Bb-106 Biophysics and Instrumentation

1. Plum pudding model was proposed by _____
   a) Dalton
   b) Hertz
   c) Thomson
   d) Rutherford

2. Which of the following unit is used for the measurement of radioactive dosage ?

   a) Rutherford
   b) Curie
   c) Bequerel
   d) Rontgen

3. Colorimeter is based on the principle of
   a) Beer's Law
   b) Lambert's Law
   c) Lambert Beer's law
   d) All of above

4. Electromagnetic waves consist of one_____vector and one _____ vector.
   a) Electric, rotational
   b) electric, vibrational
   c) Vibrational, rotational
   d) electric,magnetic

5. Reydberg's Constant value is---
   a) $1.09678 \times 10^{8}\ m^{-1}$
   b) $1.9678 \times 10^{7}\ m^{-1}$
   c) $1.09678 \times 10^{7}\ m^{-1}$
   d) $1.6978 \times 10^{8}\ m^{-1}$
6. The difference between concentration of a substance from one location to other is
   a) Diffusion
   b) Osmosis
   c) Concentration gradient
   d) Passive transport

7. Higher the concentration of dissolved particles (solutes) in solution, the concentration of water will be

a) Higher
b) Lower
c) Smaller
d) Larger

8. During repolarization, the membrane potential rapidly shifts

a) Positive to negative
b) Negative to positive
c) neutral to positive
d) No change in charge

9. Which of the following statement with reference to nuclear forces is not true ?

a) Short range
b) Charge independent
c) Strongest force
d) Spin independent

10. Radioactivity may be detected by which one of the following instrument ?

a) Multimeter
b) Geiger - Muller tube
c) Manometer
d) Rotometer

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BIOTECHNOLOGY
Bb-105 Fundamentals of Biological Chemistry

1. Which of the following is true based on the strength of the bond?
   a) Ionic > Covalent > Vanderwaal > Hydrogen
   b) Covalent > Ionic > Vanderwaal > Hydrogen
   c) Covalent > Ionic > Hydrogen > Vanderwaal
   d) Covalent > Ionic > Hydrogen = Vanderwaal

2. Buffers are the mixture of
   a) Strong acid and strong base
   b) Strong acid and weak base
   c) Weak acid and their conjugate base
   d) Weak base and their conjugate acid

3. Red blood cells would swell in which type of solution?
   a) hypotonic **b)** isotonic **c)** hypertonic **d)** hydrophilic

4. During an isothermal expansion of an ideal gas which of the following is true for the gas?
   a) enthalpy decreases
   b) entropy decreases
   c) enthalpy remains constant
   d) entropy remains constant

5. Heat transferred at constant pressure _____ the enthalpy of a system.
   a) decreases
   b**) increases**
   c) first decreases then increases
   d) first increases then decreases

6. The role of a catalyst is to change _____
   a) gibbs energy of reaction.
   b) enthalpy of reaction.
   c) **activation energy of reaction**.
   d) equilibrium constant.

7. The total of the oxidation number in an element is
   a) Charge
   b) volatility
   c) reduction
   d) oxidation

8. **The reduction is a gain of**
a) electrons
b) protons
c) neutros
d) oxygen

9. Which of the following are not the components of RNA?
   a) Thymine
   b) Adenine
   c) Guanine
   d) Cytosine

10. The sugar molecule in a nucleotide is _____
a) Pentose
b) Hexose
c) Tetrose
d) Triose