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: 120013

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024
Third Semester
Biomedical Engineering
U23BM303 – BIOSCIENCES FOR MEDICAL ENGINEERING
(Regulation 2023)

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	KL	CO
1.	How water acts as biological solvent?	2	K2	CO1
2.	List any two clinical applications of radioisotopes.	2	K2	CO1
3.	Classify carbohydrates with example for each.	2	K2	CO2
4.	Distinguish between simple and derived lipids with examples.	2	K2	CO2
5.	Write a short notes on irreversible cell injury.	2	K2	CO5
6.	Compare benign and malignant tumours.	2	K2	CO5
7.	Write the causes for thrombosis.	2	K2	CO4
8.	Describe pulmonary edema.	2	K2	CO4
9.	What is bright field microscopy?	2	K2	CO3
10.	Explain the structure of antibody.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Explain in detail about the Handerson-Hassel Balch equation.	13	K2	CO1

(OR)

	b)	Elaborate on different types of physiological buffers.	13	K2	CO1
12.	a)	Explain the nomenclature of fatty acid and highlight on the hormonal regulation of fatty acid metabolism.	13	K2	CO2
		(OR)			
	b)	Explain in detail about Watson and Crick model of DNA.	13	K2	CO2
13.	a)	Elaborate on intracellular accumulations in cells.	13	K3	CO4
		(OR)			
	b)	Explain in detail neoplasia, its classification, etiology, diagnosis and treatment strategies.	13	K3	CO4
14.	a)	Explain in detail about hemostasis and embolism with the significant consequences.	13	K3	CO4
		(OR)			
	b)	Describe in detail about bleeding and coagulation disorders.	13	K3	CO4
15.	a)	i. You are inoculating 50 bacillus cells into a nutrient broth. The number of cells increases four times after 60 min. How many cells will be there after 3 hrs? Calculate the generation time of this bacterium.	7	K3	CO5
		ii. Elaborate on growth phases of bacteria with neat diagram.	6	K2	CO5
		(OR)			
	b)	Explain the role of TEM and SEM in pathology.	13	K2	CO5

PART – C

(1 x 15 = 15Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	A 55 year old male had a severe chest pain for the past 4 hours. On physical examination it was revealed that he had tachycardia. Laboratory results show an increased serum troponin I of 10 ng/ml. A coronary angiogram revealed >90% occlusion of the anterior interventricular artery. What would have happened to cardiac tissues, give a clear sketch on cellular changes and why troponin level is elevated?	15	K4	CO5
		(OR)			
	b)	A 65 year old working woman admitted to the hospital with a history of generalised weakness and significant weight loss. Over a few months, she had a progression of dyspnea and cannot do household work because of pain in elbows and knees with swelling in knee joints. She had BP: 128/70, Heart rate: 90 bpm, respiration rate: 25 breaths/ min an decreased breath sounds. The blood screening result shows the existence of auto antibodies as a supportive evidence. Find the pathological condition and discuss on the same.	15	K4	CO5