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BTECH
(SEM VIII) THEORY EXAMINATION 2018-19
UNCONVENTIONAL MANUFACTURING PROCESSES

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

a. What are the objectives of un-conventional manufacturing processes.
b. What do you understand by unconventional hybrid machining process.
c. Identify the mechanism of material removal, transfer media and energy source for EDM.
d. What are the desirable properties of carrier gas in AJM?
e. What are the basic requirements of dielectric fluid used in EDM?
f. Why the servo controlled system is needed in EDM?
g. What are the characteristics(requirements) of a good ECM tool?
h. What are the characteristics of laser used in laser machining?
i. What do you understand by fourth state of matter?
j. What do you understand by unconventional metal forming process.

SECTION B

2. Attempt any *three* of the following: **10x3=30**

a. Explain the reasons for the development of Unconventional Machining Process. Discuss about the criteria recommended in selection of these processes. (or) Explain the need for the development of Unconventional Machining Process by considering any four simple cases of your own interest.
b. Explain the principle of USM and its equipment. Explain the factors, which influence the MRR in USM. Compare USM with traditional Abrasive machining.
c. What are the important process parameters that control the material removal rate in EDM? Explain any four factors.
d. Explain principle of underwater welding. Classify underwater welding. Explain cavity type underwater welding.
e. Explain principle and industrial application of Photo- Lithography process with suitable diagram.

SECTION C

3. Attempt any *one* part of the following: **10x1= 10**

a. Explain the factors that should be considered during the selection of an appropriate unconventional machining process for a given job.
b. Draw the schematic layout of AJM and explain its operating characteristics. What are the methods adopted to have an effective control over the mass flow rate of the abrasive?

4. Attempt any *one* part of the following: 10x1= 10

a. Discuss about the process capabilities of EBM and the process parameters of EBM in improving machining quality.
b. Write a brief notes on underwater plasma arc cutting system.

5. Attempt any *one* part of the following: 10x1= 10

a. Explain the working of electro chemical grinding process with a neat sketch and explain why the life of the ECG wheel is much higher than conventional grinding. Also list down its advantages and limitations?
b. With suitable sketches, explain the need for the insulation in an ECM process. List the advantages, disadvantages and applications for this process.

6. Attempt any *one* part of the following: 10x1= 10

a. Write down the principle of unconventional welding process. Explain explosive welding process with their process parameters.
b. What is chemical machining, how it differs from electro chemical machining process.

7. Attempt any *one* part of the following: 10x1= 10

a. Explain the thermal features of Laser beam machining. Discuss the performance of various types of Lasers.
b. Explain the principle and application electro discharge forming with help of suitable diagram.