

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID :140652

Roll No.

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B.Tech.

(SEM. VI) THEORY EXAMINATION 2013-14

UNCONVENTIONAL MANUFACTURING PROCESSES

Time : 3 Hours

Total Marks : 100

Note :- (i) Attempt all questions.

(ii) Be precise in your answer.

1. Attempt any two parts of the following : (10×2=20)

(a) Classify the unconventional machining process on the basis of type of energy employed. Also state the mechanism of material removal, transfer media and energy source used.

(b) Recommend an unconventional machining processes for the following operation with proper justification.

(i) Cutting a glass plate into two pieces

(ii) Making a hole into a mild steel work piece.

(c) Briefly discuss the important parameters required for the selection of unconventional machining processes. What are the limitations in successfully employing an unconventional machining process ?

2. Attempt any four parts of the following : (5×4=20)

(a) Write a brief note on abrasive jet machining.

(b) Explain the effect of abrasive flow and nozzle pressure on abrasive jet machining process.

- (c) Describe the role of electrolyte in electrochemical machining processes.
- (d) Discuss the effect of inter-electrode gap on electrochemical machining process.
- (e) What are the essential properties of a good dielectric system in electric discharge machining ?
- (f) Write a short note on electrodes used in EDM.

3. Attempt any **two** parts of the following : **(10×2=20)**

- (a) What kind of materials can be machined by laser beam machining ? Explain drilling and cutting by LBM. What is the effect of focusing on performance of LBM ?
- (b) Briefly describe the following for electron beam welding:
- Electron beam gun
 - Process parameters
 - Material removal rate.
- (c) What is Ultrasonic Welding ? Explain the working mechanism of joining of two plastic pieces using USW. What are the unique features of USW ?

4. Attempt any **two** parts of the following : **(10×2=20)**

- (a) Why explosive welding is good for dissimilar materials ? Discuss about the explosives used in explosive welding. What are its major applications ?
- (b) Describe the mechanism of dry underwater welding. Why is this process called hyperbaric process ? What are its advantages and disadvantages ?
- (c) What is Cladding ? Explain the process with neat sketch. How is it different from conventional welding ?

5. Attempt any **two** parts of the following : **(10×2=20)**

- (a) Briefly discuss electro-discharge forming. What are its advantages over other forming processes ?
- (b) With the help of a neat schematic diagram explain the water hammering process. What are its limitations ?
- (c) Describe diffusion -lithography process. What are its applications ? Enumerate the steps in the process.