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: 90010

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2025
Third Semester
Biotechnology
U23BT303 – CELL BIOLOGY
(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.	Differentiate between prokaryotic and Eukaryotic cells.	2	K1	CO1
2.	Highlight the characteristics of microtubules.	2	K1	CO1
3.	Cite the significance of G_0 phase in mitosis.	2	K2	CO2
4.	Write the salient features of CDK.	2	K1	CO2
5.	What is pinocytosis?	2	K1	CO3
6.	Define tonicity. Classify its types.	2	K2	CO3
7.	Draw and label the cell signaling stages.	2	K2	CO4
8.	Write the significance of GPCR.	2	K1	CO4
9.	List the methods for generating a stable cell line.	2	K1	CO5
10.	What are adherent and suspension cell cultures?	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.			Questions	Marks	KL	CO
11.	a)	i.	Elucidate the fluid mosaic model with neat sketch.	8	K2	CO1
		ii.	Briefly discuss the structural organization of prokaryotic and eukaryotic cells.	5		

			(OR)			
	b)	i.	Describe the structure and function of cell organelles with neat sketch.	8	K2	CO1
		ii.	What is cytoskeleton? Explain its structure and composition.	5		
12.	a)	i.	Depict the stages of mitosis with neat diagram.	8	K2	CO2
		ii.	Interpret the regulation of cell cycle.	5		
			(OR)			
	b)	i.	Illustrate and explain the stages of meiosis with a neat sketch.	8	K2	CO2
		ii.	Analyze the role of G_1, G_2, and M checkpoints in controlling cell cycle.	5		
13.	a)		Explain the various ATP dependent proton pump with examples.	13	K2	CO3
			(OR)			
	b)		What is active transport? Explain in detail with a neat sketch.	13	K3	CO3
14.	a)	i.	Explain the cell signaling process in detail.	8	K3	CO4
		ii.	Give a short account on nuclear receptors.	5		
			(OR)			
	b)	i.	What is GPCR? Explain its structure and mechanism of action.	8	K3	CO4
		ii.	Briefly discuss on secondary messengers and their role in cell signaling.	5		
15.	a)	i.	What is cell line? Explain the different types of cell line with examples.	8	K3	CO5
		ii.	Summarize the characterization of the cell line.	5		
			(OR)			
	b)	i.	Illustrate about the cell culture contamination and its monitoring methods.	8	K3	CO5
		ii.	Review about the 3-D cell Culture.	5		

PART – C

(1 x 15 = 15Marks)

Q.No.			Questions	Marks	KL	CO
16.	a)		Cell division is a major process in living organisms. Reproductive cells such as sperm and ovum are formed through a specific type of division. Explain the appropriate cell division process involved in reproductive cells.	15	K3	CO2
			(OR)			
	b)	i.	Outline the salient features of endocytosis & exocytosis with neat sketch.	7	K3	CO3
		ii.	Describe in detail about the facilitated diffusion and its mechanism.	8		