Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

B.E. DEGREE END SEMESTER THEORY EXAMINATIONS, APR / MAY 2026

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	BTL	CO	Marks
1.	What are the importances of unconventional machining?	L2	1	2
2.	List down various mechanical energy based Unconventional machining processes.	L1	1	2
3.	Name some of the maskants used in Chemical Machining process.	L1	2	2
4.	Give the requirements of tool materials in ECM process.	L1	2	2
5.	Write the advantages of wire cut EDM process.	L1	3	2
6.	State the working principle of PAM.	L1	3	2
7.	Mention one key process parameter that affects Magnetorheological Abrasive Flow Finishing.	L1	4	2
8.	What is effect of abrasive particle size and pressure on the surface finish in AFM?	L1	4	2
9.	Define hybrid non-traditional machining processes.	L1	5	2
10.	State one advantage of hybrid non-traditional machining over conventional machining.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No			Questions	BLT	CO	Marks
11.	a	i	Explain the reasons for the development of Unconventional Machining Process.	L2	1	8
		ii	Discuss about the criteria recommended in selection of these processes.	L2	1	8
			Or			
	b		Elucidate the principle of AJM. Discuss about the AJM process variables that influence the rate of material removal and accuracy in the machining. Also mention some of the specific applications.	L2	1	16
12.	a		Investigate the working principle of the Electrochemical Machining (ECM) process and illustrate how process parameters affect material removal rate and surface finish, with a neat sketch. List its advantages and suggest suitable industrial applications.	L3	2	16
			Or			
	b		Elucidate the working principle of Electrochemical Grinding (ECG) with a neat sketch. Discuss how the process combines electrochemical and mechanical actions to improve material removal.	L3	2	16
13.	a		Explain the process of electrical discharge machining, its process parameters and applications.	L2	3	16
			Or			
	b		Explain the process of laser beam machining, its process parameters and applications.	L2	3	16

14.	a	Distinguish the principles, equipment, and working mechanisms of AFM and CMP. Point out how each process affects surface finish and material removal.	L3	4	16
		Or			
	b	Differentiate the mechanical, chemo-mechanical, and magnetorheological finishing techniques in terms of precision, material removal rate, and ability to process complex geometries.	L3	4	16
15.	a	Can you distinguish between any three hybrid non-traditional machining processes in terms of their working principles, equipment used, process parameters, and typical applications?	L4	5	16
		Or			
	b	A company needs to machine a component with very hard material. Recommend a hybrid non-traditional machining process, justify your choice based on working principle and process parameters, and list the advantages and limitations.	L4	5	16