



B.E/B.TECH DEGREE EXAMINATIONS: NOV/DEC 2024

(Regulation 2018)

Fifth Semester

MECHANICAL ENGINEERING

U18MEE0013: Modern Machining Processes

COURSE OUTCOMES

- CO1:** Apply the appropriate advanced machining components recognizing the industrial requirements.
- CO2:** Apply the knowledge of advanced machining process using mechanical energy.
- CO3:** Apply the principle of material removal by electrical discharge machining .
- CO4:** Apply the principle of material removal by chemical and electro chemical energy based processes
- CO5:** Apply the fundamentals of radian energy processes.
- CO6:** Apply the knowledge and concepts in micro machining 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. Classify modern machining processes on the basis of type of energy employed. | CO1 | [K ₁] |
| 2. Write down the different machining characteristics with respect to which the modern machining processes can be analyzed. | CO1 | [K ₁] |
| 3. Outline the parameters that influence the material removal rate in ultrasonic machining process. | CO2 | [K ₁] |
| 4. Write down the various abrasives used in AJM process. | CO2 | [K ₁] |
| 5. List out the desirable properties of good dielectric fluids. Recall commonly used fluids in EDM. | CO3 | [K ₁] |
| 6. Mention the applications of wire cut EDM. | CO3 | [K ₁] |
| 7. Enlist the factors that influence the material removal rate in ECM. | CO4 | [K ₁] |
| 8. Write down the advantages of ECG over conventional grinding. | CO4 | [K ₁] |
| 9. Why tungsten is not used as electrode material in plasma arc cutting? | CO5 | [K ₂] |
| 10. Classify micro machining process. | CO6 | [K ₁] |

Answer any FIVE Questions:-
PART B (5 x 16 = 80 Marks)
(Answer not more than 400 words)

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|-----|----|--|----|-----|-------------------|
| 11. | a) | Explain the factors to be considered during the selection of an appropriate modern machining process for a given job. | 8 | CO1 | [K ₂] |
| | b) | Compare the process capabilities and limitations of Chemical and thermal energy based machining process. | 8 | CO1 | [K ₃] |
| 12. | a) | Discuss with sketch the working principle of ultrasonic machining process and list its applications. | 8 | CO2 | [K ₃] |
| | b) | Describe in detail the principle of abrasive jet machining process and explain how the process parameters influence the MRR. | 8 | CO2 | [K ₂] |
| 13. | a) | Explain the arrangement of an electrical discharge machining process and write down the applications. | 8 | CO3 | [K ₂] |
| | b) | Describe the principle, construction of wire-cut electrical discharge machining process. | 8 | CO3 | [K ₂] |
| 14. | a) | Explain the following with respect to chemical machining process:
i) Characteristics and selection of etchant
ii) Applications | 8 | CO4 | [K ₂] |
| | b) | Discuss in detail the tool feed system and electrolyte flow system in electro chemical machining. | 8 | CO4 | [K ₃] |
| 15. | a) | Explain the process of electron beam machining with sketch. | 8 | CO5 | [K ₂] |
| | b) | Discuss the factors that influence the quality of cut in plasma arc machining process. | 8 | CO5 | [K ₃] |
| 16. | a) | Describe laser methods, thermal features and applications of laser beam machining process. | 10 | CO5 | [K ₂] |
| | b) | Write a note on nano finishing process. | 6 | CO6 | [K ₂] |
