



SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY :: PUTTUR
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QUESTION BANK (DESCRIPTIVE)

Subject with Code: BIOLOGY FOR ENGINEERS(18HS0803)
Year &Sem: II-B.Tech&I-Sem

Branches: MECH,CIVIL,EEE,AGRI
Regulation: R18

UNIT – I

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| 1. | (a) Define biology? | 2M |
| | (b) What is 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. | 5M |
| | b. Compare the characteristics of Prokaryotic and Eukaryotic cell | 5M |
| 3. | a. Classify Kingdom Protista and Kingdom Animalia. | 5M |
| | b. Write short notes on unicellular and Multicellular with examples | 5M |
| 4. | What are Model organisms? Give brief notes on any three model organisms | 10M |
| 5. | a Explain mode of excretion in Urinotelic organisms | 5M |
| | b Write carbon and Energy Utilization in lithotrophs | 5M |
| 6. | a Define Habitat. Explain Terrestrial Habitat. | 5M |
| | b How autotrophs utilize carbon and energy? | 5M |
| 7. | Write the differences between Plant cell and Animal cell. | 10M |
| 8. | a. Define classification | 5M |
| | b. What are the Divisions in Kingdom Plantae? | 5M |
| 9. | a. Describe Amminotelism and Uricotelism. | 5M |
| | b. Draw labeled diagram of Animal cell as seen in Electron microscope. Comment on characteristics of Animal cell. | 5M |
| 10. | Explain the classification of organisms based on carbon utilization of organisms | 10M |

UNIT-II

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| 1 | (a) What is cell cycle? | 2M |
| | (b) What is meiosis? | 2M |
| | (c) Define Mendel 1 st & 2 nd law. | 2M |
| | (d) Give an account on dominant & recessive uses | |
| | (e) What is gene mapping? | 2M |
| 2 | What are the three Laws of Inheritance proposed by Mendel? Explain Monohybrid cross | 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 | Explain about Phenylketonuria. and Albinism | 5M |
| 6 | Explain Meiosis with diagrammatic representation. | 10M |
| 7 | a Discuss on Gene Mapping. | 5M |
| | b Give an account on Law of Independent Assortment [Dihybrid cross] | 5M |
| 8 | What is Mitotic Cell division? Explain Mitosis with neat diagram. | 10M |
| 9 | Give an account on Down's syndrome | 10M |
| 10 | How genetic material passes from Parents to offspring's? | 10M |

UNIT-III

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| 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 |
| | (e) List some important organic compounds present in living organisms? | 2M |
| 2 | Define enzymes and its role in plants? | 10M |
| 3 | Describe the enzyme nature, properties and nomenclature? | 10M |
| 4 | Describe the enzyme action and kinetics? | 10M |
| 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 monosaccharides | 10M |
| 8 | Biological classification of amino acids and their importance | 10M |
| 9 | Describe the following | 10M |
| | a) RNA catalysis. (b) Kinetic parameters related too biology. | |
| 10 | a Define polysaccharides with suitable examples | 5M |
| | b What are Nucleotides? | 5M |

UNIT IV

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|-----------|---|-----|
| 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 & Describe the R-DNA technology methods? | 10M |
| 4 | Define transgenic plants & its applications? | 10M |
| 5 | Give brief account on hierarchy of DNA structure from single stand to double helix? | 10M |
| 6 | Explain about on Genetic material of DNA? | 10M |
| 7 | Explain the following in detail | 10M |
| | a. Coding and decoding genetic information transfer. | |
| | b. R-DNA duplication. | |
| 8 | Give an account on | 10M |
| | a. Proteins as enzymes. | |
| | b. Protein as Structural elements | |
| 9 | a What are the functions & Structure of Proteins? | 10M |
| | b Explain gene- complementation and recombination | 10M |
| 10 | Explain the Laws of Thermodynamics in biological systems. | 10M |

UNIT-V

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| 1 | (a) What are photo systems? | 2M |
| | (b) Difference between aerobic & anaerobic respiration? | 2M |
| | (c) What are the general features of TCA cycle? | 2M |
| | (d) What is sterilization? | 2M |
| | (e) Define stem cells & their functions? | 2M |
| 2 | Explain the glycolysis process in detail. | 10M |
| 3 | Describe the kerbs cycle in detail. | 10M |
| 4 | Explain identification and classification of microorganisms | 10M |
| 5 | What are the principles of energy transaction in physical and biological world? | 10M |
| 6 | Give an account on energy yielding and energy consuming reactions? | 10M |
| 7 | Write a note on sterilization and various techniques used. | 10M |
| 8 | Explain the following in brief | 10M |
| | (a) ATP as energy currency (b) Photosynthesis (c) Growth kinetics. | |
| 9 | Explain exothermic and endothermic reactions. | 10M |
| 10 | How to prepare culture medium? Explain it in detail | 10M |