

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***B.E/B.TECH DEGREE END SEMESTER THEORY EXAMINATIONS, NOV/DEC 2025***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 Biomaterials.	L1	1	2
2.	Relate lung transplantation with heart lung transplantation.	L2	1	2
3.	Classify some of the recent advancement in designing the implantable devices.	L2	2	2
4.	Define scaffold.	L1	2	2
5.	Define the factors that determine the biocompatibility of a material.	L1	3	2
6.	Explain the process of degradation of polymer-based devices in the body.	L2	3	2
7.	Recall the common complications associated with neurosensor implants.	L1	4	2
8.	Compare demand pacemakers with fixed-rate pacemakers.	L2	4	2
9.	What is a dental crown and define the requirements of dental crown.	L1	5	2
10.	Illustrate the importance of gut microbiota in gastrointestinal health.	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 Write in detail about the design consideration that is to be followed during organ replacement.	L1	1	16
	Or			
	b Explain in detail the process of bone marrow transplant.	L1	1	16
12.	a Illustrate the principles and Considerations of implants during the designing process in detail.	L2	2	16
	Or			
	b Demonstrate Tissue engineering applications in the Field of Artificial organs and implants.	L2	2	16
13.	a Experiment the local effects such as fibrous encapsulation that affects the functionality of an implant, justify how biomaterial design mitigate these effects.	L3	3	16
	Or			
	b Identify the common types of corrosion that affect metallic implants, and write in detail with the environmental factors like pH and ion concentration for the corrosion.	L3	3	16

14.	a	Analyze the mechanical and biological design considerations that influence the selection of heart valve implants for patients with valvular heart disease.	L3	4	16
		Or			
	b	Examine the oxygen-carrying compounds in artificial blood products, such as perfluorocarbons and hemoglobin-based oxygen carriers and categorize based on their difference in their mechanisms of action.	L3	4	16
15.	a	Evaluate the role of 3D imaging and printing technologies in maxillofacial surgery, and assess how their use has advanced the planning and execution of complex reconstructions.	L4	5	16
		Or			
	b	Analyze the clinical applications of zygomatic implants in maxillofacial prosthetics, and evaluate their advantages and challenges associated with their use in maxillofacial prosthetics.	L4	5	16