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15ME554

## Fifth Semester B.E. Degree Examination, July/August 2021 Non Traditional Machining

Time: 3 hrs.

Max. Marks: 80

**Note: Answer any FIVE full questions.**

- 1
  - a. Classify the NTM processes on the basis of type of energy, mechanism of metal removal, transfer media, energy source. (08 Marks)
  - b. Explain the need for NTM processes. (08 Marks)
  
- 2
  - a. Differentiate between traditional and non traditional machining process. (08 Marks)
  - b. Give the various aspects to be considered before selecting a NTM. (08 Marks)
  
- 3
  - a. Sketch and explain the principle, equipment and operation of Abrasive jet machining process. (10 Marks)
  - b. During AJM process, the mixing ratio is 0.2. Calculate the mass ratio if the density of abrasive and density of carrier gas is 20. (06 Marks)
  
- 4
  - a. Explain the principle of water jet machining process. (06 Marks)
  - b. Discuss the following parameters on USM process
    - i) Amplitude and vibration frequency
    - ii) Abrasive grain size
    - iii) Slurry
    - iv) Effect of applied static load (feed force)
    - v) Tool and work material. (10 Marks)
  
- 5
  - a. Sketch and explain the principle, equipment and operation of ECM. (08 Marks)
  - b. Explain the effect of following parameters on ECM:
    - i) Electrolyte
    - ii) Tool feed rate
    - iii) Velocity of electrolytic flow
    - iv) Gap between work piece and tool. (08 Marks)
  
- 6
  - a. Explain with a neat sketch electro chemical honing. State its advantages and disadvantages. (10 Marks)
  - b. Briefly explain the process characteristics in chemical machining process. (06 Marks)
  
- 7
  - a. Explain with a neat sketch the principle, equipment and operation of EDM process. (10 Marks)
  - b. Sketch and explain any two methods of flushing used in EDM. (06 Marks)
  
- 8
  - a. Explain the following process parameters:
    - i) Torch-work piece distance (04 Marks)
    - ii) Gas flow rate. (04 Marks)
  - b. What are the advantages of PAM? (04 Marks)
  - c. With a neat sketch, explain principle of PAM. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 9 a. With a neat sketch, explain the basic principle, advantages/disadvantages application of LBM. (10 Marks)
- b. Discuss about i) CO<sub>2</sub> laser ii) Nd-YAG , used in LBM. (06 Marks)
- 10 a. Explain the generation and control of electron beam with schematic diagram. (06 Marks)
- b. Explain with a neat sketch, the working principle of EBM. State the advantages, disadvantages and applications of EBM. (10 Marks)

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