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

Question Paper Code : 41349

B.E./B.Tech. DEGREE EXAMINATION, APRIL/MAY 2018

Sixth Semester

Mechanical Engineering

ME 6004 – UNCONVENTIONAL MACHINING PROCESSES

(Common to Mechanical and Automation Engineering/Production Engineering)

(Regulations 2013)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions.

PART – A **(10×2=20 Marks)**

1. Classify the different types of unconventional machining processes based on mechanical energy.
2. What are the desirable properties of carrier gas in AJM ?
3. What is the principle of WJM ?
4. What is ultrasonic machining ?
5. What are the prime requirements of tool material in EDM ?
6. Define W/T ratio.
7. Name any four methods generally used to filter the electrolyte.
8. What are the important functions of abrasive particles used in ECG ?
9. What is the basic heating phenomenon that takes place in plasma arc welding ?
10. Write down the Richardson-Dushman equation.

PART – B (5×13=65 Marks)

11. a) Analyze the process capabilities and process economy of different unconventional machining processes in detail. (13)

(OR)

b) Justify the need of unconventional manufacturing process in today's Industries. Explain the classification of unconventional machining according to major energy source employed. (13)

12. a) Describe the priciple and equipment for AWJM. Give the process capabilities and applications of AWJM. (13)

(OR)

b) i) Give principle of material removal in USM. Explain ultrasonic sinking and contour machining with a simple sketch. (6)

ii) List the factors which affect the MRR in USM and write short notes on each of them. (7)

13. a) Describe the wire cut EDM equipment, its working applications and advantages. (13)

(OR)

b) i) Write about various types of flushing techniques used in EDM. (6)

ii) Explain different types of control circuits used in EDM. (7)

14. a) Explain in detail the ECM process with neat sketch and also mention the advantages and applications. (13)

(OR)

b) i) Discuss about the electrochemical honing. (6)

ii) Explain the principle of ECG with a neat sketch. (7)

15. a) Describe, with the help of neat sketch, the principle and working of an EBM machine. (13)

(OR)

b) Discuss the principle and working of PAM with the help of neat sketch. (13)

PART – C (1×15=15 Marks)

16. a) Describe the working principle and construction of LBM. Mention its merits, demerits and applications. (15)

(OR)

b) Compare and contrast the working principle of AJM and WJM. Mention their exclusive applications. (15)