



**B.E DEGREE EXAMINATIONS: NOV/DEC 2022**

(Regulation 2018)

Seventh Semester

**MECHATRONICS ENGINEERING**

U18MCE0013: Precision Manufacturing

**COURSE OUTCOMES**

- CO1:** Describe different types of Unconventional Machining processes and principle of mechanical energy based unconventional machining processes.
- CO2:** Explain the working principle of electrical energy based unconventional machining processes.
- CO3:** Explain the working principle of chemical energy based unconventional machining processes.
- CO4:** Explain the working principle of electro chemical energy based unconventional machining processes.
- CO5:** Explain the working principle of thermal energy based unconventional machining processes.
- CO6:** Describe the working principle of super finishing process.

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 2 = 20 Marks)**

**(Answer not more than 40 words)**

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|--|-----|-------------------|
| 1. Distinguish unconventional and conventional machining process.  | CO1 | [K <sub>2</sub> ] |
| 2. List the types of abrasives used in abrasive machining process. | CO1 | [K <sub>2</sub> ] |
| 3. Write the functions of dielectric fluid used in EDM.            | CO2 | [K <sub>2</sub> ] |
| 4. Brief the wire cut EDM. write its salient feature               | CO2 | [K <sub>2</sub> ] |
| 5. What are the materials used to make the tool electrode in ECM.  | CO3 | [K <sub>2</sub> ] |
| 6. State the principle of ECG process.                             | CO4 | [K <sub>2</sub> ] |
| 7. Classify the laser used in laser beam machining process.        | CO5 | [K <sub>2</sub> ] |
| 8. Why electron beam machining done in high vacuum chamber?        | CO5 | [K <sub>2</sub> ] |
| 9. Define the burnishing process.                                  | CO6 | [K <sub>2</sub> ] |
| 10. In What way the lapping process differs from grinding process. | CO6 | [K <sub>2</sub> ] |

**Answer any FIVE Questions:-**

**PART B (5 x 4 = 20 Marks)**

**(Answer not more than 80 words)**

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|---|-----|-------------------|
| 11. Draw the abrasive machining process along with its process parameter.           | CO1 | [K <sub>2</sub> ] |
| 12. List the types of power circuits used in EDM. Explain any one with neat sketch. | CO2 | [K <sub>2</sub> ] |

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|-----|--|--|-----|-------------------|
| 13. | Write the different types of maskant and etchant used in chemical machining process. |  | CO3 | [K <sub>2</sub> ] |
| 14. | Brief the working principles of electro chemical honing process with neat sketch.    |  | CO4 | [K <sub>2</sub> ] |
| 15. | Illustrate plasma arc machining process with its application.                        |  | CO5 | [K <sub>2</sub> ] |
| 16. | Discuss the working principles of magnetic float polishing.                          |  | CO6 | [K <sub>2</sub> ] |

**Answer any FIVE Questions:-  
PART C (5 x 12 = 60 Marks)  
(Answer not more than 300 words)**

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|-----|--|----|-----|-------------------|
| 17. | Discuss the working principles of ultrasonic machining process with suitable sketch. Also list and explain different types of transducer used in ultrasonic machining process. | 12 | CO1 | [K <sub>2</sub> ] |
| 18. | a) Illustrate wire-cut EDM machine and explain working principles of wire-cut EDM.   | 10 | CO2 | [K <sub>2</sub> ] |
|     | b) Write the properties of dielectric fluid used in EDM.   | 02 | CO2 | [K <sub>2</sub> ] |
| 19. | a) List and explain the sequence of chemical machining process with neat sketch.   | 10 | CO3 | [K <sub>2</sub> ] |
|     | b) Write the different applications of chemical machining process.   | 02 | CO4 | [K <sub>2</sub> ] |
| 20. | Describe the working principles of electrochemical machining process along with the factors that affecting the MRR in electro chemical machining process.                      | 12 | CO4 | [K <sub>2</sub> ] |
| 21. | List the thermal energy based unconventional machining process. Explain any one with suitable sketch.  | 12 | CO5 | [K <sub>2</sub> ] |
| 22. | a) Discuss the working principles of honing machining.   | 08 | CO6 | [K <sub>2</sub> ] |
|     | b) Brief the term magnetic field assisted polishing and electro polishing.   | 04 | CO6 | [K <sub>2</sub> ] |

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