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18ME641

Sixth Semester B.E. Degree Examination, July/August 2022

Non-Traditional Machining

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Define Non-Traditional Machining Process. Explain the need for non-traditional machining process. (06 Marks)
- b. Discuss briefly the classification of Non-Traditional Machining process based on different sources of energy. (06 Marks)
- c. What are the specific advantages, limitations and applications of Non-Traditional machining process? (08 Marks)

OR

- 2 a. Differentiate between conventional (traditional) and Non-Traditional machining process. (08 Marks)
- b. Write in brief note on the selection of Non-Traditional Machining process. (08 Marks)
- c. Write history about Non-Traditional Machining. (04 Marks)

Module-2

- 3 a. With the help of neat sketch, explain working principle of ultrasonic machining process. (08 Marks)
- b. Discuss the effects of the following parameters on the rate and material removal and surface finish obtained in ultrasonic machining:
i) Amplitude and frequency of vibration
ii) Static load
iii) Abrasive grid size. (06 Marks)
- c. List the advantages and disadvantages of ultrasonic machining process. (06 Marks)

OR

- 4 a. Explain the working principle of abrasive jet machining process with the help of neat diagram. Mention its advantages. (10 Marks)
- b. With a neat sketch, explain the following variables that influence the MRR in AJM.
i) Standoff distance
ii) Types of abrasive
iii) Carrier gas
iv) Velocity of the abrasive jet
v) Work material. (10 Marks)

Module-3

- 5 a. Explain the working principle of electro chemical machining with the help of neat sketch. (08 Marks)
- b. Explain with a neat sketch, Electro Chemical Grinding (ECG). (06 Marks)
- c. Explain the following ECM process characteristics:
i) Material removal rate
ii) Accuracy
iii) Surface finish. (06 Marks)

OR

- 6 a. Explain with neat sketches of chemical blanking process and chemical milling process. (08 Marks)
- b. Explain the following in chemical machining process:
i) Maskants ii) Etchants. (06 Marks)
- c. What are the advantages, disadvantages and applications of chemical machining process? (06 Marks)

Module-4

- 7 a. With the help of a neat diagram, working principle of electrical discharge machining process. (08 Marks)
- b. Explain the different methods of dielectric flushing in electrical discharge machining. (06 Marks)
- c. Sketch and explain travelling wire EDM process. (06 Marks)

OR

- 8 a. Explain with neat diagram, construction and working principle of Plasma Arc Machining (PAM). (08 Marks)
- b. What are the safety precautions in PAM? Explain. (06 Marks)
- c. What are the advantages and disadvantages of PAM. (06 Marks)

Module-5

- 9 a. Explain with neat sketch, working principle of Laser Beam Machining (LBM) process. (08 Marks)
- b. What are characteristics and process parameters of LBM? (06 Marks)
- c. What are the advantages and limitations of LBM process? (06 Marks)

OR

- 10 a. Explain working of electron beam machining process with the help of neat sketch. (08 Marks)
- b. Explain the equipments used in the Electron Beam Machining (EBM). (06 Marks)
- c. Write the advantages and applications of Electron beam machining process. (06 Marks)
