R20 Regulation *Subject code: 3E6CE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A' Grade)

B.TechVI Semester Regular Examinations, June/July 2023

NON TRADITIONAL MACHINING PROCESSES

(Mechanical Engineering)

Maximum Marks: 70 Date:03.07.2023 Duration: 3 hours

Note: 1.This question paper contains two parts A and B.
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10x2M=20 Marks)

1 Why nontraditional machining process is not popular? Justify.
2 State the function of transducers in ultrasonic machining process.
3 Why reuse of abrasives is not recommended in abrasive jet machining process?
4 Identify the mechanism of material removal, transfer media and energy source for WJM process.
5 Classify the tool materials in EDM.
6 Assess the influence of current in MRR on EDM process.
7 State the principle of EBM process.
8 Distinguish between vacuum and non-vacuum EBM process.
9 Describe the process input parameters of magnetic abrasive finishing process.
10 Point out the salient features of chemical machining process.

Part-B

Answer All the following questions. (10MX 5=50Marks)

11 A. Enumerate the important factors that should be considered during the selection of a nontraditional machining process for a given job. [5 M]
B. Classify modern machining process in detail with their merits and demerits. [5 M]

OR

12 A. Classify and explain the types of transducers used in USM. [5 M]
B. Discuss the effects of the following parameters on MRR and surface finish in USM: [5 M]
(i) Amplitude and frequency ii) Effect of slurry, tool and work material.

13 A. Describe the principle and equipment for Water Jet Machining with a neat diagram. [5 M]
B. Explain the different applications and process control features of WJM. [5 M]

OR

14 What is the fundamental principle of abrasive jet machining? Briefly explain with a neat diagram, the AJM process. In AJM, how is material removal rate increased? [10 M]

15 Draw the scheme of Electro discharge wire cutting machine and explain its principle of operation. Also discuss the operating process parameters and their effects. [10 M]

OR

16 A. Illustrate and explain the types of tool wear in EDM process. [5 M]
B. Explain how MRR and quality is controlled in EDG process. [5 M]

17 A. Discuss about the process capabilities of LBM and the process parameters of LBM in improving machining quality. [5 M]
B. Compare LBM and EBM on the basis of their applications and limitations. [5 M]

OR

18 A. Enumerate the thermal features of Laser beam machining. Discuss the performance of various types of Lasers. [5 M]
B. Point out the control of following parameters in EBM (i) Current (ii) Spot-diameter (iii) Focus distance of magnetic lens. [5 M]

19 A. Enumerate the shaped tube electrolyte machining process in detail with a neat diagram. [5 M]
B. Brief out the process capabilities and parameters of plasma machining process in detail. [5 M]

OR

20 Summarize the general arrangement of chemical machining process and list out the advantages, disadvantages, and applications of chemical machining process. [10 M]