

Roll No.

22601

M. Tech. 1st Semester (ME)

CBCS Scheme

Examination – February, 2022

MICRO MACHINING PROCESSES

Paper : MTME 21C1

Time : Three Hours |

[Maximum Marks : 100]

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt five questions in all, selecting one question from each Unit. Question No. 1 is compulsory. All questions carry equal marks.

1. Explain the following : 4 × 5 = 20
- (a) Surface unevenness due to sporadic breakdown of anode in electrochemical machining.
 - (b) Surface finish optimization in ultrasonic machining.
 - (c) Error of cutting accuracy and surface accuracy in wire electric discharge machining.
 - (d) Hysteresis property of transducer.

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UNIT - I

2. Provide an overview of modern machining processes on the basis of mechanics of material removal. 20
3. Discuss some advancements achieved in machining process after introduction of modern machining processes. 20

UNIT - II

4. Explain some common materials used in micro-electro-mechanical system with their suitable examples of application. 20
5. (a) Discuss working of any two temperature measuring mechanical transducers. 10
- (b) Describe etching process in micro-electro-mechanical system. 10

UNIT - III

6. (a) Discuss electrochemistry of electrochemical machining. 8
- (b) Elaborate about machining area of electrochemical grinding. 6
- (c) Discuss different feeding arrangements for ultrasonic machining units. 6

22501 - (P-3)/(Q-9)/(22) (2)

7. (a) Explain scheme of material removal in whirling jet machining. 8
- (b) Describe effect of frequency, amplitude, feed rate, hardness ratio, grain diameter and abrasive concentration on material removal rate in ultrasonic machining. 12

UNIT - IV

8. (a) Explain principle of RC relaxation circuit with a constant dc source in electric discharge machining. 10
- (b) With schematic diagram explain process characteristics of wire electric discharge machining. 10
9. (a) Describe mechanics of electric discharge machining. 10
- (b) Discuss different sources of dimensional inaccuracy in electric discharge machining. 10

22501 - (P-3)/(Q-9)/(22) (3)