

Reg. No. :

**Question Paper Code : Q 2296**

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2009.

Sixth Semester

(Regulation 2004)

Mechanical Engineering

ME 1001 — UNCONVENTIONAL MACHINING PROCESSES

(Common to Production Engineering)

(Common to B.E. (Part-Time) Fifth Semester Mechanical Engineering –  
Regulation 2005)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Why is unconventional mechanical machining process not popular?
2. How do you minimize pulsation in water jet machining?
3. Why is Abrasive jet machining not recommended to machine ductile materials?
4. What is the influence of dielectric contamination on the EDM?
5. Mention the factors influencing the choice of electrode material in EDM.
6. Distinguish between peel and photographic resists.
7. Why is surface finish obtained in CHM of alloys poor?
8. Mention the specific application of Electro chemical grinding.
9. What do you understand by fourth state of matter?
10. How is the work table protected from getting damaged by EBM while machining the work piece?

PART B — (5 × 16 = 80 marks)

11. (a) Explain the basis upon which modern machining are classified. Why the unconventional machining process not completely taking over the conventional machining process?

Or

- (b) Recommend a suitable machining process for (i) Cutting a glass plate into two pieces and (ii) Ultra precision machining in microprocessors. Justify your answer with proper explanations.

12. (a) (i) Discuss in detail the principle and influence of process variables upon the material removal in ultrasonic machining. (12)
- (ii) Ultrasonic machining is used for drilling a hole in aluminium and cast iron under same conditions. Which one will have higher depth drilled? Justify. (4)

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 features of the equipment used in water jet machining. (8)
13. (a) (i) With a neat sketch explain the principle and working of EDM. (8)
- (ii) Discuss in detail about the types of pulse generators used in EDM. (8)

Or

- (b) (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)
14. (a) (i) Discuss the effect of high temperature and pressure of electrolyte on ECM process. (4)
- (ii) Briefly discuss about Electro chemical Deburring process. (12)

Or

- (b) (i) Explain in detail the principle involved in chemical machining process. (8)
- (ii) Discuss briefly about the various parameters of chemical machining process that influence the performance of the machining. (8)
15. (a) Explain the principle, construction and working of electron beam machining. Also how a complex shape can be cut using EBM process?

Or

- (b) (i) Explain the production of laser beam and working principle of laser beam machining. (10)
- (ii) Write a brief note on underwater plasma arc cutting system. (6)