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Question Paper Code: 59711

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

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
- 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
- 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
- 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
- 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)

