Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 21828

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2015.

Sixth Semester

Mechanical Engineering

ME 2026/ME 606/10122 MEE 17 — UNCONVENTIONAL MACHINING PROCESSES/UNCONVENTIONAL MANUFACTURING PROCESSES

(Common to B.E. Mechanical and Automation Engineering and B.E. Production Engineering)

(Regulations 2008/2010)

(Common to PTME 2026 — Unconventional Machining Processes for B.E. (Part-Time) Sixth Semester — Mechanical Engineering — Regulations 2009)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — ($10 \times 2 = 20$ marks)

1. List the unconventional machining processes based on chemical energy.

2. What are the advantages of Unconventional Machining processes?

3. Name any four abrasives used in AJM process and mention their recommended use.

4. What are the applications of USM process?

5. Write short notes on dielectric fluid used in EDM process.

6. List out the applications of wire cut EDM process.

7. What are etchants in Chemical Machining process?

8. Write the formula for finding the MRR in ECM process.

9. What is the principle of laser beam machining process?

10. List the applications of electron beam machining process.

PART B — (5 × 16 = 80 marks)

11. (a) Explain with case study, the needs of unconventional Machining processes. (16)

Or

(b) (i) How are the unconventional machining processes classified? (6)

(ii) Compare the process application of unconventional machining processes. (10)

12. (a) (i) Briefly explain the process of abrasive jet machining. (6)

(ii) What are the variables that affect the cutting phenomena in AJM process? And also explain the effect of any two variables on MRR. (10)

Or

(b) (i) Sketch the water jet cutting unit and also explain the mechanism of jet cutting. (8)

(ii) With a neat sketch, explain the working principle of ultrasonic machining process. (8)

13. (a) (i) Explain the break down mechanism in EDM process. (8)

(ii) Discuss the various electrode materials used in EDM process. (8)

Or

(b) (i) Explain with a neat sketch, the wire cut EDM process. (8)

(ii) Discuss the types of tool wear in EDM process. (8)

14. (a) (i) With a neat sketch, explain the chemical machining process. (10)

(ii) List the advantages and limitations of CHM process. (6)

Or

(b) (i) Explain with a neat sketch, the electro chemical grinding process. And also list its applications. (12)

(ii) What is the principle of ECH? (4)

15. (a) Explain with a neat sketch, the working principle of Electron Beam Machining process. And also list its applications. (16)

Or

(b) With a neat sketch, explain the process of plasma arc machining. (16)

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