

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

PAPER ID : 0406

Roll No.

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B.Tech.

(SEM. VII) ODD SEMESTER THEORY EXAMINATION
2010-11

UNCONVENTIONAL MANUFACTURING PROCESS

Time : 3 Hours

Total Marks : 100

Note : Attempt all questions. Be precise in your answer.

1. Attempt any **two** of the following : **(10×2=20)**
 - (a) What are the different classifications of conventional and unconventional manufacturing methods ? Enumerate major advantages and disadvantages of unconventional manufacturing processes.
 - (b) Discuss the limitations of conventional machining processes that necessitate the invent of unconventional machining processes. What are the major constraints in employing these processes ?
 - (c) Discuss the various important factors that should be considered during the selection of an unconventional machining process for a given job.
2. Attempt any **four** of the following : **(5×4=20)**
 - (a) With the help of a neat schematic explain the working of electron beam machining.

- (b) Enumerate any five process variables of abrasive jet machining process.
- (c) Briefly discuss the working principle of abrasive jet machining.
- (d) What are the functions of an adaptive control system used for EDM ?
- (e) Write a short note on electrolyte supply and cleaning system in electrochemical machining.
- (f) Derive the expression for maximum permissible feed rate during ECM.

Attempt any two of the following :

(10×2=20)

- (a) Explain the working of a laser beam machining system with the help of a neat sketch. Describe the solid state laser system and their advantages.
- (b) Briefly discuss about the three most important elements of electron beam machining system. What are the major applications of EBM ?
- (c) Discuss the effect of amplitude of vibration, frequency of vibration, abrasive grain size and percentage abrasive concentration on material removal rate in ultrasonic machining.

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

- (a) With the help of a schematic diagram of the process explain the working mechanism of explosive welding. What are its main process parameters ?
- (b) Describe the working principle of dry and wet underwater welding. In your view which process is better and why ?
- (c) Describe the mechanism of cladding. How is it different from conventional welding ? What are its merits and demerits ?

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

- (a) Explain electromagnetic forming. What are its advantages over conventional forming processes ?
- (b) Describe explosive compaction and its major applications. What are the important parameters that need to be considered while choosing this process ?
- (c) Describe the working principle of metallising. What are the basic criteria for the selection of coating materials ?