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15ME554

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020 Non Traditional Machining

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain non-traditional machining, by defining it and discuss about the need of non-traditional machining in detail. (08 Marks)
- b. Discuss the comparison between traditional and non-traditional machining in detail. Classify the general NTM processes in detail. (08 Marks)

OR

- 2 a. Analyze the classification of non-traditional machining based on nature of energy employed in machining. (10 Marks)
- b. Explain the specific advantages, limitations and applications of non-traditional machining. (06 Marks)

Module-2

- 3 a. Explain construction and working process of USM (Ultrasonic Machining) in detail by drawing a neat figure. Discuss the effect of amplitude and frequency and grain diameter. (10 Marks)
- b. Describe application and limitations of USM. (06 Marks)

OR

- 4 a. Explain AJM (Abrasive Jet Machining) by drawing a neat schematic diagram. Describe "SOD" (Stand-Off Distance) and MRR (Material Removal Rate). (08 Marks)
- b. Discuss WJM (Water Jet Machining) process in detail by drawing a neat schematic diagram. Describe Application, Advantages and Limitations. (08 Marks)

Module-3

- 5 a. Explain in detail for the ECM (Electro Chemical Machining). The element of ECM processes D.C. power and control system by drawing the adequate figures. (08 Marks)
- b. Describe the chemistry of the ECM process and MRR by drawing a neat figure. (08 Marks)

OR

- 6 a. Discuss in CHM (Chemical Machining) the RESISTS (MASKANTS), Chemical Balance. (08 Marks)
- b. Discuss about the Etchants, Applications and Advantages of CHM. (08 Marks)

Module-4

- 7 a. Explain EDM (Electrical Discharge Machining) principle, by drawing a neat figure and discuss in detail about DIELECTRIC FLUID. (08 Marks)
- b. Discuss in detail about Pressure Flushing in EDM. Describe the Applications and Advantages of EDM. Explain Travelling Wire EDM. (08 Marks)

OR

- 8 a. Explain PAM (Plasma ARC Machining) in detail by drawing neat sketch. (08 Marks)
b. Discuss the safety precautions, application, advantages and limitations of PAM. (08 Marks)

Module-5

- 9 a. Explain in LBM (Laser Beam Machining) the Ruby Laser by drawing energy level diagram. (08 Marks)
b. Explain types of laser and discuss in detail the laser beam cutting with gas by drawing a neat figure. List out the advantages and applications. (08 Marks)

OR

- 10 a. Discuss the principle of EBM (Electron Beam Machining) by drawing a neat figure. (08 Marks)
b. Draw a graph of MRR (Material Removal Rate) by assuming 15% efficiency and explain advantages and limitations of EBM. (08 Marks)
