'समानो मन्त्रः समितिः समानी'

UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 2nd Semester Examination, 2022

CC4-PHYSIOLOGY

CHEMISTRY OF BIOMOLECULES

Time Allotted: 2 Hours | Full Marks: 40

The figures in the margin indicate full marks.

GROUP-A

1. Attempt any ***five*** questions from the following: 1×5 = 5
   (a) What do you mean by redox potential?
   (b) What is amino acid pool?
   (c) Mention the importance of lipids in the body.
   (d) Give few examples of mucopolysaccharides.
   (e) What is Saponification?
   (f) Name the tissues where hexose monophosphate shunt pathway is active.
   (g) What are lipoproteins?
   (h) What is inversion?

GROUP-B

Answer any *three* questions from the following 5×3 = 15

2. (a) State the function of helicase and DNA pol-III in DNA replication. 3
   (b) What is the significance of urea cycle? 2

3. (a) Write the decarboxylation steps of TCA cycle. 3
   (b) How many turns of DNA (B-type) helix are noted within 340 Å length? 2

4. State the ATP synthesis process in any one complex of electron transport chain operated in mitochondria. 5

5. (a) What do you mean by glucogenic and ketogenic amino acids? 2
   (b) What are high-energy compounds and why are they so called? 3

6. Explain the alpha-helical structure of protein with examples. 5

GROUP-C

Answer any *two* questions from the following 10×2 = 20

7. (a) State the structural characteristics of tRNA. 4

   (b) Describe the biochemical steps involved in glycogenesis. 6

8. (a) What is the difference between acyl CoA and acetyl CoA. 2

   (b) Describe the enzymatic pathway of pyruvate oxidation through Kreb's cycle. 6

   (c) Give the full form of FAD and NAD. 2

9. (a) What do you mean by saturated and unsaturated fatty acids? 2

   (b) Describe the process of beta-oxidation of fatty acids. 6

   (c) Define deamination and transamination. 2

10. (a) What are primary and secondary derived proteins? 4

    (b) Discuss the structural organization of proteins, mentioning the chemical bonds and/or forces involved in the formation and stabilization of such structures. 6

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