Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.Tech (ME)/SEM-2/PTM-202/2011

2011

NON-TRADITIONAL MACHINING PROCESSES

Time Allotted : 3 Hours Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer any *five* questions. 5 × 14 = 70

1. Discuss why the AJM technique, when applied do ductile materials, leads to a low rate of metal removal. Discuss the rate of metal removal on the following parameters :

   a) Grain size

   b) Jet velocity.

2. What are the principles of electrochemical machining ? What are the materials commonly used for making a tool for use in this method ? Is there any limitation on the type of material that can be machined by ECM ?

3. What are the functions of an electrolyte ? Discuss the chemistry involved in ECM process. Derive a theoretical relationship for the determination of M.R.R. in ECM process.

4. What are the specific advantages of using chemical machining over electrochemical machining ? Give some practical applications of the chemical machining process.

5. Discuss the advantages of EDM as compared to other non-traditional methods with regard to

   a) metal removal rate

   b) accuracy

   c) surface finish.

6. In an EDM operation with R-C circuit the following data are available :

   Supply voltage = 100 V

   Discharge voltage = 75 V

   Resistance (R) = 10 ohms.

   20% of discharge energy used up in metal removal operation.

   Calculate the time required to drill a 10 mm diameter hole in a steel workpiece having a thickness of 15 mm.