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

**Question Paper Code: 9018**

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – MAY / JUNE 2024

Fifth Semester

Electrical and Electronics Engineering

U19BTEO1– BIOLOGY FOR ENGINEERS

(Common to Electronics and Communication Engineering)

(Regulation- 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

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

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Define cell theory.	2	K2	CO1
2.	Differentiate between prokaryotic and eukaryotic cell.	2	K1	CO1
3.	What are the three types of cell signalling?	2	K2	CO2
4.	Highlight the importance of peripheral nervous system.	2	K1	CO2
5.	Differentiate between innate immunity and adaptive immunity.	2	K2	CO3
6.	Define antigen.	2	K1	CO3
7.	State nano-biomolecules.	2	K1	CO4
8.	Highlight the advantages of biofuels compared to fossil fuel.	2	K1	CO4
9.	Define recombinant DNA technology.	2	K2	CO5
10.	Illustrate monohybrid cross with an example.	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Write a brief notes on cell organelles with a neat sketch.	13	K2	CO1
	(OR)			
b) i.	Differentiate lysosome from peroxisome.	8	K1	CO1
ii.	Explain the advantages and disadvantages of electron microscope	5	K2	CO2
12. a)	Explain in detail about respiratory system.	13	K2	CO2
	(OR)			
b)	Write a brief notes on cell cycle with a neat diagram.	13	K2	CO2
13. a)	Explain in detail about types of antibodies and its structure.	13	K2	CO3
	(OR)			
b)	Elaborate steps involved in CD8 cell activation with neat sketch.	13	K2	CO3
14. a)	Explain the principle and application of biosensor with an example.	13	K2	CO4
	(OR)			
b)	Discuss how biofuels are economically feasible in India.	13	K2	CO4
15. a)	How stem cells are used in regenerative medicine explain in detail.	13	K2	CO5
	(OR)			
b)	Explain the different types of gene therapy with an example.	13	K2	CO5

PART – C

(1 x 15 = 15Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	Discuss in detail about the biochip and its application.	15	K2	CO4
	(OR)			
b)	Discuss about how neural network, machine learning and deep learning are interconnected.	15	K2	CO5