Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Fifth Semester

Mechanical Engineering

CME387 - Non-Traditional Machining Processes

Regulations - 2021

Duration : 3 Hrs *Maximum: 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Suggest a suitable non- traditional machining process to cut a thin glass plate into two pieces.	AP	1	2
2.	Mention the characteristics of a horn in ultrasonic machining.	UN	1	2
3.	Why etchants are important in chemical machining?	RE	2	2
4.	Write some industrial applications of ECH.	UN	2	2
5.	List the functions of dielectric fluid used in EDM.	UN	3	2
6.	Identify the reasons for non usage of the tungsten as electrode material in PAM.	UN	3	2
7.	How the extrusion pressure affects the AFM process?	RE	4	2
8.	State the principles behind magnetorheological finishing.	UN	4	2
9.	Define hybrid non-traditional machining processes.	RE	5	2
10.	Discuss the control system used in hybrid non-traditional machining equipment.	UN	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)*

Q.No			*Questions*	*BLT*	*CO*	*Marks*
11.	a		Discuss the process parameters, applications, advantages and disadvantages of abrasive jet machining process.	UN	1	13
			Or			
	b		Explain the principle, mechanisms involved in material removal of USM and its equipment with neat sketches.	UN	1	13
12.	a	i	Summarize the characteristics of cut peel maskants, selection of maskants, advantages of photoresist maskant with respect to chemical machining	UN	2	9
		ii	Categorize the process parameters of ECH with ECG.	UN	2	4
			Or			
	b	i	Illustrate the working principle and process parameters of electro chemical grinding process with a neat sketch.	UN	2	9
		ii	Why the life of the ECG wheel is much higher than conventional grinding? Simplify.	UN	2	4

13.	a	In what ways the different process parameters (e.g., cutting speed, focus, and gas pressure) interact to influence the overall performance of LBM?	AN	3	13
		Or			
	b	Examine the roles of the electron gun, vacuum chamber, workpiece holder, and focusing system in the EBM setup.	AN	3	13
14.	a	Compare and contrast the effects of different abrasive sizes in abrasive flow machining.	AN	4	13
		Or			
	b	Analyze the impact of abrasive particle size and fluid viscosity on the magneto rheological abrasive flow finishing process.	AN	4	13
15.	a	Demonstrate the effect of changing feed rate on the output quality in hybrid machining.	AP	5	13
		Or			
	b	How would you optimize process parameters for a hybrid machining process to improve surface finish? Explain with suitable examples.	AP	5	13

*PART – C (Marks 1*15 = 15)*

Q.No		*Questions*	*BLT*	*CO*	*Marks*
16.	a	What are the steps that are to be adopted in sequence while applying the linear programming technique to optimize the MRR in EDM process?	AP	3	15
		Or			
	b	Explain how the stratified wire works. Also discuss about the recent developments in WEDM?	AP	3	15