

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.Tech DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***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)**

<i>Q.No</i>	<i>Questions</i>	<i>BTL</i>	<i>CO</i>	<i>Marks</i>
1.	List any four factors that should be considered during the selection of an appropriate unconventional machining process.	L1	1	2
2.	Write the elements and characteristics of USM.	L1	1	2
3.	List the various steps involved in the chemical machining process.	L1	2	2
4.	What is the fundamental difference between electrochemical grinding (ECG) and traditional grinding?	L2	2	2
5.	Distinguish between electric discharge machining and wire-cut electric discharge machining.	L2	3	2
6.	Why tungsten is used as electrode material in Plasma arc cutting?	L2	3	2
7.	Classify abrasive flow machining process.	L1	4	2
8.	Write down the principle of magneto rheological finishing.	L1	4	2
9.	What is meant by hybrid non - traditional machining process?	L1	5	2
10.	How does electrochemical-assisted abrasive jet machining (ECAJM) differ from conventional abrasive jet machining (AJM)?	L2	5	2

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

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Classify unconventional machining processes based on basic mechanism involved in the processes, source of energy required for the material removal, medium for transfer of energies and type of energy required to shape materials.	L2	1	16
	Or			
	b With a neat sketch, describe the working principle and process parameters of Abrasive Jet Machining (AJM).	L2	1	16
12.	a Discuss how the shape of the tool electrode is replicated onto the workpiece in Electrochemical Machining (ECM) and also list the factors influence the accuracy of the replication process.	L2	2	16
	Or			
	b With a neat sketch, explain the principle of electro-chemical grinding and state its process capabilities and applications.	L2	2	16

13.	a	Describe the construction and working principle of Wire Electrical Discharge Machining (WEDM) process with neat sketch. Write its advantages, disadvantages and applications. Also, discuss the process parameters that effects on the metal removal in WEDM.	L2	3	16
	Or				
	b	Describe Electron beam machining process with clear illustration, in terms of mechanism of metal removal, process characteristics, accuracy, surface quality and applications.	L2	3	16
14.	a	With a neat sketch, elaborate the working principle of abrasive flow machining process and also discuss the effect of process parameters in machining process.	L2	4	16
	Or				
	b	Explain the process parameters which govern the magneto rheological abrasive finishing process with neat sketch.	L2	4	16
15.	a	Explain the reasons for the development of Unconventional Machining Process. Discuss about the criteria recommended in selection of these processes.	L2	5	16
	Or				
	b	With a neat sketch, explain laser beam assisted machining process and mention its advantages and limitations.	L2	5	16