2114
B.Sc. (Hons.) Bio-Informatics
First Semester
BIN-1007: Introduction to Biochemistry

Time allowed: 3 Hours

Max. Marks: 60

NOTE: *Attempt five questions in all, including Question No. I which is compulsory and selecting two questions from each Unit.*

x-x-x

1. Explain briefly the following terms:
   (i) buffer (ii) pI (iii) neucleosides (iv) ORFs (v) triplet code (vi) supercoiled DNA (vii) essential amino acids (viii) acidic amino acids (ix) activation energy (x) storage polysaccharides (xi) structure of sucrose (xii) anomers   (1x12=12)

Unit-I

2. (a). Derive Henderson-Hasselbalch equation and briefly discuss role of buffers in biological system.   (7)
   (b). Discuss the interrelationship between titration curve and pka of weak acids.   (5)
3. (a) Describe the double helix structure of DNA through the diagram.   (7)
   (b). Comment on denaturation and renaturation of DNA.   (5)
4. (a). Explain the process of DNA replication.   (8)
   (b). Comment on the concept of introns, exons and splice variants.   (4)

Unit-II

5. (a.) Describe the structural organization of proteins.   (9)
   (b). Give the structure of aromatic amino acids.   (3)
6. (a). Describe the Michaelis Menten equation for enzymes kinetics.   (7)
   (b). Write a note on regulation of enzyme activity.   (5)
7. (a). Give an detail account of structural and functional role of carbohydrates.   (9)
   (b). Differentiate between glycoproteins and proteoglycans.   (3)

x-x-x