

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL/MAY 2026***Fifth Semester**Biomedical Engineering***CBM332 - ARTIFICIAL ORGANS AND IMPLANTS***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.	Define artificial organs and give two examples.	L2	1	2
2.	What are the main immunological challenges associated with liver transplantation?	L2	1	2
3.	Differentiate between permanent and absorbable implant devices with examples.	L2	2	2
4.	List any two clinical problems that can be solved using biomedical implants.	L2	2	2
5.	Write the importance of modulus matching between an implant and surrounding tissue.	L1	3	2
6.	Analyze how corrosion and wear affect the long-term performance of bone implants.	L2	3	2
7.	State the basic function of a cardiac pacemaker.	L1	4	2
8.	Define artificial kidney.	L1	4	2
9.	List the main organs of the gastrointestinal system.	L1	5	2
10.	Mention the role of recent advancements of 3D printing in craniofacial reconstruction.	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 Discuss the design and evaluation process of artificial organs.	L2	1	16
	Or			
	b i Explain the process of organ transplantation with reference to immunological considerations.	L2	1	8
	ii Evaluate the role of blood transfusion and bone marrow transplantation in patient recovery.	L2	1	8
12.	a Elaborate the fundamental principles of implant design related to clinical requirements and biocompatibility.	L3	2	16
	Or			
	b Explain the tissue engineering and evaluate the role of scaffolds, cells and growth regulators in organ regeneration with a suitable case study to illustrate successful organ regeneration.	L3	2	16

13.	a	Discuss the concept of biocompatibility in detail. Analyze how the local and systemic effects of implant materials on body tissues.	L2	3	16
		Or			
	b i	Describe the degradation and failure mechanisms of biomedical implants.	L2	3	8
	ii	Explain the role of polymer selection and corrosion control in developing implants for bone regeneration.	L2	3	8
14.	a	Elaborate the design, working principle, and clinical applications of neural and neuromuscular implants.	L3	4	16
		Or			
	b	Explain the working principles of heart valve implants and cardiac assist devices.	L3	4	16
15.	a	What are the strategies used for maxillofacial and craniofacial replacement? Explain how these techniques restore outcomes in patients.	L4	5	16
		Or			
	b	Can you tell about soft tissue repair, replacement and augmentation techniques? Evaluate the recent advancements.	L4	5	16