Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 80640

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2016.

Sixth Semester

Mechanical Engineering

ME 6004 — UNCONVENTIONAL MACHINING PROCESSES

(Common to Mechanical and Automatics Engineering and Production Engineering)

(Regulations 2013)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. State the industrial needs for unconventional machining processes.
2. Distinguish traditional and non-traditional machining.
3. List the different types of abrasives used in AJM.
4. List the applications of WJM.
5. Write down the limitations in EDM.
6. What are the roles of dielectric fluid in EDM?
7. List the factors that affect MRR in ECM.
8. What is the advantage of ECG over conventional grinding?
9. What do you mean by plasma?
10. What is the advantage of EBM over LBM?

PART B — (5 × 16 = 80 marks)

11. (a) (i) State and explain the factors to be considered during the selection of an unconventional machining process for a given job. (8)

(ii) How are the developments in the area of materials partly responsible for evolution of advanced machining techniques? (8)

Or

(b) Classify the unconventional machining process on the basis of type of energy employed, MRR, transfer media and energy resources used. (16)

12. (a) Describe the apparatus, process parameters, process capabilities and applications of Abrasive-water Jet machining. (16)

Or

(b) (i) Explain the principle and working of Ultrasonic machining process. (10)

(ii) Discuss on the transducers and abrasives used in USM. (6)

13. (a) Describe the construction and working principle of EDM process. Write its advantages, disadvantages and applications. Also, discuss the effect of process parameters on the metal removal in EDM. (16)

Or

(b) Describe the construction and working principle of wire-cut EDM process with neat sketch. Write its advantages, disadvantages and applications. Also, discuss the process parameters that effects on the metal removal in WEDM. (16)

14. (a) With the help of a diagram, explain the working of ECM process. Also, write its advantages, disadvantages and applications. (16)

Or

(b) With a neat sketch, explain the principle of electro-chemical grinding. State its process capabilities and applications. (16)

15. (a) Explain different types of plasma arc machining process with a neat sketch. Also, state its advantages, disadvantages and applications. (16)

Or

(b) Explain the principles, machining system, process capabilities, applications and advantages of EBM with a neat sketch. (16)

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