

**IV B.Tech I Semester Supplementary Examinations, April/May 2005**  
**UNCONVENTIONAL MACHINING PROCESS**

**( Common to Mechanical Engineering and Production Engineering)**

**Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

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1. (a) Explain the influence of work piece hardness and tool hardness on metal removal rate in ultrasonic machining process.  
(b) Describe how abrasive grit size influences the surface roughness of the machined surfaces in USM.
2. (a) Describe the role of nozzle in water jet machining.  
(b) Explain how the distance between nozzle and work piece influence the material removal rate.
3. (a) Why is it important to have mask on workpiece in Chemical Machining operations? Do you recommend Chemical Machining a part without a mask? If yes, give an example.  
(b) Describe the dip masking technique in Chemical Machining. What are the precautions required?
4. (a) Explain the process of Chemical Machining and its advantages.  
(b) What are the important industrial applications of Chemical Machining?
5. What are the various E.D. M. Parameters that influence metal removal rate. Discuss them in detail.
6. For a relaxation circuit used in E.D.M. process prove that  
 $V_c = V_0(1 - e^{-t/R_c C})$  Where  
 $V_c$  = Charged voltage of condenser in volts  
 $V_0$  = e.m.f. Applied across the circuit for charging the condenser in volts  
 $R_c$  = Charging resistance in ohms  
 $C$  = Capacitance of condenser in farads  
 $t$  = time in sec.
7. State the advantages, disadvantages, limitations and applications of laser beam machining.
8. Derive an expression for the pressure to be applied by the hydraulic system in hydrostatic extrusion.

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