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**Reg. No. :**

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**Question Paper Code: 59711**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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)

1. Non-Traditional machining is recommended when we need which of the following features? CO1- R  
(a) Complex shapes                      (b) Better surface quality  
(c) Both are correct                      (d) None of the above
2. In mechanical machining, material is removed by \_\_\_\_\_. CO1- R  
(a) Erosion                      (b) Corrosion                      (c) Vaporization                      (d) Abrasion
3. Water jet machining process can be used for CO2- R  
(a) Conductors                      (b) Insulators                      (c) Metals                      (d) All the above
4. The following device is used for converting electrical impulses into mechanical vibration in USM CO2- R  
(a) Transducer                      (b) Oscillator                      (c) Tank                      (d) Pump
5. The temperature developed in EDM is in the order of CO3- R  
(a) 14,000C                      (b) 10,000C                      (c) 5,000C                      (d) 2,500C
6. \_\_\_\_\_ is the correct gap between the electrode and workpiece in EDM CO3- R  
(a) 0.001 – 0.05 mm                      (b) 0.01 – 0.5 mm                      (c) 0.1 – 5 mm                      (d) 1 – 5 mm
7. By using Chemical machining, which of the following can be produced? CO4- R  
(a) Slots                      (b) Pockets                      (c) Contours                      (d) All the above

8. Servo control system is responsible for which action in ECM? CO4- R  
(a) Control Power supply (b) Control Electrolyte supply  
(c) Control feed to tool (d) All the above

9. Physics of laser is very complex due to which of the reasons below? CO5- R  
(a) ) Scattering loss (b) Reflection loss  
(c) Both are correct (d) None of the mentioned

10. Surface defects that may be occurred during thermal machining are? CO5- R  
(a) Micro cracking (b) Heat affected zones  
(c) Striations (d) All of the mentioned

PART – B (5 x 2= 10 Marks)

11. What do you mean by unconventional machining process? CO1- R  
12. Mention any two applications of ultrasonic machining process CO2- R  
13. Tell the properties of dielectric fluid CO3- R  
14. Mention the merits of using chemical machining CO4- R  
15. What is plasma? CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) What are the basic factors upon which the unconventional manufacturing processes are classified? Explain in detail. CO1- U (16)

Or

- (b) Explain the need for the development of Unconventional Machining Process by considering any four simple cases of your own interest. CO1- U (16)

17. (a) With suitable sketches explain the working principle of abrasive jet machining process and also discuss the process parameters and list the merits. CO2- U (16)

Or

- (b) Explain the working principle of ultrasonic machining process with suitable illustrations and also discuss its merits and applications CO2- U (16)

18. (a) Discuss the working principle of electrical discharge machining process with suitable illustration and also discuss its process parameters in detail. CO3- U (16)

Or

- (b) With necessary sketch explain the working principle of wire electrical discharge machining process and also discuss its applications in detail. CO3- U (16)

19. (a) With necessary sketch explain the working principle of electro chemical machining process and also discuss its merits and demerits. CO4- U (16)

Or

- (b) Explain the working principle of chemical machine (CHM) process with neat diagram. State its advantages and limitations. CO4- U (16)

20. (a) Identify the suitable unconventional machining process in which it needs vacuum and also discuss the process parameters in detail and list the merits. CO5- App (16)

Or

- (b) Suggest a suitable thermal energy based unconventional machining process in which the MRR is high and also discuss the process parameters in detail and list the merits. CO5- App (16)

