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**Reg. No. :**

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**Question Paper Code: 59711A**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

Elective

Mechanical Engineering

15UME911 - UNCONVENTIONAL MACHINING PROCESS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- Which process is best suited for producing micro holes? CO1- R  
(a) Laser beam Machining (b) Abrasive jet machining  
(c) Electro chemical Machining (d) Ultrasonic Machining
- In mechanical machining, material is removed by \_\_\_\_\_ CO1- R  
(a) Erosion (b) Corrosion (c) Vaporization (d) Abrasion
- Which of the following gases is not used in Abrasive jet machining? CO2- R  
(a) Air (b) Nitrogen (c) Carbon di-oxide (d) Argon
- In Electrochemical machining the gap maintained between tool and work piece is of the order of CO2- R  
(a) 0.05mm (b) 0.1mm (c) 0.5mm (d) 1mm
- The temperature developed in EDM is in the order of CO3- R  
(a) 14,000C (b) 10,000C (c) 5,000C (d) 2,500C
- In wire cut EDM the electrode is a CO3- R  
(a) Thin wire (b) Thin sheet (c) Copper bar (d) Tungsten plate
- What is the value of voltage that the power supply unit supplies for ECM? CO4- R  
(a) 0.01 to 1V (b) 2 to 30 V (c) 50 to 80 V (d) 100 to 160 V

8. MRR in Electrochemical machining depends on CO4- R  
 (a) Hardness of work material (b) Atomic weight of work material  
 (c) Both are correct (d) Ductility of work material
9. In Electron beam machining, work-piece is held in CO5- R  
 (a) Vacuum chamber (b) Dielectric medium  
 (c) Electrolyte (d) None of these
10. Which of the following process is based on Faradays law of Electrolysis? CO5- R  
 (a) Electron beam Machining (b) Laser Beam Machining  
 (c) Electrical discharge Machining (d) Electrochemical Machining

PART – B (5 x 2= 10 Marks)

11. Classify the various types of energy sources used in nontraditional machining techniques CO1- R
12. Name the abrasive materials that are used for the AJM. CO2- R
13. Outline the applications of EDM process. CO3- R
14. Mention the merits of using chemical machining CO4- R
15. Explain any one method of producing Laser. CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) Classify the modern machining processes in detail. Justify for its economic aspects. CO1- App (16)  
 Or  
 (b) Analyze about the criteria recommended in selection of these processes and explain the reasons for the development of Unconventional Machining Processes. CO1- App (16)
17. (a) Explain the process parameters of Water Jet Machining process. CO2- U (16)  
 Or  
 (b) Write the AJM process variables that influence the rate of material removal rate in the machining process. CO2- U (16)
18. (a) Interpret the process parameters of EDM with the advantages and applications CO3- U (16)

Or

- (b) Explain the process of Electrical discharge wire cutting and list of its advantages, limitations and applications. CO3- U (16)
19. (a) Explain the working principle of Electro Chemical Grinding and discuss its process capabilities CO4- U (16)
- Or
- (b) With a neat sketch, explain the construction and working principle of ECM and also list the applications CO4- U (16)
20. (a) Examine the parameters that are affecting the performance of Plasma Arc Machining. CO5- U (16)
- Or
- (b) With a neat sketch, explain the Working principle of Plasma Arc Machining process its parameters, advantages and applications. CO5- U (16)

