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## P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Sixth Semester, B.E. - Industrial and Production Engineering

Semester End Examination; June - 2017

Non - Traditional Machining methods

Time: 3 hrs

Max. Marks: 100

**Note:** i) Answer **FIVE** full questions, selecting **ONE** full question from each unit.

ii) Missing data may suitably be assumed.

### UNIT - I

- 1 a. Explain the classification of non-conventional machining process. 6
- b. With a neat sketch, explain ultrasonic machine. 8
- c. Discuss the effect of slurry concentration on metal removal rate in ultrasonic machining. 6
- 2 a. Discuss the following parameters on metal removal rate in USM : 10
  - i) Grain size
  - ii) Amplitude of vibrations.
- b. List the applications and limitations of USM. 6
- c. List the functions of Total feed mechanism of ultrasonic machine. 4

### UNIT - II

- 3 a. With a neat sketch, explain Abrasive jet machining. 8
- b. List the variables that influence the rate of metal removal and explain any three of them. 12
- 4 a. Discuss the advantages and disadvantages of Abrasive jet machining. 6
- b. List the applications of AJM. 6
- c. Write a note on nozzle wear in AJM. 8

### UNIT - III

- 5 a. Describe the chemistry involved in the ECM process. 8
- b. Discuss the factors which govern the accuracy of the parts produced by ECM process. 12
- 6 a. List and explain types of resists. 8
- b. List the factors considered for selection of echant for a component. 6
- c. Mention the applications of chemical machining. 6

### UNIT - IV

- 7 a. With a neat sketch, explain principle of EDM process. 10
- b. With a neat sketch, explain electrode feed control used in EDM process. 10
- 8 a. What do you mean by flushing? Explain any two types of flushing with neat sketch. 9
- b. List and explain any two types of spark generator used in EDM process. 11

### UNIT - V

- 9 a. With a neat sketch, explain plasma Arc machining. 10
- b. Explain the parameters that govern the performance of PAM. 10
- 10 a. Compare thermal and non thermal processes in EBM. 7
- b. With a neat sketch, explain electron Beam machining. 8
- c. List the application of EBM processes. 5