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B.Sc./3rd Sem (H)/ZOO/23(CBCS)

2023

3rd Semester Examination

ZOOLOGY (Honours)

Paper : C 7-T

[Fundamentals of Biochemistry]

[CBCS]

Full Marks : 40

Time : Two Hours

The figures in the margin indicate full marks.

*Candidates are required to give their answers
in their own words as far as practicable.*

Group - A

Answer any *five* questions from the following :

2×5=10

1. Name a vitamin which is a derived monosaccharide.
Why do monosaccharides form rings in an aqueous solution?
2. What is the biological function of sphingomyelin.
Why is LDL considered harmful for our health?
3. What is a zwitterion?

4. Write one difference between :
- (i) A purine and a pyrimidine
 - (ii) A nucleoside and a nucleotide
5. Write one difference between prosthetic group and coenzyme. What is the effect of enzyme on activation energy.
6. Differentiate between competitive and non-competitive inhibition with suitable examples.
7. What is a redox reaction? Give a suitable example.
8. Name two inhibitors and two uncouplers of electron transport chain.

Group - B

Answer any *four* questions from the following :

5×4=20

9. Why Kerbs cycle is considered as an amphibolic pathway? Summarize the products of a TCA cycle for one molecule of glucose. 2+3
10. Where does the HMP pathway occurs? Why it is called a shunt? Mention the three steps of the oxidative phase of the HMP shunt. 1+1+3
11. Calculate the number of ATP molecules that can be obtained from the beta oxidation of Palmitic acid ($n=16$, where n is the number of carbon atoms). 5

12. What is Ramachandran Plot? Write the significance of ψ and ϕ bond angle in Ramachandran Plot? Write two differences between parallel and antiparallel beta pleated sheet. 1+2+2
13. Why is the transamination reaction called a Ping pong reaction? Give a suitable example of the above. Name one enzyme responsible for deamination reaction. What are the main sites for deamination reaction? 2+1+1+1
14. What are allosteric enzymes? Give example. Differentiate between "Lock and Key" model and "Induced Fit" model of enzyme-substrate interaction. 1+1+3

Group - C

Answer any *one* question from the following :

10×1=10

15. Derive Michaelis Menten equation to show how the initial rate of a reaction (V_0) depends on the substrate concentration [S]. How this equation is affected in case of competitive inhibition. Draw and explain Lineweaver Burk Plot. 5+2+3
16. Draw a labelled diagram to show the role of the different complexes of the Electron Transport Chain. Name an electron carrier and an electron acceptor of the Electron Transport System. Explain briefly how F_0-F_1 particle participate in the synthesis of ATP. 4+2+4