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

PAPER ID : 0406 Roll No. | | | | | | | | | | |

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 ?