric discharge machining. [2]
- f) What are the steps involved in the generation of sparks in EDM? [3]
- g) How do you control an electron beam? [2]
- h) Compare thermal and non-thermal processes. [3]
- i) What are different types of maskants used in chemical machining? [2]
- j) List out the applications of plasma arc machining. [3]

PART - B**(50 Marks)**

- 2.a) Discuss the constructional details of the horn of an ultrasonic machine.
- b) Elaborate the factors to be considered for the selection of non-traditional machining methods for a given application. [5+5]

OR

- 3.a) Discuss the influence of process parameters of ultrasonic machining on its performance.
- b) Build the relationship between the development in materials and non-traditional machining methods. [5+5]

- 4.a) Compare abrasive jet machining and abrasive water jet machining.
- b) How do you estimate the metal removal rate in electro chemical machining? [5+5]

OR

- 5.a) Justify the use of electro chemical grinding process in grinding of carbides.
- b) What is the influence of process variables on the metal removal rate in abrasive water jet machining? [5+5]

- 6.a) Identify the factors to be considered for the selection of tool electrode in electric discharge machining.
- b) Construct an R-L-C circuit used for the control of sparks. [5+5]

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OR

- 7.a) How do you select the dielectric fluid for electric discharge wire cutting process?
- b) Develop models for the machining accuracy in electric discharge machining. [5+5]

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- 8.a) Examine the limitations of electron beam machining.
- b) Analyze the thermal features of laser beam machining. [5+5]

OR

- 9.a) What is the motive for the use of vacuum in electron beam machining?
- b) Inspect the cutting speed and accuracy aspects of laser beam machining. [5+5]

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- 10.a) Identify the critical parameters in magnetic abrasive finishing and explain their influence.
- b) Construct a model for the relationship between process parameters and accuracy in plasma arc machining. [5+5]

OR

- 11.a) Develop a model for the removal of material through abrasive flow finishing.
- b) Identify the limitations for the application of plasma for machining. [5+5]

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