

- Q.31 What type of jobs are suitable for Electrochemical machining and why?
- Q.32 Explain Ultra sonic machining process with its diagram.
- Q.33 Write short note on underwater welding.
- Q.34 Differentiate between Electro-Discharge Machining and Electro-Discharge Forming.
- Q.35 Give five difference between conventional and non conventional machining processes.

#### SECTION-D

- Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)
- Q.36 Explain the principle, working and equipment needed for WEDM process with its line diagram.
- Q.37 What are the properties of water jet machining about effect cutting action? What are the types of units and its purpose used in water jet cutting system? Why we are using the diamond nozzle?
- Q.38 Describe the equipment needed for EBM process with its diagram. Also explain the working of the process.

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**4th Sem / Branch : Mechatronics**  
**Subject:- Non Conventional Manufacturing**  
**Process-I**

Time : 3Hrs.

M.M. : 100

#### SECTION-A

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 Commercial ECM is carried out at a combination of \_\_\_\_\_
- Low voltage high current
  - Low current low voltage
  - High current high voltage
  - High voltage only
- Q.2 Mechanism of material removal in Electron Beam Machining is due to \_\_\_\_\_
- Mechanical erosion due to impact of high energy electrons
  - Chemical etching by the high energy electron
  - Sputtering due to high energy electrons
  - Melting and Vaporisation due to the thermal effect of impingement of high energy electron
- Q.3 In laser beam machining, electrons are excited by \_\_\_\_\_
- High temperature steam
  - Flash lamps
  - Flash torch
  - Cathode ray tube

- Q.4 AJM nozzles are made of  
 a) Low carbon steel      b) HSS  
 c) WC                      d) Stainless steel
- Q.5 Which is not the components of USM?  
 a) Ultrasonic transducer  
 b) Concentrator  
 c) Ultrasonic speaker  
 d) Abrasive slurry
- Q.6 Which tool material is not desirable for USM?  
 a) Low carbon steels      b) Stainless steel  
 c) High carbon steel      d) None of the above
- Q.7 What are the non elements of Carrier fluid?  
 a) Act as heating and melting fluid  
 b) Act as bond between the work piece and the tool  
 c) Helps efficient transfer of energy  
 d) Act as medium to carry the abrasive
- Q.8 What abrasives are used in AJM process?  
 a) Aluminium oxide      b) Silicon carbide  
 c) Glass powder          d) All of the above
- Q.9 Which is not characteristics of cut and peel maskants in Chemical Machining?  
 a) It gives high chemical resistance  
 b) Depth of etchant is restricted to 13 mm  
 c) It is not suitable for obtaining critical dimensional tolerances.  
 d) Re-scribing of maskant is not possible.
- Q.10 Which non conventional machining process has highest material removal rate?  
 a) USM                      b) ECM  
 c) AJM                      d) PAM

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## SECTION-B

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 Define unconventional machining process.  
 Q.12 Expand WEDM.  
 Q.13 Where is the ECM process is used?  
 Q.14 Define ultra Sonic.  
 Q.15 Define cladding.  
 Q.16 Define forming process.  
 Q.17 What is photo lithography?  
 Q.18 What is the intensity of Electron beam?  
 Q.19 What is the high energy in forming process?  
 Q.20 Expand LASER.

## SECTION-C

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

- Q.21 What are the future possibilities of unconventional machining process?  
 Q.22 Explain the working principle of EDM with its diagram.  
 Q.23 Discuss the principle of abrasive jet machining.  
 Q.24 Explain the explosive welding process.  
 Q.25 Describe the plasma arc cutting process.  
 Q.26 Explain water hammer forming process.  
 Q.27 Discuss the diffusion processes.  
 Q.28 Differentiate between IBM and EBM processes.  
 Q.29 Which tool material is suitable for EDM , USM processes giving the reason.  
 Q.30 Explain the relative advantages and drawbacks of abrasive flow machining process.

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