R20 Regulation *Subject code: 3E6CE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Regular/Supplementary Examinations, July 2024

Non Traditional Machining Processes

(Mechanical Engineering)

Maximum Marks: 70 Date:30.07.2024 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	CO	Bloom Tx
All the following questions carry equal marks (10x2M=20 Marks)			
1	Mention the requirements demanding application of non-traditional machining processes.	1	I
2	Name an unconventional machining process to cut a thin glass plate into two pieces.	1	II
3	List the types of abrasives used in abrasive water jet machining.	2	I
4	What are the factors affecting MRR in electro chemical machining?	2	I
5	Compare EDM with wire cut EDM	3	II
6	State the purpose of servo mechanism in EDM process.	3	I
7	Give the merits of electron beam machining over laser beam machining.	4	II
8	Is it possible to machine electrically non-conductive materials by using EBM? Justify.	4	II
9	Why tungsten is not used as the electrode material in plasma arc cutting?	5	II
10	Give the principle of shaped tube electrolyte machining.	5	I
	Part-B		
Answer All the following questions. (5X10M=50Marks)			Bloom Tx level
11	Explain the classification of unconventional machining processes based on the type of major energy source employed. Also describe the mechanism of material removal. [10]	1	III
	OR		
12	Discuss the following: (a) Transducers used in ultrasonic machining (b) Mechanism of material removal in ultrasonic machining. [10]	1	III
13	Explain the process of electro chemical machining with a neat sketch. List the process advantages and limitations. [10]	2	III
	OR		
14	Explain the various process parameters in abrasive waterjet machining and their impact on MRR. [10]	2	IV

15	Explain the general arrangement of an EDM process. List the process merits, demerits and applications. [10]	3	III
	OR		
16	Give the principle of a wire cut EDM process with sketch. Also discuss the influence of various process variables. [10]	3	IV
17	What is a Laser beam machining? Explain how it is used to machine a material with diagram. [10]	4	III
	OR		
18	Discuss the generation and control of electron beam for machining. List the process merits and demerits. [10]	4	III
19	Compare the concept of transferred and non-transferred arc mode in plasma arc machining with sketches. [10]	5	IV
	OR		
20	Discuss the following: (a) Maskants in chemical machining and its selection. (b) Quality of surface finish in chemical machining. [10]	5	III