

IV B.Tech I Semester Supplementary Examinations, November 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

1. (a) What is a piezoelectric transducer? Explain how it is used for producing ultrasonic waves. [3+5=8]
 (b) Explain with the help of a neat sketch the working principle of ultrasonic machining. [4+4=8]
2. (a) With the help of neat sketch explain the mechanism of material removal in abrasive jet machining process. [3+5=8]
 (b) What are the factors affecting the material removal rate in abrasive jet machining? Explain. [8]
3. (a) Distinguish between etch rate and etch factor. Why are they important in Chemical Machining? How do you estimate them? [3+3+4=10]
 (b) What is the care required in demasking? How is it achieved? [3+3=6]
4. Describe the influence of the following in Electro Chemical Machining. [4x4=16]
 - (a) polarization
 - (b) acids as electrolytes
 - (c) initial condition of workpiece and surface preparation prior to machining.
 - (d) interelectrode gap. [16]
5. Explain with neat sketch the constant tool feed mechanism used In E.D.M. to maintain a fixed gap in between the work and tool electrode. [4+12]
6. To drill a hole of 10 mm dia. in carbon steel using brass as tool electrode and kerosene as dielectric, the time taken is 250 min. Using E.D.M. process. The process parameters used are: - [16]

D.C voltage = 200 volts
 Break down voltage = 80 volts
 Inter electrode gap = 300 microns
 Resistance in the circuits = 100 ohms
 Capacitance in the circuits = 15 micro-farads
 Calculate the total quantity of metal machined in mm^3 .
7. (a) What do you mean by Laser Beam machining (LBM)? [6]
 (b) What is a spontaneous emission? [4]

- (c) Explain the physical principal of laser with suitable diagram. [4+2]
8. Derive an expression for the pressure to be applied by the hydraulic system in hydrostatic extrusion. [16]

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