

Roll No :-

3568

**M.Sc. (Zoology) (SEMESTER-II)  
EXAMINATION, 2019  
SEVENTH PAPER  
BIO CHEMISTRY**

Time Allowed - Three Hours  
Maximum Marks - 50

*Note: The questions paper is divided into three parts,  
Part-A, Part-B and Part-C.*

**Part-A (Compulsory) {Marks:10}**

*Part A is compulsory and contains 10 questions (50 words each). Each question is of 1 mark.*

**Part-B (Compulsory) {Marks:10}**

*Part-B is compulsory and contains five questions at least one from each unit. Candidate is required to attempt all five questions. Each question is of 2 marks (100 words).*

**Part-C {Marks:30}**

*Part-C contains six questions two from each unit. Candidate is required to attempt three questions. one from each unit. Each question is of 10 marks (400 words).*

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**Part-A (Compulsory)**

1. Which one of following non-covalent interactions between two non-bonded atom A and B is most sensitive to the distance between them? Write the justification for your answer also.
  - a) A and B are permanent dipoles and are involved in hydrogen bonding.
  - b) A and B are fully ionized and are involved in salt bridge formation.
  - c) A and B are Uncharged and repel each other.
  - d) A and B are Uncharged and attract each other.
2. Which of the following pairs of Subcellular compartments is likely to have same pH and electrolyte composition. Also write justification for your answer.
  - a) Cytosol and mitochondrial inner membrane
  - b) Cytosol and lysosomes
  - c) Cytosol and endosome.
  - d) Mitochondrial matrix and inner membrane space.
3. What will be the value of pKa of lactic acid, given that when the concentration of lactic acid is 0.010M and the concentration of lactate is 0.087M, where the pH is 4.80?

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4. Define protein stability. Glycerol is added to protein solution to stabilize the preparations by

- increasing the viscosity of solution
- stabilizing the pH
- Preferential hydration of proteins
- interacting and neutralising the surface charges on the proteins.

5. Write name of one glucogenic and one ketogenic amino acid?

- Write chemical structure of Malonyl-COA.
- Write chemical structure of Pyruvic acid?
- Which fragment is known as Klenow fragment?
- What is Hsp 100?
- Write the name of one omega-3-fatty acid and its one dietary source in India.

#### Part-B (Compulsory)

- What is Rho dependent termination?
- What is Levinthals Paradox?
- What is vander waals radius?
- Explain Mutarotation of D-glucose?
- What is shuttle for transfer of acetyl groups from mitochondria to the cytosol?

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#### Part-C Unit-I

- Define pH. Also explain that pH of neutral solution is 7 at 25°C (you may explain the pH of neutral water)?
  - What are Buffers? Write a note on Buffers in Biological systems.

OR

- Write a note on structural lipids in membranes.

#### Unit-II

- Write short notes on
  - Ramchandran plot.
  - $\beta$ -conformation of polypeptide chains.

OR

- Write names of nine Essential amino acids. Explain the biosynthesis of any one amino acid.

#### Unit-III

- Explain the four steps-
  - Condensation
  - Reduction of carbonyl group
  - Dehydration and
  - Reduction of double bond, during fatty acid synthesis.

OR

- Write a note on Kreb's cycle.

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