

ROYAL COLLEGE OF ARTS, SCIENCE AND COMMERCE

FYBSc SEMESTER II SAMPLE PAPER

CHEMISTRY PAPER I (USCH201)

Answer the following using correct option.

- 1) Maxwell Boltzmann distribution law is expressed in a simplified form as
 - a) $n = n_0 e^{E/RT}$
 - b) $n = n_0 e^{-E/RT}$
 - c) $n_0 = n e^{-E/RT}$
 - d) $n = n_0 + e^{-E/RT}$

- 2) According to Le Chatelier's principle at a given pressure, an endothermic reaction is favoured by _____-.
 - a) increasing the temperature
 - b) decreasing the temperature
 - c) Increasing the volume
 - d) decreasing the volume

- 3) The relation between K_p and K_c for the reaction
$$\text{CO}_{(g)} + 2 \text{H}_{2(g)} \rightleftharpoons \text{CH}_3\text{OH}$$
 - a) $K_p = K_c (RT)^2$
 - b) $K_p = K_c \cdot RT$
 - c) $K_p = K_c (RT)^{-2}$
 - d) $K_c = K_p \cdot RT$

- 4) The standard free energy change and equilibrium constant are related as
 - a) $K_p = \left(\frac{e}{R}\right)^{-\Delta G^0}$
 - b) $\Delta G^0 = e \frac{K_p}{RT}$
 - c) $K_p = e^{-\frac{\Delta G^0}{RT}}$
 - d) $K_p = e^{\frac{\Delta G^0}{RT}}$

- 5) What is compressibility factor if one mole of a gas occupy a volume of $200 \times 10^{-5} \text{ m}^3$ at $1.0135 \times 10^5 \text{ Nm}^{-2}$ pressure and 200K.
(Given $R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$)
- a) 8.203
 - b) 0.01219
 - c) 0.1219
 - d) 0.823
- 6) _____ gas is evolved when carbonate or bicarbonate salts are heated.
- a) Hydrogen
 - b) Oxygen
 - c) Carbon dioxide
 - d) Sulphur dioxide
- 7) Which reagent paper is used to detect sulphide ions?
- a) Starch iodide paper
 - b) Lead acetate paper
 - c) Potassium dichromate paper
 - d) Dimethylglyoxime paper
- 8) In the titration of 10 cm^3 of 0.1 M HCl with 0.1 M NaOH, concentration of H^+ ions is _____ when 2.0 cm^3 of NaOH is added.
- a) 0.033
 - b) 0.067
 - c) 0.12
 - d) 0.18
- 9) Interference of Fe^{3+} in detection of Co^{2+} can be avoided by masking Fe^{3+} with _____.
- a) Potassium ferrocyanide
 - b) Ammonium hydroxide
 - c) Potassium cyanide
 - d) Citric acid
- 10) Occurrence of certain minerals can be explained by _____.
- a) Arrhenius theory
 - b) Lowry Bronsted Concept
 - c) HSAB concept
 - d) Autoionization concept

- 11 20% H_2SO_4 + 1% HgSO_4 is used for _____.
- a Hydration of alkynes
 - b Birch reduction
 - c Ozonolysis
 - d Wilkinson's catalyst
- 12 Allylic Bromination is carried out using _____ reagent.
- a Na/ liq NH_3
 - b 20% HgSO_4
 - c $\text{OsO}_4/\text{KMnO}_4$
 - d NBS
- 13 Terminal alkynes are _____ in nature.
- a Weakly acidic
 - b Weakly basic
 - c Strongly acidic
 - d Strongly basic
- 14 Bromine is _____ reactive and _____ selective than chlorine.
- a More, less
 - b Less, more
 - c More, more
 - d Less, less
- 15 Molozonide is formed during _____ reaction as unstable intermediate compound.
- a Hydrolysis
 - b Hydroxylation
 - c Ozonolysis
 - d Hydroboration