



Zahira College Board of Examinations



First Term Test - 2019

Grade 12

Chemistry I

1 Hrs.

Admission No : 689

Class : 12th Science.

$\text{Universal gas constant} = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$
 $\text{Avagadro constant} = (N_A) = 6.022 \times 10^{23} \text{ mol}^{-1}$
 $\text{Planck's constant} = (h) = 6.626 \times 10^{-34} \text{ Js}$
 $\text{Velocity of light} = (c) = 3 \times 10^8 \text{ ms}^{-1}$

- This paper consists of 30 MCQ questions. Answer all.

(01) Consider a cathode ray tube filled with ^1_1H isotope - H_2 gas. Which is true regarding particles produced when high voltage is applied between electrodes,

- | | |
|--------------------------------|--|
| (1) Consist of only electrons. | (4) Consist of only protons & electrons. |
| (2) Consist of only protons. | (5) Consist of all electrons protons & neutrons. |
| (3) Consist of only neutrons. | |

(02) The first person to discover evidence for radioactivity,

- | | | |
|---------------------|----------------|------------|
| (1) Marie Curie | (3) Max Planck | (5) Mosley |
| (2) Henri Becquerel | (4) Rutherford | |

(03) When a ^9_4Be isotope was bombarded with α rays it produced a neutron & another element atom, The other elemental atom could be,

- | | | | | |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| (1) $^{12}_6\text{C}$ | (2) $^{10}_5\text{B}$ | (3) $^{14}_7\text{N}$ | (4) $^{12}_7\text{N}$ | (5) $^{12}_5\text{B}$ |
|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|

(04) Correct increasing order of e/m ratio for following particles which show deflection under a magnetic field.

- | | |
|---------------------------------------|---------------------------------------|
| (1) Electron < proton < α rays | (4) α rays < proton < electron |
| (2) Proton < α rays < electron | (5) electron < α rays < proton |
| (3) α rays < electron < proton | |

(05) Which of the following quantum numbers do not suits for an electron of an element in 4th period.

- | |
|--|
| (1) $n = 3$ $\ell = 2$ $m\ell = 0$ $ms = +1/2$ |
| (2) $n = 4$ $\ell = 0$ $m\ell = 0$ $ms = +1/2$ |
| (3) $n = 4$ $\ell = 1$ $m\ell = 0$ $ms = +1/2$ |
| (4) $n = 4$ $\ell = 2$ $m\ell = 0$ $ms = +1/2$ |
| (5) $n = 4$ $\ell = 0$ $m\ell = 0$ $ms = -1/2$ |

(06) Which of following shows hybridization same as hybridization of C in HCHO

- | | | | | |
|-------------------|-------------------|-------------------|-------------------|---------------------|
| (1) SO_3 | (2) CO_2 | (3) SO_2 | (4) HOCl | (5) POCl_3 |
|-------------------|-------------------|-------------------|-------------------|---------------------|

(07) Which of the following shows polarity in bonds, but not molecular polarity,

- | | | |
|--------------------|-------------------|---------------------|
| (1) NCl_3 | (3) SO_2 | (5) NO_2^- |
| (2) N_2 | (4) SO_3 | |

(08) Which of the following interaction types dominate in boiling points of G 17 hydrides HCl, HBr & HI,

- (1) H - bonding ✓ (4) H - bonding & London forces ✓
 (2) dipole - dipole interactions (5) H - bonding & dipole - dipole forces ✓
 (3) London dispersion forces

(09) A rigid vessel with volume V was filled with $\text{PCl}_5(\text{g})$ at temperature T & pressure P. When the temperature was raised to 2T, 20% of PCl_5 dissociates as follows.



What is the pressure of the container after dissociation?

- (1) P (2) 1.2 P (3) 1.4 P (4) 2.4 P (5) 4.8 P

(10) Correct order of ionic radius of Na^+ , Mg^{2+} , F^- ,

- (1) $\text{F}^- < \text{Mg}^{2+} < \text{Na}^+$ (3) $\text{Mg}^{2+} < \text{F}^- < \text{Na}^+$ (5) $\text{Na}^+ < \text{F}^- < \text{Mg}^{2+}$
 (2) $\text{F}^- < \text{Na}^+ < \text{Mg}^{2+}$ (4) $\text{Mg}^{2+} < \text{Na}^+ < \text{F}^-$

(11) Correct order of increasing electronegativity of C in CO , CO_2 , $\text{C}_2\text{O}_4^{2-}$ & CO_3^{2-}

- (1) $\text{CO}_3^{2-} < \text{C}_2\text{O}_4^{2-} < \text{CO}_2 < \text{CO}$ (3) $\text{CO}_2 < \text{CO} < \text{C}_2\text{O}_4^{2-} < \text{CO}_3^{2-}$ (5) $\text{C}_2\text{O}_4^{2-} < \text{CO}_3^{2-} < \text{CO} < \text{CO}_2$
 (2) $\text{C}_2\text{O}_4^{2-} < \text{CO}_3^{2-} < \text{CO}_2 < \text{CO}$ (4) $\text{CO} < \text{CO}_2 < \text{CO}_3^{2-} < \text{C}_2\text{O}_4^{2-}$

(12) False statement on molecular structure of XeF_4 ,

- (1) Electronic geometry of XeF_4 is octahedral. (4) Secondary interaction of XeF_4 is London forces.
 (2) Molecular geometry of XeF_4 is square planar. (5) The bond angle of F-Xe-F is 90°
 (3) XeF_4 is polar.

(13) A hydrated salt with molecular formula $\text{MSO}_4 \cdot 5\text{H}_2\text{O}$ contains 36% of water. What is atomic mass of M.

- (1) 64 (2) 36 (3) 128 (4) 96 (5) 48

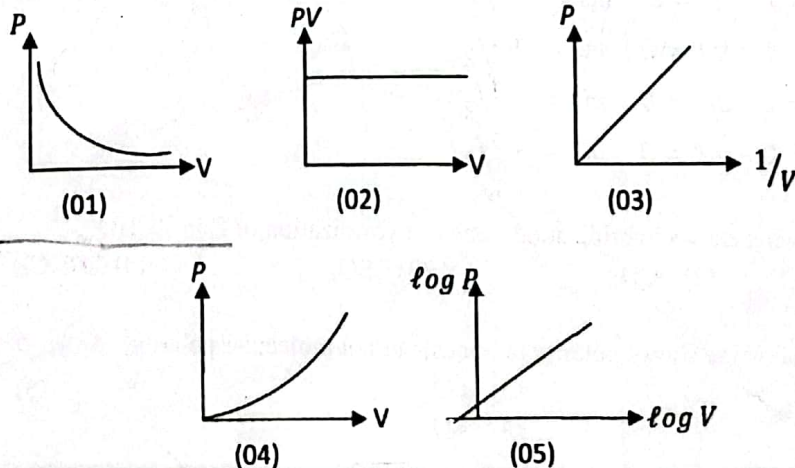
(14) A solution of FeCl_2 with concentration C & volume V needed 30cm^3 of acidic KMnO_4 with concentration C_2 for complete oxidation. Calculate the volume of $\text{K}_2\text{Cr}_2\text{O}_7$ with concentration C_2 needed for complete oxidation of FeCl_2 solution with same volume V & concentration C,

- (1) 36cm^3 (2) 25cm^3 (3) 24cm^3 (4) 18cm^3 (5) 15cm^3

(15) The H-bond is strongest in,

- (1) O - H /// S (3) N - H /// O (5) F - H /// O
 (2) F - H /// F (4) S - H /// O

(16) Which of the following is not compatible with Boyle's Law,



- (17) Which of the following has molecular geometry same as that of electron geometry of SF_4
- (1) H_2O (2) PO_4^{3-} (3) PF_3Cl_2 (4) BrF_4^+ (5) XeO_4

- (18) Covalent bond formation is favoured by,
- (1) Small cation & large anion with high charge on both ions.
 (2) Small cation & large anion with low charge on both ions.
 (3) Large cation & small anion only.
 (4) Small cation & large anion only.
 (5) Small cation with low charge & small anion with high charge.

Covalent Bond - Cation Anion

- (19) Select the incorrect statement on ideal gases,
- (1) The molecules will continue moving in a straight line with undiminished speed until it collide with another molecule or wall.
 (2) Most of the volume occupied by a gas is empty space & can ignore the volume occupied by molecules.
 (3) Pressure exerted is same in all directions.
 (4) Unless the kinetic energy is removed, the molecules will continue to move with same average kinetic energy.
 (5) The average kinetic energy is inversely proportional to the absolute temperature.

- (20) Which of the following has the highest no. of lone pairs in +2 oxidation state,
- (1) $\text{Ni} - 28$ (2) $\text{Cu} - 29$ (3) $\text{Cr} - 24$ (4) $\text{Fe} - 26$ (5) $\text{Mn} - 25$
 2, 8, 8, 8, 2 3, 9, 8, 8, 3 2, 8, 8, 6 2, 8, 8, 8 2, 8, 8, 7

- For question No. 21 - 25 one or more options out of 4 (a, b, c, & d) given are correct. Select the correct response in accordance with following.

- (1) (a) & (b) are correct
 (2) (b) & (c) are correct
 (3) (c) & (d) are correct
 (4) (a) & (d) are correct
 (5) Any other number or combination is correct.

- (21) The molecules that show dipole moment are,
- (a) CH_2Cl_2 (b) CS_2 (c) ClF_2^- (d) CH_2O

- (22) In which of the following the central atom has +5 oxidation state,

- (a) H_3PO_4 (b) HClO_3 (c) AlO_2^- (d) HClO_4
 -1 -3 -2 -1 -6 4 -5 -1 -2
 -9 -8

- (23) Which of the following is false regarding Rutherford's gold foil experiment

- (a) Electron travel in orbitals. ✓
 (b) All positive charges are concentrated in the central nucleus along with neutrons. ✓
 (c) The atom has large empty space.
 (d) Electrons are revolving around nucleus in fixed circular paths. ✓

- (24) The oxide of non-metallic elements are,

- (a) Covalent in nature. (c) Found in gaseous state.
 (b) Ionic in nature. (d) Have giant structures.

- (25) Element with positive first electron gain energy,

- (a) P (b) N (c) Mg (d) C

- From question numbers 26-30 two statements are given. Select the most suitable option from the following table regarding the two statements & mark appropriately.

	Statement 1	Statement 1
(1)	Correct	Correct & explains statement 1
(2)	Correct	Correct but do not explain statement 1
(3)	Correct	Incorrect
(4)	Incorrect	Correct
(5)	Incorrect	Incorrect

	Statement 1	Statement 1
(26)	The mean square speed of He atom is more than the a Ne atom at same temperature ✓	In any ideal gas mean square speed of any atom is directly proportional to absolute temperature. ✓
(27)	The masses of $H_{2(g)}$ & $He_{(g)}$ at same temperature pressure & volume are equal. ✗	The amount of gas that be inserted into a rigid vessel keeping temperature & pressure constant do not depend on mass of gas molecule. ✗
(28)	Graphite conduct electricity diamond do not. ✓	C possess sp^2 hybridization in graphite & sp^3 hybridization in diamond. ✓
(29)	The 1 st ionization energy of P is greater than S. ✓	The electronic configuration of S is relatively stable than that of P. ✗
(30)	I_2 would dissolve in KI, instead water & will be found stable as KIO_3 ✓	Than the H-bonding among water molecules, the H-bonding among H_2O & I_2 molecules are weaker. ✓