SUCCESS KEY TEST SERIES

Annual Examination

Std: 11th Science | **Subject: Chemistry** | **Time: 3 Hours**

Date : | **Sample Question Paper** | **Max Marks: 70**

Section A (MCQ & VSA 1 MARKS Questions)

Q.1 Select and write the correct answer: **10**

(i) Through separating funnel, immiscible solutions
(a) cannot be dissolved. (b) cannot be separated completely.
(c) can be easily decanted. (d) can be centrifuged.

(ii) The correct set of quantum numbers for the unpaired electron of F atom is
(a) 2, 0, 0, +1/2 (b) 2, 0, 0, +1/2 (c) 2, 1, 1, +1/2 (d) 3, 1, 1, +1/2

(iii) The angle between two covalent bonds is minimum in:
(a) CH_4 (b) C_2H_2 (c) NH_3 (d) H_2O

(iv) Consider this reaction:
$3Au_{(s)} + 8H^+ + 2NO_3^- \rightarrow 3Au_2^+{}_{(aq)} + 2NO_{(g)} + 4H_2O_{(l)}$
(a) Au(s) is reduced during the reaction.
(b) The oxidation state of nitrogen changes from +6 to +2.
(c) Hydrogen ions are oxidized when they form $H_2O_{(l)}$.
(d) All are false

(v) Amphoteric hydroxides react with both alkalies and acids. Which of the following Group 2 metal hydroxide is soluble in sodium hydroxide?
(a) $Be(OH)_2$ (b) $Mg(OH)_2$
(c) $Ca(OH)_2$ (d) $Ba(OH)_2$

(vi) One mole of oxygen at 273 k and one mole of sulphur dioxide at 546 k are taken in two separate containers, then,
(a) kinetic energy of O_2> kinetic energy of SO_2 .
(b) kinetic energy of O_2< kinetic energy of SO_2.
(c) kinetic energy of both are equal.
(d) None of these

(vii) Isotope Iron-59 is used in
(a)treatment of thyroid cancer.
(b)bone marrow function.
(c)treatment of leukemia.
(d)spleen imaging.

(viii) Which of the following compound is heterocyclic in nature?
(a) Benzene
(b) Cyclohexene
(c) Cyclobutane
(d) Piperidine

(ix) toluene is aromatic because it has
(a) 4n π electrons (b) (4n+2) π electrons
(c) non-planar geometry (d) none of these

(x) Quinones undergo polymerization giving brown colour products called_____.
(a) tannins (b) proteins (c) amino acids (d) fatty acids

Q.2 Answer the following: **8**

(i) Which is more paramagnetic Fe^{3+} or Fe^{2+}?

(ii) Covalent bond is directional in nature. Justify.

(iii) The amount of energy released when 1×10^{10} atoms of chlorine in vapour state are converted to Cl^- (g) ion is 5.786×10^{-9} J. Calculate the electron gain enthalpy of chlorine atom in kJ/mol and ev/atom.

(iv) Name the member of group 14 that forms the most acidic oxide?

(v) What is the cause of Brownian movement?

(vi) If a stress is applied to a reaction mixture at equilibrium, then in which direction will the reaction take place?

(vii) What is electromeric effect?

(viii) Arrange following hydrocarbons in the increasing order of acidic character.
Propane, propyne, propene.

Section B (SA I - 2 MARKS EACH)

Attempt any Eight: **16**

Q.3 In two moles of acetaldehyde (CH_3CHO) calculate the following
(a) Number of moles of carbon
(b) Number of moles of hydrogen
(c) Number of moles of oxygen
(d) Number of molecules of acetaldehyde

Q.4 How many litres of oxygen at STP are required to burn completely 2.2 g of propane, C_3H_8 ?

Q.5 Never heat organic solvents with a Bunsen burner. Explain?

Q.6 Make the pairs:

	Column A		Column B
(a)	Neutrons	(i)	six electrons
(b)	p-orbital	(ii)	-1.6×10^{19}C
(c)	Charge on electron	(iii)	Ultraviolet region
(d)	Lyman series	(iv)	Chadwick

Q.7 Which type of hybridization is present in ammonia molecule? Write the geometry and bond angle present in ammonia.

Q.8 Compare chemical properties of metals and non metals.

Q.9 Write the biological importance of magnesium and calcium.

Q.10 The volume occupied by a given mass of a gas at 298 K is 25 ml at 1 atmosphere pressure. Calculate the volume of the gas if pressure is increased to 1.25 atmosphere at constant temperature.

Q.11 Two processes which are taking place in opposite directions in equilibrium. How to write equilibrium constant expression for heterogeneous equilibrium?

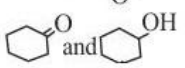
Q.12 Write the equilibrium constant expression for the decomposition of baking soda. Deduce the unit of K_c.

Q.13 Find out the type of isomerism exhibited by the following pairs.

A. $CH_3\text{-}CH_2\text{-}NH\text{-}CH_2\text{-}CH_3$ and $CH_3\text{-}NH\text{-}CH_2\text{-}CH_2\text{-}CH_3$

B. $CH_3\text{-}CH(OH)\text{-}CH_2\text{-}CH_3$ and $CH_3\text{-}CH_2\text{-}O\text{-}CH_2\text{-}CH_3$

C. $CH_3\text{-}CH_2\text{-}N(=O)(=O)$ and $CH_3\text{-}CH{=}N(OH)(=O)$

D.  and

Q.14 Acetone and acetaldehyde are the ozonolysis products of an alkene. Write the structural formula of an alkene and give IUPAC name of it.

Section C (SA II - 3 MARKS EACH)

Attempt any Eight: **24**

Q.15 Find the formula mass of
(i) NaCl (ii) Cu $(NO_3)_2$

Q.16 Write electronic configurations of Fe, Fe^{2+}, Fe^{3+}

Q.17 Assign oxidation number to the atoms other than O and H in the following species.

i. SO_3^{2e} ii. BrO_3^{e} iii. CLO_4^{e} iv. NH_4^{e} v. NO_3^{e}

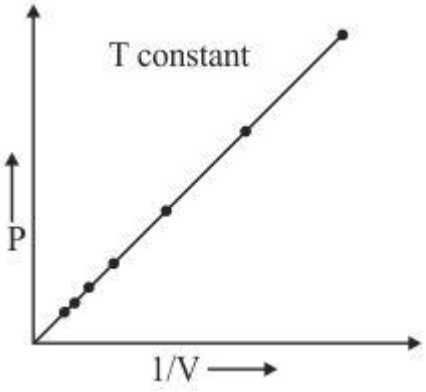
vi. NO_2^{e} vii. SO_3 viii. N_2O_5

Q.18 The first ionization enthalpy values of Si, P and CI are 780, 1060 and 1255 kJ mol^{-1} respectively. Predict whether the first ionization enthalpy of S will be closer to 1000 or 1200 kJ mol^{-1}.

Q.19 What happens when dihydrogen react with halogens?

Q.20 Discuss the nature of bonding of compounds of group 13, 14 and 15 elements.

Q.21 With the help of graph answer the following -



At constant temperature,
(a) Graph shows relation between pressure and volume. Represent the relation mathematically.
(b) Identify the law.
(c) Write the statement of law.

Q.22 Explain Bredig's arc method.

Q.23 Explain in short homogeneous equilibrium and heterogeneous equilibrium.

Q.24 Calculate the binding energy per nucleon of $^{84}_{36}Kr$ whose atomic mass is 83.913 u. (Mass of neutron is 1.0087 u and that of H atom is 1.0078 u).

Q.25 Write the balanced chemical reactions to get benzene from
(a) Sodium benzoate.
(b) Phenol.

Q.26 What do you meant by rancidity of oils and fats ? Explain how does it lead to rancidity.

Section D (SA II - 4 MARKS EACH)

Attempt any Three: **12**

Q.27 1. Distinguish between accuracy and precision.

2. Calculate the molarity of NaOH in the solution prepared by dissolving its 4 g in enough water to form 250 mL of the solution.

Q.28 Explain geometry of methane molecule on the basis of Hybridisation.

Q.29 Explain structure and bonding of diborane.

Q.30 1. Which of the CH_3- $CHCl_2$ and CH_3CH_2Cl is expected to have stronger -I effect ?

2. Write three resonance structures for CH_3-CH = CH-CHO. Indicate their relative stabilities and explain.

Q.31 How many monochlorination products are possible for
(a) 2-methylpropane ?
(b) 2-methylbutane ?
Draw their structures and write their IUPAC names.

-------- All the Best --------