

Reg.No.:



VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 120007

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024

Seventh Semester

Biomedical Engineering

U19BMV53 - HUMAN ASSIST DEVICES

(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	(10 x 2 = 20 Marks)	
			KL	CO
1.	List the different types of oxygenators.	2	K1	CO1
2.	Define the term: Shunting.	2	K2	CO1
3.	List the functions and need for cardiac assist devices.	2	K2	CO2
4.	Draw and label the components of Intra-Aortic balloon pump.	2	K2	CO2
5.	List the composition of dialysate solution.	2	K1	CO3
6.	Differentiate between peritoneal dialysis and hemodialysis.	2	K2	CO3
7.	Define Pure tone audiometry.	2	K2	CO4
8.	List the types of deafness.	2	K1	CO4
9.	Write the principle of Transcutaneous electrical nerve stimulator.	2	K2	CO5
10.	What is meant by bio-feedback?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Explain in detail about basic principle of operation of a Heart lung machine with a neat functional diagram.	13	K2	CO1
	(OR)			
b)	Summarize the functioning of artificial heart. List the different types of artificial heart and elaborate them in detail.	13	K2	CO1
12. a)	Summarize about heart valves and its function. List out the characteristics of biomaterials used in prosthetic heart valves.	13	K2	CO2
	(OR)			
b)	Describe the principle of External Counter Pulsation along with its benefits and limitations.	13	K2	CO2
13. a)	Identify the principle of dialysis in the artificial kidney. What are different types of dialyzers? Explain their construction and principle of operation.	13	K2	CO3
	(OR)			
b)	Draw the block diagram of a haemodialysis machine and explain the importance of each building block.	13	K2	CO3
14. a)	Classify and compare the different types of hearing aids based on their design & functionality.	13	K4	CO4
	(OR)			
b)	Describe the physiological effects of IPPB on lung mechanics and gas exchange.	13	K2	CO4
15. a)	Discuss in detail about the transcutaneous electrical nerve stimulator with appropriate diagram and application.	13	K3	CO5
	(OR)			
b)	Compare the effectiveness of point of care testing with conventional laboratory testing in term of speed, accuracy and patient outcome.	13	K4	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	Analyze the factors that influence the decision making process for selecting candidate for cardiac transplantation.	15	K4	CO1
	(OR)			
b)	Compare the right ventricular bypass pump and left ventricular bypass pump with respect to principle & applications.	15	K4	CO2