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: 90012

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024
Third Semester
Biotechnology
U15BT302 – GENETICS AND MOLECULAR BIOLOGY
(Regulation 2015)

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.	Draw the structure of DNA.	2	K1	CO1
2.	Comment on different forms of DNA.	2	K2	CO1
3.	Differentiate transition and transversion.	2	K1	CO2
4.	Write short notes on frame shift mutation.	2	K2	CO2
5.	What do you mean by semi conservative replication?	2	K1	CO3
6.	List out the proteins involved in DNA replication.	2	K1	CO3
7.	Define Okazaki fragment.	2	K2	CO4
8.	What is degeneracy of code? Give examples.	2	K2	CO4
9.	Pen down the role of histone modification in gene regulation.	2	K2	CO5
10.	Explain the levels of gene regulation in prokaryotes.	2	K2	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	What is meant by Linkage and Crossing over? What effect does the crossing over have on Linkage? How does Linkage affect inheritance? Explain in detail.	13	K2	CO1
		(OR)			
	b)	Explain Mendalian principles of genetics with suitable examples.	13	K2	CO1
12.	a)	Describe the molecular basis of DNA damage and the repair mechanisms.	13	K4	CO2
		(OR)			
	b)	What are mutations? List out the various types of mutation. Discuss in detail with four examples the consequence of gene mutations in relation to disease.	13	K4	CO2
13.	a)	Briefly describe the replication in eukaryotes.	13	K3	CO3
		(OR)			
	b)	Explain in detail about Eukaryotic transcription.	13	K3	CO3
14.	a)	Explain initiation of translation and post translation modifications in eukaryotes.	13	K2	CO4
		(OR)			
	b)	Explain in detail about wobble hypothesis.	13	K3	CO4
15.	a)	Describe the regulation of gene expression in prokaryotes.	13	K3	CO5
		(OR)			
	b)	Discuss in detail about "lac operon system" and its regulatory components.	13	K3	CO5

PART – C

(1 x 15 = 15Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	What is chromosome theory of inheritance? Briefly explain with T.H. Morgan experiment.	15	K4	CO3
		(OR)			
	b)	Explain the different stages in transcription. Add a note on regulation of transcription.	15	K3	CO3