

**SIDDHARTH GROUP OF INSTITUTIONS :: PUTTUR**

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QUESTION BANK (DESCRIPTIVE)**Subject with Code: BIOLOGY FOR ENGINEERS(18HS0803)****Year & Sem: II-B.Tech &II-Sem****Branches: ECE & CSE****Regulation: R18****UNIT –I**

1. (a) Define biology? [2M]
(b) What are autotrophs & heterotrophs? [2M]
(c) Define taxonomy? [2M]
(d) What are the three domains (kingdoms) of life? [2M]
(e) What is cell? [2M]
2. (a) Draw ultra structure of Prokaryotic cell. [4M]
(b) Compare the characteristics of Prokaryotic and Eukaryotic cell. [6M]
3. What are Model organisms? Give brief notes on any three model organisms. [10M]
4. (a) Classify Kingdom Protista and Kingdom Animalia. [6M]
(b) Write short notes on unicellular and Multicellular with examples. [4M]
5. (a) Explain mode of excretion in Urinary organisms. [6M]
(b) Write carbon and Energy Utilization in lithotrophs. [4M]
6. (a) Define Habitat. Explain Terrestrial Habitat. [5M]
(b) How autotrophs utilize carbon and energy? [5M]
7. Draw neat labeled diagram of Plant cell. Write the differences between Plant cell and Animal cell. [10M]
8. Define classification. Give an account on three Kingdom classifications. [10M]
9. Draw labeled diagram of Animal cell as seen in Electron microscope. Comment on functions of cell organelles. [10M]
10. Illustrate in detail about the concept of taxonomic hierarchy. [10M]

UNIT –II

1. (a) What is cell cycle? [2M]
(b) What is meiosis? [2M]
(c) Define Mendel 1st & 2nd law. [2M]
(d) What is meant by dominant and recessive? [2M]
(e) What is gene mapping? [2M]
2. Explain Mendel's law of segregation and independent assortment in terms of genetics. [10M]
3. Define gene Interaction. Give brief account on Dominant Epistasis with suitable example. [10M]
4. (a) Describe Complementary Gene Interaction. [5M]
(b) Give an account on Duplicate Gene Interaction. [5M]
5. (a) Describe how color blindness is passed on to children. [5M]
(b) Discuss the mechanism and genetics behind Hemophilia. [5M]
6. Explain Meiosis with diagrammatic representation. [10M]
7. (a) Explain Phenylketonuria. [5M]
(b) Explain about Albinism. [5M]
8. (a) Give an account on Down's syndrome. [5M]
(b) Write about Turners syndrome. [5M]
9. What is Mitotic Cell division? Explain Mitosis with neat diagram. [10M]
10. Write a short note on Gene Mapping. [10M]

UNIT –III

1. (a) What are polysaccharides? [2M]
(b) Write any four functions of proteins? [2M]
(c) List the two types of lipids and their functions? [2M]
(d) How many types of nucleic acids are there? And write any two functions. [2M]
(d) List some important organic compounds present in living organisms? [2M]
2. Describe the enzyme nature, properties and nomenclature? [10M]
3. Describe the enzyme action and kinetics? [10M]
4. (a) Classify the Proteins. [5M]
(b) Summarize the types of RNA and its functions in cells. [5M]
5. What are lipids? Classify and explain different types of lipids. [10M]
6. What are the macro molecules and its types? Write the functions of macro molecules. [10M]
7. What are carbohydrates? Classify and explain monosaccharide's. [10M]
8. Biological classification of amino acids and their importance. [10M]
9. (a) List out the factors affecting the rate of enzyme reaction with neat diagrams. [5M]
(b) Outline the mechanism of enzyme action with suitable diagrams. [5M]
10. Define polysaccharides with suitable examples. [10M]

UNIT –IV

1. (a) Distinguish between DNA and RNA? [2M]
(b) Draw a neat diagram of DNA double helix structure? [2M]
(c) What is complementation? [2M]
(d) Write full form of M-RNA & TRNA & their functions? [2M]
(e) What are the two Purines & Pyrimidines of DNA? [2M]
2. Explain genetic code & Degeneracy of genetic code? [10M]
3. Explain about Genetic material of DNA? [10M]
4. Give brief account on hierarchy of DNA structure from single stand to double helix? [10M]
5. Explain about Genetic material of DNA? [10M]
6. Describe the structure and complementary base pairing of DNA. [10M]
7. Discuss the functions & Structure of Proteins? [10M]
8. Explain gene- complementation and recombination. [10M]
9. Write short notes on
(a) Protein as an Enzyme. [5M]
(b) Protein as Structural elements. [5M]
10. (a) Give the characteristics of genetic codon, why the code is universal. [5M]
(b) Define Nucleosomes. Illustrate the structure of Nucleosomes. [5M]

UNIT –V

1. (a) What are photo systems? [2M]
(b) Write the difference between aerobic & anaerobic respiration? [2M]
(c) What are the general features of TCA cycle? [2M]
(d) What is sterilization? [2M]
(e) Define 1st law and 2nd law of Thermodynamics. [2M]
2. Describe Krebs cycle. [10M]
3. Illustrate step by step process in Glycolysis. [10M]
4. What are the principles of energy transaction in physical and biological world?(laws of thermodynamics) [10M]
5. Give an account on energy yielding and energy consuming reactions? [10M]
6. Write a note on sterilization and various techniques used. [10M]
7. What is microscopy? Explain different types of microscopy. [10M]
8. Explain using a graph :
 - (a) Lag phase
 - (b) Log phase
 - (c) Stationary phase
 - (d) Death phase of microorganisms. [10M]
9. What is culture medium? Explain types of culture media based on its physical state. [10M]
10. (a) Interrupt the mechanism of ATP production. [5M]
(b) What is photosynthesis? Summarize the process of light dependent reaction of photosynthesis. [5M]