SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

AN AUTONOMOUS INSTITUTION

Approved by AICTE, New Delhi and Affiliated to Anna University, Chennai

VII Semester

19BY701 – Biology for Engineers

B.E – Department of Computer Science Engineering (IoT, Cyber Security including BCT)

UNIT 1
16 MARKS

1. How do the principles of cell theory contribute to our understanding of the structure and function of living organisms, and what implications does this theory have for modern biological research?
2. How do the intricate signaling pathways involved in plant growth regulation, including phytohormones and environmental cues, differ among various plant species, and how do these differences affect their adaptability to changing ecosystems? Additionally, how can this knowledge be applied to develop strategies for sustainable agriculture and ecosystem management?
3. Analyze the case of Sarah, a 12-year-old diagnosed with cystic fibrosis (CF) due to ΔF508 and R117H mutations in the CFTR gene. Discuss how these specific genetic mutations impact the clinical presentation of CF and evaluate the implications for diagnosis and treatment. How does this case illustrate broader principles of genetic inheritance, and what are the challenges in managing CF in a clinical setting?
4. Evaluate the case of Jane, who suffers from vitamin B12 deficiency. How does this deficiency affect the enzyme methionine synthase and contribute to her health problems? Discuss the specific symptoms Jane experiences and the treatment methods implemented to address her condition
5. Evaluate how the understanding of cell theory has evolved by analyzing key scientific discoveries from its early stages to modern times. Specifically, examine the impact of the invention of the electron microscope and the study of mitochondria on our understanding of cellular and molecular biology. Discuss the contributions of scientists such as Robert Hooke, Richard Altmann, and others, and explain how these advancements have refined our knowledge of cellular and subcellular structures and functions.
6. Explain how lipids, proteins, and nucleic acids each contribute to different functions in the body, and give examples of their roles in specific biological processes.