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PART - B

Answer any NINE of the following questions. Each question carries six marks. (9×6=54)

13. a) Discuss the role of water in biological systems due to its
i) high dielectric constant.
ii) high heat of vaporisation.
b) Name two high energy molecules other than ATP. (4+2)
14. a) What are sugar acids? Mention their types with an example.
b) Write the Haworth structure of fructose - 1,6 - diphosphate. (4+2)
15. a) What are phospholipids? Mention their biological importance.
b) Give the biological role of HDL and LDL cholesterol. (4+2)
16. a) How are amino acids classified based on polarity of the side chain? Give an example for each class.
b) What is denaturation of proteins? How is it prevented? (4+2)
17. a) Explain α - helix and β - pleated structure of proteins.
b) What is oxidative rancidity? How is it prevented? (4+2)
18. a) Discuss the salient features of Watson and Crick model of DNA.
b) State Chargaff's rule of base equivalence. (4+2)
19. a) Explain the effect of P^H and substrate concentration on enzyme activity with the help of a graph.
b) Write a note on Koshland's induced fit theory of enzyme catalysis. (4+2)
20. a) List out the structural features of ATP which makes it a high energy compound. Illustrate with structure.
b) What is substrate level phosphorylation? Give an example. (4+2)
21. a) Discuss the principle and applications of Thin layer chromatography.
b) Mention any two biological functions of proteins. (4+2)
22. a) Explain briefly the semi - conservative mechanism of replication of DNA.
b) Genetic code is universal and degenerate. Justify. (4+2)
23. a) Write the sequence of chemical reactions by which an activated fatty acid undergoes β - oxidation in mitochondria.
b) What is the fate of pyruvate in anaerobic conditions? Give chemical equation. (4+2)
24. a) Write the chemical equation for the two oxidative decarboxylation reactions in TCA cycle. Mention the enzymes involved.
b) Explain transamination with an example. (4+2)
25. a) What are hormones? How are they classified?
b) Write any two applications of DNA profiling. (4+2)
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