

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***Sixth Semester**Mechanical Engineering***CME397 - Surface Engineering***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>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	Distinguish between static friction and rolling friction.	L2	1	2
2.	Why is thermal consideration important in sliding contact?	L1	1	2
3.	Differentiate between adhesive wear and abrasive wear.	L2	2	2
4.	What is Archard's wear law, and why is it significant in wear analysis?	L1	2	2
5.	Outline the role of corrosion inhibitors.	L2	3	2
6.	Illustrate how oxygen contributes to the corrosion process.	L2	3	2
7.	What are the key factors that influence the quality of a thermal spray coating?	L1	4	2
8.	Outline the challenges associated with the application of thick coatings.	L2	4	2
9.	What role do ceramics play in tribology?	L1	5	2
10.	Compare magnesium alloys to aluminium alloys in terms of weight and strength.	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 Compare different surface measurement techniques and evaluate their effectiveness in measuring surface roughness for various engineering applications.	L4	1	16
	Or			
	b Analyze how metals and non-metals behave under sliding contact by comparing their frictional properties and discuss possible modifications to improve their friction performance in extreme environments.	L4	1	16
12.	a Apply wear debris analysis to predict maintenance requirements in machinery and discuss its effectiveness as a proactive maintenance tool.	L3	2	16
	Or			
	b Analyze the application of theoretical wear models to real-world engineering problems and discuss how these models can inform design and maintenance decisions.	L3	2	16
13.	a Analyze in-service monitoring techniques for assessing corrosion in structures and apply your findings to improve maintenance strategies.	L3	3	16
	Or			
	b Apply material selection and design strategies to prevent corrosion in engineering applications. Discuss how these strategies can enhance durability.	L3	3	16

14.	a	Analyze how laser surface hardening can improve wear resistance in engineering components.	L4	4	16
	Or				
	b	Compare PVD and CVD processes regarding their mechanisms, advantages, and limitations.	L4	4	16
	Or				
15.	a	Compare high-friction and low-friction materials in terms of their properties and applications.	L4	5	16
	Or				
	b	Analyze the implications of biomaterials on human health within biotribology contexts.	L4	5	16