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10ME665

Sixth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Non Traditional Machining

Time: 3 hrs. Max. Marks:100

Note: ***Answer FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Distinguish between conventional and non-conventional machining processes. **(04 Marks)**
b. Discuss briefly, how the non-traditional machining processes are classified. **(06 Marks)**
c. Explain different parameters for selecting modern machining processes. **(10 Marks)**

2 a. Explain USM process with a neat diagram. **(08 Marks)**
b. List out advantages and limitations of USM process. **(06 Marks)**
c. Discuss the effects of the following parameters on the rate of material removal and surface finish obtainable in ultrasonic machining
i) Amplitude and frequency of vibration
ii) Abrasive grid size
iii) Static load. **(06 Marks)**

3 a. Explain with a schematic diagram the abrasive jet machining process. **(06 Marks)**
b. Discuss the following variables that influence the metal removal in AJM.
i) Carrier gas ii) Type of abrasive iii) Standoff distance
iv) Work material v) Velocity of the abrasive jet. **(10 Marks)**
c. List out advantages of water jet machining process. **(04 Marks)**

4 a. List out different characteristics of an electrolyte to be effective and efficient in ECM process. **(04 Marks)**
b. Explain ECM process with a schematic diagram. **(06 Marks)**
c. Briefly discuss the economics of ECM process. **(05 Marks)**
d. Discuss different applications of ECM. **(05 Marks)**

PART – B

5 a. Explain the following parameters with respect to chemical machining
i) Resists (Maskants) ii) Etchants. **(10 Marks)**
b. What are the specific advantages of using chemical machining over electro-chemical machining? **(05 Marks)**
c. Give some practical applications of chemical machining. **(05 Marks)**

6 a. Explain the mechanism of metal removal in EDM. **(10 Marks)**
b. Discuss the factors that influence the choice of electrode material in EDM. **(05 Marks)**
c. Discuss the advantages of EDM as compared to other non-traditional methods. **(05 Marks)**

7 a. Explain with a neat sketch the principle process of metal removal in PAM. **(10 Marks)**
b. List out different applications of PAM. **(05 Marks)**
c. Discuss advantages and limitations of PAM process. **(05 Marks)**

8 a. With a neat diagram, explain the process of metal removal by Laser Beam Machining (LBM). **(10 Marks)**
b. Discuss with a neat diagram, Electron Beam Machining (EBM). **(06 Marks)**
c. List out advantages and limitation of LBM process. **(04 Marks)**

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