

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: 70

Answer any FIVE Questions
All Questions carry equal marks

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) Explain the characteristics of abrasive jet machining.
(b) What are the advantages and limitations of abrasive jet machining?
3. (a) Describe the reactions in a electrolytic cell suitable for Electro Chemical Machining.
(b) Compare the suitability of Sodium Chloride and Sodium Nitrate as electrolytes for Electro Chemical Machining.
4. (a) In a certain Electro Chemical Machining of a metallic die, a metal removal rate of $2\text{cm}^3/\text{min}$ is desired. Determine the current required for machining given that: Atomic weight: 56 gms
Valency of dissolution: 2
Density of material: 7.8 gms/cm^3
Voltage: 45 volts
Electrolyte velocity: 20 m /sec.
Inter Electrode gap: 0.05 mm
Electrolyte type & concentration: 20% sodium chloride.
(b) State the assumptions made in the above case.
5. What are the various thermal metal removal processes? Clearly, bring out the differences between them and explain them in brief.
6. Describe the advantages and limitations of power supply with rotary impulse generator circuit used in EDM.
7. (a) Explain about the hole drilling & surface machining capabilities of electron beam.
(b) How machining rate can be controlled in EBM process.
8. Derive an expression for the pressure to be applied by the hydraulic system in hydrostatic extrusion.
