

**PIE Tech****POLLACHI INSTITUTE OF ENGINEERING AND TECHNOLOGY**
(Approved by **AICTE** and Affiliated to **Anna University**) *sky is the limit***Degree / Branch: BE / Mechanical Engineering****Semester /Year: VII / IV****Sub Code / Name: ME8073 / UNCONVENTIONAL MACHINING PROCESSES****Question Bank (2Mark & 16 Mark)****UNIT I - INTRODUCTION AND MECHANICAL ENERGY BASED PROCESSES****PART A – 2 MARKS**

1. What do you mean by Unconventional machining process?

Unconventional machining process is defined as a group of processes that remove excess material by various techniques involving mechanical, thermal, electrical or chemical energy or combinations of these energies but do not use a sharp cutting tools as in traditional manufacturing processes.

2. List down various mechanical energy based Unconventional machining processes. (Nov/Dec-2004& Apr/May-2010)

The various mechanical processes that are mechanical energy based are

1. Abrasive Jet Machining (AJM)
2. Ultrasonic Machining (USM)
3. Water Jet Machining (WJM)
4. Abrasive Water Jet Machining (AWJM)

3. How will you compare various non-traditional processes?(Nov/Dec-2008)

The comparison of various non-conventional machining process can be done based on the following parameters.

1. Physical parameters involved in the processes
2. Capability of machining different shapes of work material
3. Applicability of different processes to various types of material
4. Operational characteristics of manufacturing and
5. Economics involved in the various processes.

4. What are the different machining characteristics with respect to which the nontraditional machining processes can be analyzed?(Nov/Dec-2008)

The machining characteristics of different non-conventional processes can be analyzed with respect to

- 1 Metal removal rate
- 2 Tolerance maintained
- 3 Surface finish obtained
- 4 Power required for machining

5. What are the various thermal energy methods of UCM?

The various thermal energy methods of UCM are Laser Beam machining, Plasma Arc machining, Electron beam machining and Ion Beam machining.

6. What are the various chemical energy methods of UCM?

The various chemical energy methods of UCM are Electro chemical machining, Electro chemical grinding, Electro chemical honing and Electro chemical discharge machining.

7. What are the various mechanical energy methods of UCM?

The various mechanical energy methods of UCM are ultrasonic machining, abrasive jet machining and water jet machining.

8. What is the unconventional process which is used to remove maximum material?

The processes which remove maximum material are Electro chemical machining and plasma arc machining.

9. What is the unconventional process which removes minimum material?

The process which remove minimum material are Electron beam machining.

10. What is the unconventional process which consumes maximum power?

The process which consumes maximum power is laser beam machining.

11. What is the unconventional process which consumes minimum power?

The process which consumes minimum power is plasma arc machining.

12. What type of energy source is applied in the ion beam machining process?

Ionised substance is used as energy source in ion beam machining process.

13. What type of energy source is applied in ECM process?

Electrical current is used as energy source in ECM process.

14. What is type of energy source applied in chemical machining process?

Corrosive agents are used as energy source in chemical machining process.

PART B

1. Write down the energy transfer media, energy source and mechanism of metal removal for the nontraditional machining processes. (16 marks) (May/June-2006)
2. Explain the classification of Unconventional machining according to major energy source employed? (8marks) (Apr/May-2008)
3. What are the various aspects to be considered while selecting a UCM process? (16 marks) (May/June-2007)
4. How are the Unconventional machining process classified? (8marks) (May/June-2012)
5. Classify unconventional machining processes based on basic mechanism involved in the process, sources of energy required for material removal, medium of transfer of energies and type of energy required to shape the materials. (16 marks) (Apr/May-2008)
6. What do you understand by the word 'unconventional' in unconventional machining process? Is it justified to use this word in the context of utilization of these processes in the shop floor? (8 marks) (May/June-2012)
7. What is the need for development of unconventional machining processes? Explain with examples. (16 marks) (May/June-2007)
8. What is the importance of unconventional machining? (8 marks) (May/June-2006)
9. How will you analyze the applicability of different processes to different types of materials, namely Metals, alloys and non-metals? Present in the form of table. (16 marks) (May/June-2009)
10. Compare the process capabilities and limitations of electrical energy based and mechanical energy based unconventional processes. (16 marks) (May/June-2012)