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Question Paper Code : X10683

B.E./B.Tech. DEGREE EXAMINATIONS, NOV/DEC 2020 AND APRIL / MAY 2021
Sixth/ Seventh Semester
Mechanical Engineering
ME 8073 – UNCONVENTIONAL MACHINING PROCESSES
(Common to Manufacturing Engineering Mechanical and Automation Engineering and
Production Engineering)
(Regulations 2017)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions

PART – A

(10×2=20 Marks)

1. List down various mechanical energy based unconventional machining processes.
2. Write the elements and characteristics of USM.
3. List the process parameters of PAM.
4. Mention a few varieties of power supply circuits commonly used in EDM.
5. What are the different types ECM operations ?
6. Write the Faraday's second law of electrolysis.
7. Classify the different types of Advanced Machining Processes based on different criteria.
8. Write the process parameters of abrasive flow machining.
9. Need for the development of unconventional machining methods.
10. Difference between conventional and unconventional machining processes.

PART – B

(5×13=65 Marks)

11. a) Discuss in detail about the AJM process variables that influence the rate of material removal and accuracy in the machining. (13)

(OR)

X10683



- b) Explain the working principle and process parameters in WJM processes. List the applications, advantages and limitations of WJM. **(13)**
12. a) Discuss the process parameters of EBM and their influence on machining quality. **(13)**
- (OR)
- b) Explain the process parameters which govern the EDM/wire EDM process. **(13)**
13. a) Explain the principle of working, equipment's and Applications of Electro Chemical Grinding. **(13)**
- (OR)
- b) Describe the working principle and elements of chemical machining. What are the factors on which the selection of a resist for use in chemical machining? **(13)**
14. a) Explain the principle of working, equipment's and applications of chemo-mechanical polishing. **(13)**
- (OR)
- b) Explain the process parameters which govern the magneto rheological abrasive finishing process with neat sketch. **(13)**
15. a) Explain the reasons for the development of Unconventional Machining Process. Discuss about the criteria recommended in selection of these processes. **(13)**
- (OR)
- b) Explain the working principle of 3D printing technology for the production of parts. **(13)**

PART – C

(1×15=15 Marks)

16. a) What is the principle of plasma arc machining? What are the two stages in which the process of material removal is affected? What is the main industrial application of plasma cutting systems?
- (OR)
- b) How will you carry out the analysis for optimization of metal removal rate in EDM process? What are the steps that are to be adopted in sequence while applying the linear programming technique to optimize the metal removal rate in EDM process?
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