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Question Paper Code : 91605

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2014.

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)

(Regulation 2008/2010)

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

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the need of unconventional machining?
2. List out the limitations of traditional machining processes.
3. Why is abrasive jet machining not recommended to machine ductile materials?
4. What are the characteristics of a good suspension media of the USM process?
5. What is the function of servo mechanism in EDM process?
6. List out the importance of EDM process.
7. Elaborate the functions of electrolyte in ECM.
8. Give the applications of electro chemical grinding.
9. Can you machine electrically non-conductive materials by PAM? Justify your answer.
10. Contrast LBM and EBM.

PART B — (5 × 16 = 80 marks)

11. (a) Differentiate between conventional and unconventional machining processes. Discuss the reasons for the development of unconventional machining methods. (16)

Or

- (b) Give the complete classification of unconventional machining processes with the distinctive features of each of them. (16)

12. (a) Discuss in detail the principle and influence of process variables upon the material removal in ultrasonic machining. (16)

Or

- (b) (i) Discuss the effects of various process parameters of abrasive jet machining on accuracy and MRR. (8)

- (ii) Write a brief note on the special feature of the equipment used in water jet machining. (8)

13. (a) (i) Explain the working principle, elements and characteristics of wire EDM. (8)

- (ii) Explain how the stratified wire works. Also discuss about the recent developments in wire EDM. (8)

Or

- (b) (i) Explain the different types of control circuits used in EDM process. (10)

- (ii) What are the basic requirements of tool materials in EDM process? Name any four materials. (6)

14. (a) (i) Discuss the effect of high temperature and pressure of electrolyte on ECM process. (4)

- (ii) Briefly discuss Electro chemical deburring process. (12)

Or

- (b) (i) Why maskants are required in chemical machining process? Explain. (6)

- (ii) Describe the electrochemical honing process with a neat sketch. (10)

15. (a) Explain the production of laser beam and working principle of LBM process. (16)

Or

- (b) Explain the principle, construction and working of electron beam machining. Also how can a complex shape be cut using EBM process. (16)