

R13

Code No: 117JH

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, November/December - 2017

UNCONVENTIONAL MACHINING PROCESSES

(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 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

(25 Marks)

- 1.a) What is non-traditional machining methods? [2]
- b) What are the basic elements of ultrasonic machining? [3]
- c) List out the applications of water jet machining. [2]
- d) Give the electro-chemistry associated with electro-chemical machining. [3]
- e) What is wire EDM? [2]
- f) What factors are to be considered for the selection of tool material in electric discharge machining? [3]
- g) What are the limitations of laser beam machining? [2]
- h) Comment about accuracy of cut in electron beam machining. [3]
- i) What are the limitations of plasma arc machining? [2]
- j) What are the applications of chemical machining? [3]

PART-B

(50 Marks)

- 2.a) Give the complete classification of modern machining methods. [5+5]
 - b) Describe the horn of an ultrasonic machine. [5+5]
- OR**
- 3.a) Comment about the applications of modern machining methods. [5+5]
 - b) Explain the basic mechanism of metal removal in ultrasonic machining. [5+5]
- 4.a) Explain the influence of nature of abrasives on metal removal rate in abrasive jet machining. [5+5]
 - b) Comment about surface finish and accuracy in electro-chemical machining. [5+5]
- OR**
5. Derive an equation for metal removal rate in electro-chemical machining. [10]
- 6.a) Explain how the pulses can be controlled in EDM using Relaxation circuit. [5+5]
 - b) With the help of a line diagram explain the working of electric discharge grinding. [5+5]
- OR**
- 7.a) Explain the basic mechanism of metal removal in electric discharge machining. [5+5]
 - b) Comment about the nature of spark eroded surfaces. [5+5]

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8. With the help of line diagram explain the construction, working and applications of electron beam machining. [10]

OR

9.a) What materials are generally used for generation of laser? Explain. [5+5]
b) Discuss the thermal features of laser beam. A

10. With the help of suitable diagrams explain the use of various modes of plasma for various purposes in industry. [10]

OR

11. What are the steps involved in the chemical machining? Explain. [10]

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