

Paper ID [PE507]

(Please fill this Paper ID in OMR Sheet)

M. Tech.

NON-CONVENTIONAL MACHINING PROCESSES (PE - 507)

Time : 03 Hours

Maximum Marks : 100

Instruction to Candidates:

- 1) Attempt any Five Questions.
- 2) All questions carry equal marks.

- Q1)** (a) Sketch and explain the schematic diagram of AJM system.
(b) Why different abrasives produce different MRR.
(c) Discuss the reasons for inaccuracies in AJM process.
- Q2)** (a) If suppose USM is used for drilling a hole (under the same machining conditions) in Aluminium and Cast Iron. Which one will have higher depth of the drilled hole and why?
(b) Explain the functions of 'Horn' in USM.
(c) What do you understand by 'transducer' and 'magnetostriction effects'?
- Q3)** (a) Explain various parameters that influence the performance of chemical machining process.
(b) Write in tabular form the basic differences between chemical and electro-chemical processes.
(c) Why surface finish obtained in case of chemical machining of alloys is poor? Explain in brief.
- Q4)** (a) Discuss the mechanism of material removal in EDM process.
(b) What are the different ways of gap-flushing used in EDM?
(c) Discuss the factors influencing the choice of electrode material in EDM. Name the best electrode material for finish machining a small die made of WC by EDM.

- Q5)** (a) Explain the effect of 'focusing' on the performance of laser beam machining.
- (b) What are the different beam manipulation devices used for laser processing of material.
- (c) Explain the principle of laser beam.
- Q6)** (a) Explain why vacuum is needed in Electron beam process and also tell its order.
- (b) Write the specific applications of EBM.
- (c) How the work table is protected from getting damaged by the electron beam which has completely penetrated the workpiece.
- Q7)** (a) Explain the basic principle behind the explosive forming.
- (b) What are the types of pulse generators used in Electric Discharge machining? Discuss the merits and demerits of each one of them.
- Q8)** (a) Derive a theoretical relationship for the determination of the MRR in Electro-Chemical Machining.
- (b) Derive an expression for MRR in working of ductile material using USM.