Code No: 07A70301 **R07** **Set No. 2**

IV B.Tech I Semester Examinations,December 2011
UNCONVENTIONAL MACHINING PROCESSES
Mechanical Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. Describe the characteristic features of modern machining processes that distinguish them from conventional machining processes. [16]

2. (a) Describe with a neat sketch, the effect of the gap filling density and clearance between surfaces on the quality of surfaces produced?
   (b) What are the various materials, size of abrasives and magnetic particles used in MAF? [8+8]

3. (a) What are the important parts of a transducer used in ultrasonic machining process?
   (b) How ultrasonic vibrations are generated using Magnetostriction method? [8+8]

4. (a) How the surface tension and hydro static pressure of molten metal affect the quality of machining in EBM?
   (b) Describe the thermal features of melting and evaporation process in LBM?[8+8]

5. Write the factors that affect the performance of WJM (water Jet mchine) process. Discuss their effect in brief. [16]

6. (a) What are the various defects obtained in EDM and wire EDM processes and mention the methods of elimination?
   (b) How the MRR, TWR, roughness and inaccuracy in machining by EDM is affected by various parameters? [8+8]

7. (a) Differentiate between EBM and LBM considering atleast five aspects?
   (b) Compare the edge production in EBM and LBM. What are the factors influencing edge for maintain in both the processes? [8+8]

8. Describe the “self adjusting feature” in ECM. [16]

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Code No: 07A70301 **R07** **Set No. 4**

IV B.Tech I Semester Examinations,December 2011
UNCONVENTIONAL MACHINING PROCESSES
Mechanical Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain the advantages of Non-traditional machining processes.
   (b) What are the limitations of Non-traditional machining processes? [10+6]
2. (a) With a schematic diagram, explain magnetic field distribution and magnetic force action on the magnetic abrasive particles in MAF?
   (b) Explain the sequence of operations involved in finishing a ceramic then plate. [8+8]
3. Explain the principle and operation of chemical machining using sketches. [16]
4. Discuss the design procedure for exponential concentrator of rectangular cross section in ultrasonic machining system. [16]
5. (a) What are the various factors to be considered in the selection of Etcharts for a particular application?
   (b) What are the advantages and applications of chemical machining? [8+8]
6. (a) List few materials which cannot be machined effectively by water jet machining.
   (b) How do you compare water jet machining process with conventional machining process considering quality, surface finish, and material removal rate as criteria? [4+12]
7. (a) Describe the thermal features of melting and evapouration process in LBM.
   (b) Describe the effects of temperature and election pressure on the quality of machining in EBM? [8+8]
8. Discuss the advantages of EDM as compared to other non traditional methods with regard to
   (a) metal removed rate
   (b) accuracy and
   (c) surface finish. [16]

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Code No: 07A70301 **R07** **Set No. 1**

IV B.Tech I Semester Examinations,December 2011
UNCONVENTIONAL MACHINING PROCESSES
Mechanical Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) Explain different applications of Electro chemical machining.
   (b) Discuss the advantages and limitations of Electro chemical machining. [8+8]
2. (a) What is mixing ratio? Explain the importance of maintaining an optimum mixing ratio in Abrasive jet machining.
   (b) What are the disadvantages of Abrasive jet machining process? [10+6]
3. (a) Explain different parameters that influence the performance of Ultrasonic machining.
   (b) Describe various groups of materials that can be machined using Ultrasonic machining. [8+8]
4. (a) What the salient features of AFM and mention the process variables which control MRR.
   (b) Comment on re-use of abrasive particles and their effect on the quality of surfaces? [8+8]
5. (a) What is Etch factor and how can it be controlled in chemical machining
   (b) Why the quality of surfaces produced is poor in chemical machining when compared to ECM? [8+8]
6. Why do we need conventional machining processes, illustrate with examples. [16]
7. Explain the effect of following parameters an MRR during EDM
   (a) Resistance
   (b) Magnitute of current
   (c) Capacitance. [16]
8. (a) Describe the suitability of LBM and its machining performance, and industrial applications?
   (b) What is the mechanism of metal removal in EBM and describe the effect of process parameters on the quality of surface produced in it? [8+8]

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Code No: 07A70301 **R07** **Set No. 3**

IV B.Tech I Semester Examinations,December 2011
UNCONVENTIONAL MACHINING PROCESSES
Mechanical Engineering

Time: 3 hours **Max Marks: 80**

Answer any FIVE Questions
All Questions carry equal marks

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1. (a) What is Etch factor and how can it be controlled in chemical machining?
   (b) What are the various process parameters to be considered to obtain higher MRR and quality of machined surface? [8+8]
2. (a) Discuss the mechanism of metal removal in ultrasonic machining process.
   (b) Explain the importance of exponential trunk used in transducer. [8+8]
3. (a) Explain variation of temperature with distance from the surface for various pulse durations in EBM.
   (b) Sketch and explain the construction and working of Electron Beam Machining process. [8+8]
4. (a) What are the various process parameters to be considered in EDM process and mention their influence on metal removal rate and quality of machining?
   (b) Differentiate between electro discharge grinding and wire EDM process.[8+8]
5. Give the applications for the following processes:
   (a) Chemical machining
   (b) Electro chemical grinding. [8+8]
6. Explain the reasons that lead to the development of Unconventional machining processes. [16]
7. (a) How the complex shapes are machined by electron beam?
   (b) How the beam power, focus, pulse duration, and mechanical motion is controlled and what are the effects on the machining performance? [8+8]
8. Explain the affect of following parameters on the metal removal rate in AJM:
   (a) Velocity of fluid
   (b) Design of nozzle
   (c) Gas pressure. [16]

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