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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)

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