



Sixth Semester B.E. Degree Examination, June/July 2011
Non – Traditional Machining

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions selecting
atleast TWO questions from each part.**

PART – A

- 1 a. Explain the need for development of non traditional machining. (04 Marks)
- b. Write a note on the source of energy harnessed and mechanism of material removal in nontraditional machining. (06 Marks)
- c. Write a note on abrasive and liquid media in USM. (10 Marks)

- 2 a. Discuss the influence of the following parameters on USM process : (10 Marks)
 - i) Amplitude and frequency of vibration
 - ii) Grain size
 - iii) Slurry
- b. Write a note on process capability of USM. (05 Marks)
- c. Briefly explain the process of “water jet machining”. (05 Marks)

- 3 a. How does the following parameters affect MRR in abrasive jet machining? (12 Marks)
 - i) Nozzle gap distance
 - ii) Abrasive size
 - iii) Nozzle pressure.
- b. Write a note on abrasives used in AJM with examples. (08 Marks)

- 4 a. Describe various process parameters affecting ECM. (10 Marks)
- b. Calculate MRR and electrode feed rate in an ECM of iron (Fe) that has a cross sectional area of 25 × 25 mm with NaCl in water as electrolyte. The gap between the tool and work piece is 0.25 mm. The supply voltage is 12 VDC and specific resistance of electrolyte is 3 Ω cm. Given the atomic weight of iron 55.85, valence = 2 ; density $7.87 \times 10^6 \text{ g/m}^3$. (07 Marks)
- c. Differentiate between “fludging” and “non – fludging” electrolyte. (03 Marks)

PART – B

- 5 a. Discuss the factors to be considered for selection of ‘Maskants’ and the types that are used in ‘chemical machining’ (10 Marks)
- b. Differentiate between ‘chemical milling’ and chemical blanking’. (04 Marks)
- c. Write a note on ‘etchants’ in ‘chemical milling’. (06 Marks)

- 6 a. Describe ‘dielectric fluid’ used in EDM. (10 Marks)
- b. Briefly explain effects of
 - i) Current / supply voltage
 - ii) Spark frequency. (10 Marks)

- 7 a. Write a note on “generation of plasma” in plasma arc machining. (05 Marks)
- b. Sketch and explain any one type of plasma torch. (10 Marks)
- c. Explain a typical laser system adopted for machining process. (05 Marks)

- 8 a. With a sketch, explain the principle of EBM. (08 Marks)
- b. Comment on the parameters influencing MRR in EBM. (08 Marks)
- c. Briefly discuss the merits and demerits of EBM. (04 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

