

[9/A-10]

SEAT No. \_\_\_\_\_

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SARDAR PATEL UNIVERSITY

.B.Sc. SEMESTER III

EXAMINATION SEPTEMBER 2022

BIOCHEMISTRY: USO3CBCH02

TITLE: BIOPHYSICAL AND ENVIRONMENTAL BIOCHEMISTRY

Date: 28/09/2022 Wednesday Time: 12.30 P.M to 2:30 P.M. TOTAL MARKS: 70

Q.1 Select proper option from following MCQ.

[10]

- The bond angle between H & O atom in structure of water is \_\_\_\_\_.  
a) 100° b) 90° c) 104.5° d) 109.5°
- The most important buffer system regulating blood pH is \_\_\_\_\_.  
a) Bicarbonate Buffer system b) Hemoglobin buffer system  
c) Phosphate buffer system d) Protein buffer system
- Which of the following is strong acid?  
a) HCL b) H<sub>2</sub>CO<sub>3</sub> c) NH<sub>4</sub> d) All of these
- Emulsoids are \_\_\_\_\_ colloid.  
a) Lyophilic b) Lyophobic c) Protective d) None of the above
- In various diseases of blood, the viscosity of blood \_\_\_\_\_.  
a) Increase b) Decrease  
c) Remain constant d) None of the above
- Imbibition of water is due to \_\_\_\_\_.  
a) Colloid b) Osmosis c) Viscosity d) Diffusion
- Desktop centrifuge works at maximum RPM \_\_\_\_\_.  
a) 1000 b) 2000 c) 3000 d) 4000
- The speed of rotor is called as \_\_\_\_\_.  
a) RCF b) G c) RPM d) None of these
- \_\_\_\_\_ can be caused by inhalation of toxic element.  
a) Death b) Beneficial effect c) Growth d) None
- Mild lead poisoning can be treated by chelation using \_\_\_\_\_.  
a) EDTA b) SDS c) BAL d) GAL

Q2. Fill in the blanks and True or False:

[8]

- At normal blood pH 7.4, the ratio of bicarbonate to carbonic acid is \_\_\_\_\_.
- Size of solutes in crystalloids is \_\_\_\_\_ mm.
- Electrodes are usually made of \_\_\_\_\_.
- Chronic exposure to arsenic leads to \_\_\_\_\_ disease.

P.T.O

**True or False:**

5. Water intoxication is a result due to renal failure.
6. In plants opening and closing of stomata is regulated by osmosis.
7. Electrophoretic mobility depends upon viscosity of buffer.
8. Hemoglobin bound to enzyme system and produce nerve dystrophy.

**Q3. Answer in short. (Any ten)**

[20]

1. Define conjugate acid base pair.
2. Define hydrogen bond with figure.
3. What is acidosis and alkalosis?
4. Define viscosity.
5. Define diffusion.
6. Define colloids.
7. What are the functions of rotor?
8. Define electrophoresis and enlist factors affecting it.
9. Give effect of ionic strength on electrophoresis.
10. Write the general principle of Metal toxicity.
11. Write symptoms of cyanide poisoning.
12. Enlist the preventive methods of lead exposure.

**Q4. Long answer questions. (Any four) (8 marks each)**

[32]

1. Explain: Primary dehydration.
2. Write note on disorder caused by acid base imbalance.
3. Write significance of colloids.
4. Write importance of Donnan membrane equilibrium.
5. Explain: centrifugation and derive equation for RCF.
6. Explain paper electrophoresis with diagram.
7. Write short note on: biochemical effect of Arsenic poisoning.
8. Write short note on: biochemical effect of Lead poisoning.

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