Q. Code: 989966

Reg. No. | | | | | | | | | | | | | |

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2023

Second Semester

BT22101 – Biology for Engineers

(Common to AE, BT & IT)

(Regulation 2022)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Distinguish the structure and function of prokaryotic and eukaryotic cells.	**4**
CO 2	Explains the usage of biological principles in engineering	**2**
CO 3	Integrate the concepts of biology with engineering through case studies.	**3**
CO 4	Describe the influence of biologically inspired materials/machine/devices on environment and society.	**2**
CO 5	Understand the regulations, ethics, security and safety of engineering applications.	**2**

PART- A (20 x 2 = 40 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	Sketch few diseases cause by virus.	**1**	**3**
2.	Infer the reason behind thigmatropic plants.	**1**	**2**
3.	Classify the different types of carbohydrates.	**1**	**2**
4.	Show the actual mechanism of DNA translation into protein.	**1**	**3**
5.	Compare the functioning of human eye and camera.	**2**	**4**
6.	Relate pixel size and resolution of an image.	**2**	**4**
7.	Specify few application of optoelectronics in biology.	**2**	**3**
8.	Describe the outcomes of ICT.	**2**	**2**
9.	Demonstrate what is force torque sensor.	**3**	**3**
10.	Explain the necessity of biofertilizer.	**3**	**2**
11.	Can you analyze why bioenergy is emerging as the growing field of biotechnology.	**3**	**4**
12.	Manipulate the main principle behind Touch screen technology.	**3**	**4**
13.	Identify few Radiological wastes in the environment.	**4**	**2**
14.	Discuss few chemical hazards caused by technology development.	**4**	**2**
15.	Compare and contrast the merits and demerits of microwave radiation.	**4**	**4**
16.	Identify the harmful outcomes of cell phone usage.	**4**	**2**
17.	Discuss the privacy issues arising for 3D scanning.	**5**	**2**
18.	Do you think Surveillance in airport is essential?	**5**	**4**
19.	Identify the main sources of adult stem cell.	**5**	**2**
20.	Is Genetic manipulation of cells ethical or not?	**5**	**4**

PART- B (5 x 10 = 50 Marks)

			Marks	CO	RBT LEVEL
21. (a)	(i)	Sketch the Step wise mechanism of protein synthesis.	(5)	1	3
	(ii)	Construct the classification of various protein structures prevailing.	(5)	1	3
		(OR)			
(b)		Demonstrate the different types of microbes and their applications in this modern era of biotechnology.	(10)	1	3
22. (a)		Analyze how people got inspired and discovered the following: Lotus inspired paintbrushes, Stenocara shell inspired water collection, and Burr inspired Velcro.	(10)	2	4
		(OR)			
(b)		Relate the working principle of a camera with the functioning of human eye with suitable diagram.	(10)	2	4
23. (a)	(i)	Analyze why biosensor is playing a major role in hospitals.	(6)	3	4
	(ii)	Manipulate why biopolymer production is not easily commercialized in market.	(4)	3	4
		(OR)			
(b)		How can we formulate Human-in-the-loop process to improve the technological advancement in various fields?	(10)	3	4
24. (a)	(i)	Illustrate the effect of radiation in pregnancy and list out the time of radiation vs effect on the fetus.	(5)	4	2
	(ii)	Identify the need for internal radiation therapy with the available methods.	(5)	4	2
		(OR)			
(b)		Explain any 3 of the following case studies: Bhopal tragedy, Deep horizon oil spill, Chernobyl nuclear meltdown, Great smog London, Dust Bowl.	(10)	4	2
25. (a)		Outline the significance of medical device. Analyze the requirement and importance of medical device labelling with few examples.	(10)	5	4
		(OR)			
(b)	(i)	Can u analyze and discuss about the privacy issues behind surveillance ethics?	(5)	5	4
	(ii)	Why discovery of GM crops has led the country towards green revolution?	(5)	5	4

PART- C (1 x 10 = 10 Marks)

(Q.No.26 is compulsory)

		Marks	CO	RBT LEVEL
26.	Design a proper workload ergonomics and system ergonomics in any working environment by assuming one industry as a case study. State few strategies you will adapt to improve the ergonomics of your workspace.	(10)	3	5

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