SHREE H. N. SHUKLA COLLEGE OF SCIENCE
(AFFILIATED TO SAURASHTRA UNIVERSITY)
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F.Y. B.Sc. Biochemistry
101 Physical and Chemical Aspects of Biochemistry
Preliminary Exam

[Time: 10:00 am to 12:30 pm] **[Total Marks: 70]**
[Date: 02/02/2022]

Instruction: 1. All questions are compulsory.
2. The right-side figure indicates total marks of the question.

Question 1: Short Answer Question: **[20]**

1) Define components of Atom
2) Which bond are Participated in Protein formation.
3) The pH values of distilled water, lemon juice, sodium bicarbonate were measured using pH paper. What is the correct decreasing order of pH values?
4) Isobars
5) What is Redox Reaction?
6) Define Molar Solution.
7) Angle between O-H bonds is_____?
8) Define Nobal Gases.
9) Define Basic buffer
10) First law of thermodynamics.
11) What is the pH of Blood Plasma _____and Saliva_____?
12) What is the pH of 0.0001 M NaOH Solution?
13) What is Acidic Buffer
14) The movement of molecules from an area of high concentration to an area of low concentration the process are known as_____?
15) 0.450 moles of NaCl are dissolved in 95.0 mL of water. Calculate the molarity of the NaCl.
16) 15 g of NaCl occupy a volume of 75 mL. What is the molarity of the solution?
17) Homogeneous mixture of two or more than two compounds is called_____?
18) 10ml of alcohol dissolve in 90ml of water unit of concentration used is_____?
19) Number of moles in 1 kg of solvent is called_____.
20) How many ml of water are need to dilute 65ml 7M KCl to 2M?

Question 2 (a): Short Questions: Write any three **[06]**

1) Define bond energy.
2) Give the Characteristic features of Ionic bond.
3) Define Bronsted base.
4) Define Mole and give the importance of Mole concept.
5) Define Nernst Equation.
6) What is the importance of buffer?

Question 2 (b) Short questions: Write any three **[09]**

1) Explain Lewis acid-base theory with any one example.
2) Discuss property of water.
3) Define pH with example.
4) Define Oxidation and Reduction with example.
5) What would happen to the RBCs when they are suspended in the hypotonic medium?
6) How many grams of NaOH is required to make 2.5 N Solution 50 mL.

Question 2 (c) Write Detail Note: Any two **[10]**

1) Write a note on Characteristics of Covalent bond and Ionic bond.
2) Explain titration curve of Strong acid and Strong base.
3) Write a note Henderson Hessalbatch equation in detail.
4) Write a various application of osmosis.
5) What is the pH when 25.0 mL of 0.200 M of CH3COOH has been titrated with 35.0 mL of 0.100 M NaOH?

Question 3 (a): Short Questions: Write any three: **[06]**

1) What are inert elements?
2) What do you mean by unsaturated solution?
3) What is the effect of temperature on diffusion?
4) Factor affecting adsorption process.
5) What do you mean by reducing agent?
6) Define acidosis and alkalosis.

Question 3 (b): Short questions: Write any three: **[09]**

1) Explain Oxidation number with any two example.
2) Define Redox potential and its role in biological reaction.
3) Define buffer capacity and factor affecting on it.
4) How much NaOH required to prepare 2 M NaOH Solution for 250 ml volume. (**M.W.= 40gm**.)
5) Electrochemical Cells and Galvanic Cells
6) Write a note on pH meter with one electrode.

Question 3 (c) Write Detail Note on Any two: **[10]**

1) Why water is a universal solvent? Explain a Property of Water.
2) write a detail note on Physiological buffer.
3) Explain in detail Carbonic acid system of biological buffer.
4) Write a detail note on Viscosity and Adsorption.
5) Prepare 0.1 M acetate buffer of pH =5.5, pKa=4.6 M.W. of acetic acid =60.07, Sodium acetate = 136.08