A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 59711

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2022

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. Which process is best suited for producing micro holes? CO1- R

   (a) Laser beam Machining (b) Abrasive jet machining

   (c) Elector chemical Machining (d) Ultrasonic Machining

2. Non-Traditional machining can also be called as? CO1- R

   (a) Contact Machining (b) Non-contact machining

   (c) Partial contact machining (d) Half contact machining

3. What is the velocity of water jet stream in water jet machining? CO2- R

   (a) 100 m/sec (b) 300 m/sec (c) 700 m/sec (d) 900 m/sec

4. Ultrasonic Machining can be used for which of the following processes and applications? CO2- R

   (a) Drilling (b) Sinking and contouring

   (c) Polishing (d) All of the above

5. Which type of electrode is used for drilling in Electro discharge machining? CO3- R

   (a) Flat electrode (b) Cuboidal electrode

   (c) Tubular electrode (d) Spherical electrode

6. In wire cut EDM the electrode is a CO3- R

(a) Copper bar (b) Thin sheet (c) Tungsten plate (d) Thin wire

7. With an increase in unmanned machining hours, what happens to the efficiency of ECM? CO4-R

(a) Increases (b) Reduces (c) Increase and then decrease (d) Decreases

8. The grinding wheel used in the ECG process is of which charge given below? CO4- R

(a) Positive charge (b) Negative charge (c) Neutral charge (d) All of the above

9. The process utilizing mainly thermal energy for removing material is CO5- R

(a) Ultrasonic machining (b) Electrochemical machining

(c) Laser beam machining (d) Abrasive jet machining

10. Which of the following are the properties of a laser? CO5- R

(a) Highly collimated (b) Monochromatic (c) Coherent light beam (d) All of the above

PART – B (5 x 2= 10 Marks)

11. Distinguish traditional and non-traditional machining. CO1 R

12. List the applications of WJM. CO2 R

13. Define tool wear. How do you prevent it? CO3 R

14. Define etchants and maskant. CO4 R

15. State the working Principle of Plasma arc Machining Process. CO5 R

PART – C (5 x 16= 80 Marks)

16. (a) Analyze the process capabilities and process economy of different unconventional machining processes in detail. CO1- U (16)

Or

(b) Explain the factors that should be considered during the selection of an appropriate unconventional machining process for a given job. CO1- U (16)

17. (a) Discuss in detail the working principle of Abrasive jet machining process and explain briefly how its various parameters influence the material removal rate. CO2- U (16)

Or

	(b)	Discuss the USM process parameters on machinability of different materials and also explain USM with neat sketches.	CO2- U	(16)
18.	(a)	Describe the wire cut EDM equipment, its working applications and advantages.	CO3- U	(16)
		Or		
	(b)	Demonstrate the process parameters and process capabilities of EDM and also discuss the various electrode materials used in EDM process.	CO3- U	(16)
19.	(a)	With the help of a simple diagram, explain briefly the working of electro - chemical machining process.	CO4- U	(16)
		Or		
	(b)	Explain how water based maskant used for chemical milling and etching process.	CO4- U	(16)
20.	(a)	Explain with a neat sketch, the working principle of Electron Beam Machining process. And also list its applications.	CO5- U	(16)
		Or		
	(b)	Compare the LBM, PAM and EBM in terms of process capabilities and limitations.	CO5- U	(16)