CBCS SCHEME

USN | | | | | | | | | | |

21ME751

Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
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. Differentiate between traditional and non-traditional machining process. **(10 Marks)**

b. Classify the non-traditional machining processes based on types of energy utilized. **(10 Marks)**

OR

2 a. Write a note on the selection of non-traditional machining processes. **(10 Marks)**

b. Briefly explain the advantages, limitations and applications of NTM processes. **(10 Marks)**

Module-2

3 a. Explain the effect of following process parameters on ultrasonic machining (USM):
i) Effect of amplitude and frequency
ii) Effect of Abrasive Grain diameter **(10 Marks)**

b. Briefly explain the process characteristics of the following:
(i) Material Removal Rate (MRR)
(ii) Tool wear
(iii) Accuracy **(10 Marks)**

OR

4 a. With a neat sketch, explain the process/working of material removal of Abrasive Jet Machining (AJM). **(10 Marks)**

b. Briefly explain the process variable of the following:
(i) Carrier gas
(ii) Type of abrasive
(iii) Stand of Distance (SoD) **(10 Marks)**

Module-3

5 a. Elucidate the working of Electro-Chemical Grinding (ECG) with neat sketch. **(10 Marks)**

b. With a neat sketch, explain the principle and operation of Electro-Chemical Machining (ECM). **(10 Marks)**

OR

6 a. Characterize the following elements of chemical machining:
(i) Etchants (ii) Maskants **(10 Marks)**

b. Describe the steps for chemical milling process with a neat block diagram representation. **(10 Marks)**

Module-4

7 a. Explain the mechanism of metal removal in EDM process. **(10 Marks)**

b. Sketch and explain four types of flushing methods used in EDM process. **(10 Marks)**

OR

8 a. Explain the non-thermal generation of plasma. **(10 Marks)**

b. Characterize the safety precautions that need to be considered in Plasma Arch Machining (PAM). **(10 Marks)**

Module-5

9 a. Explain with a neat sketch, working/generation of Laser Beam Machining (LBM) **(10 Marks)**

b. Briefly explain the characteristics and process parameters of LBM process. **(10 Marks)**

OR

10 a. Explain the equipments used in Electron Beam Machining (EBM). **(10 Marks)**

b. Write the advantages, limitations and applications of EBM. **(10 Marks)**

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