



Seat no. _____

No. of Printed Pages: 02

[31]

Sardar Patel University
B.Sc Third Semester
Wednesday, 16th November 2022
10:00 am to 1:00 pm
US03CBCH22 (Biophysical Biochemistry)

Note:

Total Marks: 70

- 1) Figures to the rights indicate marks
- 2) Draw neat and labeled diagram wherever necessary

Q.1 Multiple Choice Questions

[10]

- 1) Reabsorption of water from distal tubules is facilitated by _____ hormone.
a. Vasopressin
b. Aldosterone
c. Growth hormone
d. Prostaglandin
- 2) The life span of a hydrogen bond between two water molecule in liquid water is _____.
a. 1-20 seconds
b. 1-20 microseconds
c. 1-20 nanoseconds
d. 1-20 picoseconds
- 3) The body acid load is predominately eliminated in the form of _____.
a. Respiratory mechanism
b. Renal mechanism
c. Buffer system
d. None of the above
- 4) _____ is the best applied for accurate determination of pH.
a. pH indicator
b. Litmus paper
c. pH meter
d. pH strip
- 5) At normal blood pH 7.4, the ratio of bicarbonate to carbonic acid is _____.
a. 10:5
b. 20:1
c. 1:2
d. 2:10
- 6) Buffers usually contain _____ with its conjugate _____.
a. Weak base, base
b. Strong base, acid
c. Weak acid, base
d. Weak acid, acid
- 7) Suspensoids are example of _____.
a. Lyophobic colloids
b. Association colloids
c. Protective colloids
d. Lyophilic colloids
- 8) Exchange of gases like O₂ and CO₂ is regulated by _____.
a. Osmosis
b. diffusion
c. Osmotic pressure
d. Surface tension
- 9) Liquid scintillation counting is a method of detecting _____.
a. X-rays
b. Alpha-emitters
c. Beta-emitters
d. Gamma-rays
- 10) Mass number of an atom can be expressed as _____.
a. Z+N
b. Z+e
c. N+e
d. Z

[1]

(P.T.O.)

Q.2 Answer the following questions (Attempt any TEN)

[20]

- 1) Define Obligatory loss.
- 2) Structure of water is V shape. Justify.
- 3) Write a brief on water over hydration.
- 4) Define pH with it's equation.
- 5) Differentiate between acid and base with suitable examples.
- 6) How buffers resist the change in pH?
- 7) What is flocculation?
- 8) Differentiate between lyophilic and lyophobic colloids.
- 9) Write significance of viscosity.
- 10) Write down units of radioactivity.
- 11) Draw the diagram of solid and liquid scintillation counters.
- 12) Give a comparative note on Isotopes and Radioisotopes.

- Q.3 a) Explain chemical structure of water. [05]**
b) Give an account of normal water balance regulatory mechanism. [05]

OR

- Q.3 a) Define dehydration. Explain pure salt dehydration. [05]**
b) Describe the distribution and normal water balance in an adult of 70 kg. [05]

- Q.4 a) Discuss the mechanism of phosphate buffer system in body. [05]**
b) Give a short note on: pH meter. [05]

OR

- Q.4 a) Write in detail note about titration curves of weak acids. [05]**
b) Derive the H-H equation. [05]

- Q.5 a) Write an account on different properties of colloids. [06]**
b) Define Donnan membrane equilibrium with it's significance. [04]

OR

- Q.5 a) Write a note on: [06]**
(i) Viscosity
(ii) Osmosis
b) Explain biological significance of diffusion and surface tension. [04]

- Q.6 a) Write a note on Geiger-Muller counter. [05]**
b) Give the importance of radioisotopes in biological sciences. [05]

OR

- Q.6 a) Discuss hazards and safety aspects of using radioisotopes. [06]**
b) Give an account on Autoradiography. [04]

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[2]