

MODEL QUESTION PAPER - 1
BIOLOGY FOR ENGINEERS 21BE45
MODULE - 1

1. a. Highlighting the properties of cellulose, justify cellulose as an effective water filter. 10
b. Write a short note on i. PHA ii Whey proteins 10
OR
2. a. With an example explain the development of DNA vaccines. 10
b. Explain the applications of enzymes in biosensors and Bio- bleaching 10

MODULE - 2

3. a. Brain functions as a CPU system. Justify 10
b. What is electroencephalogram? Discuss the various applications of electroencephalogram. 10
OR
4. a. What are stents? Give an account on the stent design and materials used for the manufacturer of stents. 10
b. Give an account on the characteristics and features of cataract 10

MODULE - 3

5. a. Lungs are an effective purification system. Justify the statement highlighting the functioning of the lungs. 10
b. Write a short note on
I. chronic obstructive pulmonary disease ii. Muscular dystrophy 10
OR
6. a. What is spirometry? Discuss the types and functioning of the spirometry. 10
b. With a neat labeled diagram, explain the mechanism of filtration by the nephrons. 10

MODULE - 4

7. a. What is echolocation? Discuss the application of echolocation in ultrasonography. 10
b. Explain the experiment conducted by Prof, Dickman and colleagues on GPS systems existing in pigeons 10
OR
8. a. What is a lotus leaf effect? Explain the mechanism and applications of lotus leaf effect. 10
b. The structure and design of the Kingfisher's beak led to the design of the bullet trains. Explain. 10

MODULE - 5

9. a. What is Bioprinting? Discuss the process and applications of bioprinting 10
b. What is DNA origami? Explain the process of DNA origami 10
OR
10. a. Give an account on the process involved in the self-healing bio concrete. 10
b. What is Bioremediation? Explain the various types of bioremediation. 10

MODEL QUESTION PAPER - 2
BIOLOGY FOR ENGINEERS 21BE45
MODULE - 1

1. a. What are Bioplastics ? Compare the properties of PHA and PLA. 10
b. Write a short note on i lipids as detergents ii Meat analogues 10
- OR
2. a. Discuss the development of vaccine for covid 19 10
b. What is DNA fingerprinting? Explain the process involved in DNA fingerprinting. 10

MODULE - 2

3. a. With a neat diagram of neuron explain the process of signal transmission 10
b. Heart is an effective pump. Justify 10
- OR
4. a. What is ECG? Describe the various parts of ECG 10
b. What are pacemakers? Briefly explain the various kinds of pacemakers 10

MODULE - 3

5. a. Give an account on the structure and functioning of kidneys 10
b. Write a short note on
I. Heart Lung machine ii. Muscular dystrophy 10
- OR
6. a. Give an account on the structure and function of the musculoskeletal system in humans 10
10
b. What is muscular dystrophy? Briefly discuss the various bioengineering solutions for muscular dystrophy 10

MODULE - 4

7. a. Compare the process of photosynthesis to the functioning of photovoltaic cells. 10
b. Write short notes on: i. GPS system existing in birds. ii. Shark skin 10
- OR
8. a. Inspiration derived from the mechanism of birds flight led to the discovery of aircraft. Justify 10
b. Give an account on the various blood substitutes 10

MODULE - 5

9. a. What is Bioimaging? Discuss the process and applications of bioimaging 10
b. Discuss the applications of Artificial intelligence in the diagnosis of disease 10
- OR
10. a. What is Biomining? Explain the various processes involved in biomining. 10
b. Write short notes on: i. Electronic nose ii. Self-healing Bio Concrete. 10