

Question Bank & Assignment #1

Biology for Engineers (21BE45)

Module #1

1. Explain the bio functions of carbohydrates.
2. Write a brief note on cellulose based water filters.
3. Explain the role of PHA and PLA as bio plastics.
4. Define nucleic acids. Explain the DNA vaccine structure for Rabies.
5. Explain the RNA vaccine structure for COVID 19.
6. Briefly explain the role of DNA in fingerprinting and forensic science.
7. Define proteins. Briefly explain the different types of plant and animal based proteins.
8. What are lipids? Briefly explain the different types of lipids.
9. Define biodiesel. Write an explanatory note on biodiesel.
10. Define Biosensor. Explain the functions of lignolytic enzymes in bio-bleaching.

Module #2&3

1. Discuss the architecture of the human brain.
2. Explain the central nervous system of the brain.
3. Explain the process of signal transmission by the brain to different parts of the body.
4. Discuss the engineering solutions for Parkinson's disease.
5. Define EEG. Briefly explain the procedure of EEG.
6. Explain the function of Heart as a pumping system.
7. Define ECG. Briefly explain the design of a stent in the coronary artery.
8. Briefly explain about pacemakers and Defibrillators.
9. Discuss the eye as a camera system.
10. Explain the function of lungs as a purification system.
11. Write a brief note on Kidney as a filtration system.
12. Explain Muscular and skeletal systems in detail.
13. Explain the engineering solutions for Osteoporosis and Muscular Dystrophy
14. Discuss briefly (i) Bionic eye (ii) Cataract.

Question Bank 21BE45

Module # 4 & 5

1. Explain Echolocation with applications and write a short note on SONARs.
2. Briefly discuss the mechanism of super hydrophobic and self cleaning surfaces.
3. Explain with a neat sketch, the function of shark skin as a friction reducing swimsuit.
4. Discuss the structure of kingfisher beak and its practical applications.
5. Write a short note on a. Bionic leaf b. human blood substitutes. c. Photovoltaic cells.
6. Write short notes on Bio printing techniques and materials.
7. Explain Electrical nose and tongue in detail.
8. Explain the 3D printing of skin and bone in detail.
9. With a neat sketch, explain Bio computing and imaging in detail.
10. Explain the AI process for disease diagnosis and its various applications in the medical field.
11. Briefly explain self-healing-bio concrete.
12. Explain briefly a. Bio Remediation b. Bio-Mining.