

2062  
B.E. (Mechanical Engineering)  
Sixth Semester  
MEC-606: Non-Conventional Manufacturing

Time allowed: 3 Hours

Max. Marks: 50

**NOTE:** Attempt five questions in all selecting atleast two questions from each Part.

x-x-x

**PART-A**

1.	a) Why the need for advanced manufacturing processes arose? What are the benefits of these processes? b) Explain the factors that should be considered during the selection of an appropriate unconventional machining process for a given job.	5 5
2	With neat sketch, Explain the various input and output process parameters of AJM. Discuss the major process variables that affect the MRR in Abrasive Jet Machining.	5 5
3	In abrasive water jet machining, the velocity of water at the exit of the orifice, before mixing with abrasives, is 800 m/s. The mass flow rate of water is 3.4 kg/min. The abrasives are added to the water jet at a rate of 0.6 kg/min with negligible velocity. Assume that at the end of the focusing tube, abrasive particles and water come out with equal velocity. Consider that there is no air in the abrasive water jet. Assuming conservation of momentum, calculate the velocity (in m/s) of the abrasive water jet at the end of the focusing tube.	10
4	Explain various parameters that influence the performance of chemical machining process. Write the wide applications, advantages, and limitations of Chemical Machining?	10
<b>PART B</b>		
5	a) Describe the process of electro chemical machining with the help of suitable sketches? Under which laws, the ECM process operates? Explain in details. What are the advantages and Limitations of ECM? b) What are the specific advantages of using chemical machining over electro chemical machining? Give some of the practical application of chemical machining process.	6 4
6	a) Describe the principles, equipments of solid state laser type of machining? Describe its thermal features, applications and advantages. b) What are the various types of flushing systems used in EDM process? Explain with the help of neat diagrams.	5 5

(2)

7	a) Describe with the help of neat sketches, the principle and working of Electron Beam Machining (EBM)? b) Draw a Schematic diagram of 'Electro-discharge Machining' and Explain its working principle and process parameters?	5 5
8	a) Explain the various input and output parameters of EDM process b) EDM is used to machine a metallic sheet. Calculate surface finish value if $C = 15$ UF, $V = 130$ V, $K = 4.0$ . Use the equation based on experimental results.	5 5

x-x-x