GOVT AUTONOMOUS COLLEGE ROURKELA

PG 4TH SEMESTER

PAPER - 401

Long Question :

1) What is biological buffer ? Describe the concept of biological buffer using Henderson-Hasselbalch equation with the determination of PKa value.

2) Briefly explain the principles of thermodynamics in biology.

3) What are weak acids and base ? Describe the concept of PH with the ionisation of water.

4) Describe the classification and basic chemical structure of monosaccharides with examples

5) What are lipids ? Describe the classification, chemical structure and function of different classes of lipids.

6) Write a note on 3D structure of protein.

7)What are ligands ? Explain the mechanism of protein folding and unfolding with reference to the interaction between protein and ligands.

8) Write a note on molecular mechanisms of signal transduction in living organisms.

9) What are secondary receptors ? Describe different types of secondary receptors with special reference to G-protein coupled receptors act as second messenger.

10) Describe briefly the mechanism of signalling in micro - organisms.

11)Briefly describe the properties of monosaccharides with examples.

12 What are disaccharides? Give the basic chemical structure of disaccharides with examples

13) What are polysaccharides ? Give the basic chemical structures of polysaccharides with example.

14) What is protein denaturation ? give the mechanism of denaturation of protein

15) Briefly describe the mechanism of protein folding in prokaryotes and eukaryotes ?

16) what are amino acids ? give the classification of amino acids based on R groups

17) describe the structure and properties of amino acids?

18) describe different types of oxidation reduction reactions occur in a biological system with suitable examples.

19) what are energy rich compounds? Describe the properties with examples.

20)Explain in detail the structural organization of proteins.

21) Classify amino acids in various ways with suitable examples.

22) Classify proteins in various ways with suitable examples.

23) Describe two qualitative and two quantitative methods of phytochemical analysis of proteins.

24)What is a single cell protein? How is it obtained from fungi?

25) Describe biological utilization of proteins.

26)Describe tertiary and quaternary structure of proteins.

Short Question :. (2 Mark / 3 Mark)

1. Energy rich compound.
2. GPCR
3. kglycosidic bonds
4. Enthalpy
5. concept of free energy.
6. Ion – Channels
7. peptide bond
8. entropy

9. PH scale.
10. Biological role of lipids
11. muta rotation
12. standard
13. change in free energy
14. Properties of amino acids
15. Epimers
16. osazones
17. saturated fatty acid
18. Stereoisomeris
19. anomers
20. buffer
21. unsaturated fatty acids
22. ligands
23. heats of protiens
24. domains
25. pKa
26. aldoses and ketoses
27. hylorunic acids
28. Give the functional classification of proteins.
29. Explain the alpha-helical structure of protein with examples.
30. Describe the beta pleated structure of protein with examples.
31. Write a short note on the functions of albumin.
32. Write a short note on the isoelectric pH of protein and its importance.
33. Write a short note on the biologically important peptides.

34. Write a short note on nonstandard amino acids.
35. Write a short note on plasma proteins and their functions.
36. Role of proline and stress induced proteins.
37. Comment on advantages and limitations of single cell proteins.
38. Write short notes on Protein structure.
39. Write short notes on protein domains and motifs.
40. Write short notes on Heat shock Proteins.
41. What are essential and non-essential amino acids in human food? Give one example of each type.
42. Amino acids may be acidic, alkaline or neutral. How does this happen? What are essential and non-essential amino acids? Name one of each type.
43. Write the name of linkage joining two amino acids.
44. Define a 'Peptide linkage'.
45. Explain what is meant by
    (i) a peptide linkage
    (ii) a glycosidic linkage
46. Explain the term polypeptide.
47. Explain what is meant by
    (i) a peptide linkage,
    (ii) a glycosidic linkage.

Fill in the Blanks :

1. The signalling pathways followed by T- lymphocytes in response to antigenic stimulation is --
2. ___ number of transmembrane alpha helices are present in G- protein coupled receptors.
3. Cyclic-AMP is used for ------ type of signalling.
4. ------- molecule produces highest energy on breakdown of its highest energy bond.
5. When a system is in equilibrium the value of ΔG is ----.

6. The standard free energy change of ATP is -----.

7. ------ molecules of ATP are required to fix one molecules of Nitrogen.

8. The conversion of ammonia to nitrite and then nitrates is called ------.

9. Estimation of amino acid in a solution was proposed by____

10. An example of essential proteins is _____

11. Amino acids is called as _____

12. Amino acids are compounds containing an____and a____group.

13. Amino acid exist as Zwitter ions, to make it acidic, _____ added to amino acid solution

14. All proteins are constructed from the same ubiquitous set of____amino acids.

15. Proteins are dehydration polymers of amino acids, with each amino acid residue joined to its neighbour by a specific type of____

16. Protein on heating becomes_____

17. The_____is achemical testused for detecting the presence ofpeptide bonds.

18. Formation of_____ in biuret testindicates the presentation of proteins.