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Question Paper Code : 57531

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Sixth Semester

Mechanical Engineering

ME 6004 – UNCONVENTIONAL MACHINING PROCESSES

(Regulations 2013)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. List the requirements that demand the use of unconventional machining processes.
2. Classify Modern machining processes on the basis of the type of energy employed.
3. What are the parameters that influence the material removal rate in ultrasonic machining process ?
4. Reuse of abrasives is not recommended in Abrasive jet machining process. Why ?
5. State the function of Servo-mechanism in Electrical discharge machining (EDM) Process.
6. List the desirable properties of a good dielectric fluid.
7. Distinguish between Electrochemical machining and electroplating process.
8. Define Maskants in Electrochemical machining process.
9. State the working Principle of Plasma arc Machining Process.
10. Why Vacuum is needed in Electron beam machining process ?

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PART – B (5 × 16 = 80 Marks)

11. (a) (i) Explain the factors that should be considered during the selection of an appropriate unconventional machining process for a given job. (8)
- (ii) Differentiate unconventional machining process from conventional machining process. (8)

OR

- (b) Compare the process capabilities and limitations of Mechanical, Electrical, Chemical and Thermal energy based unconventional machining processes. (16)

12. (a) Discuss in detail the working principle of Abrasive jet machining process and explain briefly how its various parameters influence the material removal rate. (16)

OR

- (b) Explain with a neat sketch the working principle of ultrasonic machining process and list its applications. (16)

13. (a) Explain the general arrangement of an Electrical discharge machining process and list out its advantages, disadvantages and applications. (16)

OR

- (b) Describe the principle, construction and working of Wirecut electrical discharge machining Process (WCEDM) and state its Merits and Demerits. (16)

14. (a) With the help of a simple diagram, explain briefly the working of electro-chemical machining process (16)

OR

- (b) (i) Explain the Electro-chemical Honing Process with a neat sketch. (8)
- (ii) Explain the followings with respect to chemical machining process : (8)
- (1) Characteristics of cut and Peel maskants
 - (2) Selection of Maskants
 - (3) Limitations.

15. (a) Explain with a neat sketch the principle, construction and working of Electron beam machining process and list its advantages, disadvantages and applications. (16)

OR

- (b) (i) What is LASER ? Explain how it is used to machine the materials. (8)
- (ii) Discuss the factors that influence the quality of the cut in Plasma arc Machining Process. (8)