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INDIAN SCHOOL SALALAH
FIRST TERM EXAMINATION – SEPTEMBER 2026



CHEMISTRY(043)

Class : XI

DATE: 10-09-2026

Time : 3 Hr

Maximum Marks: 70

General Instructions :

Read the following instructions carefully and follow them :

- (i) This question paper contains 33 questions. All questions are compulsory.*
- (ii) This question paper is divided into five sections – Section A, B, C, D and E.*
- (iii) Section A – questions number 1 to 16 are multiple choice type questions. Each question carries 1 mark.*
- (iv) Section B – questions number 17 to 21 are very short answer type questions. Each question carries 2 marks.*
- (v) Section C – questions number 22 to 28 are short answer type questions. Each question carries 3 marks.*
- (vi) Section D – questions number 29 and 30 are case-based questions. Each question carries 4 marks.*
- (vii) Section E – questions number 31 to 33 are long answer type questions. Each question carries 5 marks.*
- (viii) There is no overall choice given in the question paper. However, an internal choice has been provided in few questions in all the sections except Section –A*
- (ix) Use of calculator is NOT allowed.*

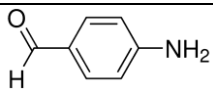
(Molar mass of H=1u, N=14u, C=12u, O=16 u, Na=23u S=32u Cu=63.5 u
 $R_H=109677\text{cm}^{-1}$, $h=6.626\times 10^{-34}$)

SECTION A		
1.	4 g of NaOH dissolved in 100 ml solution. Molarity of the solution is (A) 1 M (B) 10 M (C) 0.1 M (D) 4 M	1
2.	Which of the following has smallest de- Broglie wavelength (A) Oxygen (B) Hydrogen (C) Proton (D) Electron	1

3.	The element which has more negative electron gain enthalpy is (A)S (B)F (C) O (D) Cl	1
4.	How many electrons can fit in the subshell for which $n = 3$ and $l = 1$? (A)2 (B)8 (C) 6 (D) 10	1
5.	Which has the maximum number of molecules among the following? (A) 44g of CO_2 (B) 44g of O_2 (C) 8g of H_2 (D) 64g of SO_2	1
6.	Generally, the first ionisation enthalpy increases along a period. But there are some exceptions. One which is NOT an exception is (A)N and O (B) Na and Mg (C)Mg and Al (D)Be and B	1
7.	A binary compound contains 50% A (at. mass = 16) and 50% B (at. mass 32). The empirical formula of the compound is: (A) AB_2 (B) A_2B (C) AB (D) A_3B_2	1
8.	The oxidation number of Mn is maximum in (A) MnO_2 (B) K_2MnO_4 (C) Mn_3O_4 (D) KMnO_4	1
9.	Percentage of nitrogen in urea(NH_2CONH_2) is: (A)23.33% (B)36.48% (C) 18.42% (D)46.66%	1
10.	Which of the following is the correct representation of NiSO_4 as per stock notation? (A) Nickel (II) Sulphate (B) Nickel (I) Sulphate (C) Nickel (III) Sulphate (D) Nickel (II) Sulphide	1
11.	Predict the correct order of repulsions among the following.	1

	(a) bond pair –bond pair>lone pair – bond pair>lone pair – lone pair (b) lone pair –bond pair> bond pair –bond pair> lone pair – lone pair (c) lone pair – lone pair> lone pair –bond pair> bond pair –bond pair (d) lone pair – lone pair>bond pair- bond pair> lone pair –bond pair	
12.	Which among the following is not having a zero dipole moment (A)H ₂ O (B)BeF ₂ (C) BF ₃ (D)CCl ₄	1
	For questions number 13 to 16, two statements are given – one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below : (A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A). (B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A). (C) Assertion (A) is true, but Reason (R) is false. (D) Assertion (A) is false, but Reason (R) is true.	
13.	Assertion: No of moles of H ₂ in 0.224 L of hydrogen is 0.01 mole. Reason : 22.4 L of H ₂ at STP contains 6.023×10^{23} moles	1
14.	Assertion: Atomic radius of Na is greater than Na ⁺ . Reason : The effective nuclear charge of Na ⁺ is greater than Na.	1
15.	Assertion A: Non-metals are mostly oxidizing agents. Reason R: They are electronegative in nature	1
16.	Assertion: Electronegativity across a period is accompanied by an increase in metallic properties. Reason: Electronegativity is inversely related to the metallic properties of elements.	1
SECTION B		

17.	Density of water at room temperature is 1g/cc. How many molecules are there in 1 drop of water if its volume is 0.1cc?	2
18.	Would you expect the second electron gain enthalpy of oxygen as positive, more negative or less negative than the first? Justify your answer.	2
19.	a) What do you mean by isoelectronic species? b) Identify the isoelectronic species from the following : $\text{Na}^+, \text{K}^+, \text{Mg}^{2+}, \text{Ca}, \text{O}^-, \text{Cl}$ OR Define isotopes and give an example.	2
20.	What do you mean by disproportionation reaction? Give an example for it.	2
21.	Assign oxidation number to the underlined elements in the following: a) $\text{Na}\underline{\text{B}}\text{H}_4$ b) $\text{K}\underline{\text{I}}_3$	2
SECTION C		
22.	Write the structure for the following compounds: a) 3,3-Dimethylpentan-2-one. b) Propane -1,3-diol. c) 2-Chloro -1- methyl-4 – nitrobenzene.	3
23.	A) Balance the following redox reaction in basic medium: $\text{MnO}_4^- (\text{aq}) + \text{I}^- (\text{aq}) \rightarrow \text{MnO}_2 (\text{s}) + \text{I}_2 (\text{s})$ O R B) Balance the following equation in acidic medium : $\text{MnO}_4^- (\text{aq}) + \text{SO}_2 (\text{g}) \rightarrow \text{Mn}^{2+} (\text{aq}) + \text{HSO}_4^- (\text{aq})$	3
24.	Account for the following : a) Be has higher ionization enthalpy than B b) Noble gases have large electron gain enthalpy. c) Electron gain enthalpy of Oxygen is less negative than that of Sulphur.	3
25.	a) An atomic orbital has $n=4$. What are the possible values of l and m_l ? b) List the quantum numbers (m_l and l) of electrons for 4f orbital. c) What is lowest value of n that allows g orbital to exist?	3
26.	Name the following compounds : a) $\text{C}_2\text{H}_5 \text{OCH}(\text{CH}_3) \text{CH}_2 \text{CH}_3$	3

	b)  c) $\text{C}_6\text{H}_5\text{CH}_2\text{CH}(\text{Br})\text{CH}(\text{Br})\text{CH}_2\text{CH}_3$	
27.	a) What is resonance? b) Draw the resonance structure of CO_3^{2-}	3
28.	Calculate the wavelength, frequency and wave number of a light wave whose period is $5 \times 10^{-10} \text{ s}$	3
SECTION D		
29.	In modern periodic table, there are altogether seven periods. The period number corresponds to the highest principal quantum number (n) of the elements in the period. The first period contains 2 elements. The subsequent periods consists of 2, 8, 8, 18, 18 and 32 elements, respectively. The seventh period is incomplete and like the sixth period would have a theoretical maximum (on the basis of quantum numbers) of 32 elements. In this form of the Periodic Table, 14 elements of both sixth and seventh periods (lanthanoids and actinoids, respectively) are placed in separate panels at the bottom	
a)	Write the IUPAC name and symbol of the element with atomic number 117.	2
b)	Assign the position of the element having outer electronic configuration $3s^2 3p^4$ OR Predict the formula of stable binary compound that would be formed by the combination of lithium and oxygen.	1
c)	Arrange the following species in the increasing order of their ionic radii: $\text{N}^{3-}, \text{O}^{2-}, \text{F}^-, \text{Na}^+, \text{Mg}^{2+}$ and Al^{3+}	1
30.	Nomenclature of branched chain alkanes: We encounter a number of branched chain alkanes. The rules for naming them are given below. a) The longest carbon chain in the molecule is identified. b) The numbering is done in such a way that the branched carbon atoms get the lowest possible numbers. c) The names of alkyl groups attached as a branch are then prefixed to the name of the parent alkane and the position of the substituents is indicated by the appropriate numbers.	

	d) If two identical substituent groups are present, then the numbers are separated by commas. List side groups in alphabetical order (ignoring multipliers like <i>di-</i> or <i>tri-</i>), separate numbers with commas, and separate numbers from letters with hyphens e) Choose the ending based on the highest-priority functional group (such as <i>-ane</i> for alkanes, <i>-ene</i> for alkenes, <i>-ol</i> for alcohols, or <i>-oic acid</i> for carboxylic acids)	
a)	a) Draw the bond line formula of 4,5-Dimethyl hexan-1-ol. b) Name the compound given below: $\text{CHO-CH}_2\text{-CH}_2\text{-CO-CH}_2\text{-CH}_2\text{-CH}_3$	2
b)	Draw the structure of chlorocyclohexane	1
c)	Write the structure of 2-bromo -3-iodo hexanoic acid OR Write the structure of benzoyl chloride	1
SECTION E		
31.	(A) i) Draw the structure and predict the shape of the following molecules using VSEPR theory: $\text{BF}_3, \text{H}_2\text{O}$ and SF_4 ii) Which out of NH_3 and NF_3 has higher dipole moment and why? OR B) i) Draw the Lewis structure for the following molecules: $\text{H}_2\text{S}, \text{NO}_3^-, \text{BeF}_2$ ii) What are the conditions for the formation of ionic compounds. iii) Define lattice enthalpy.	5
32.	A) i) An organic compound on analysis gave the following data : $\text{C} = 57.82\%$ $\text{H} = 3.6\%$ and the rest oxygen. If the molecular mass was found to be 166 u then calculate the empirical formula and molecular formula. ii) How much copper can be obtained from 100 g of CuSO_4 OR B) i) 20g of CaCO_3 and 20 g of H_2SO_4 react to give CaSO_4 along with water and CO_2. Determine the limiting reagent for the above reaction. ii) How much CaSO_4 will be formed?	5

	iii) Calculate the amount of water(g) produced by the combustion of 16 g of methane according to the equation given below: $\text{CH}_4(\text{g}) + 2\text{O}_2(\text{g}) \rightarrow \text{CO}_2(\text{g}) + 2\text{H}_2\text{O}(\text{g})$ iv) Calculate the mass percentage of Na in Na_2SO_4.	
33.	A) An atom of an element contains 29 electrons and 35 neutrons. i) Deduce the number of protons and the electronic configuration of the element. ii) What will be the electronic configuration of the element if it loses 2 electrons? iii) What are the frequency and wavelength of a photon emitted during a transition from $n=5$ to $n=2$ state in hydrogen atom? OR B) i) What is the total number of orbitals associated with the principal quantum number $n=4$? ii) Arrange the following orbital based on increasing order of energy 3p, 3d, 4s, 4p iii) State Pauli Exclusion Principle. iv) Calculate the mass of a photon with wavelength $3.6 \text{ \AA}$	5
