

KENDRIYA VIDYALAYA SITAPUR (I-SHIFT )

FIRST PERIODIC TEST-2019-20

SUBJECT-CHEMISTRY

CLASS-XI

TIME : 90 min

Max.Marks : 50

All questions are compulsory.

Q1. Choose the option which is correct :-

[1 x5]

{a} How many significant figures are there in  $4.00 \times 10^6$  ?

(i) 2 (ii) 3 (iii) 6 (iv) 9

(b) What is the S.I. unit of density ?

(i)  $\text{kg/m}^3$  (ii)  $\text{g/cm}^3$  (iii)  $\text{kg/litre}$  (iv) all of these

(c) The energy associated with the first orbit in the hydrogen atom is  $-2.18 \times 10^{-18} \text{ J/atom}$ . What is the energy associated with the fifth orbit in  $\text{J/atom}$  :-

(i)  $-2.18 \times 10^{-18} / 25$  (ii)  $-2.18 \times 10^{-18} / 5$  (iii)  $-2.18 \times 10^{-18}$  (iv) none of these

(d) How many atoms in 4 u of  $\text{H}_2$  :- (i) 4 (ii) 4 moles (iii) 2 moles (iv) none of these

(e) The number of neutrons in  ${}_{38}\text{Sr}^{88}$  are :-

(i) 40 (ii) 50 (iii) 88 (iv) 38

Q 2 . Answer the following :-

[1 x5]

(a) What is the mass of electron in kg ? (b) What is the charge on 1 mole of proton?

(c) Express 2808 into scientific notation .

(d) Convert 1 mg into kg and ng.

(e) Write de Broglie's equation.

Q 3. Calculate energy of photon of radiation whose frequency is  $5 \times 10^{14}$  hertz. ( $h = 6.626 \times 10^{-34} \text{ Js}$ ) [2]

Q 4. Write short note on photo electric effect . [2]

Q 5. Define:- [i] atomic mass unit [ii] mole. [2]

Q 6. The energy of electron in hydrogen atom has negative value. What does it mean ? [2]

Q 7. Calculate the amount of carbon dioxide formed when two moles of carbon are burnt in Oxygen . [2]



Q 8. Calculate the percentage composition of oxygen in  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  . [3]

[At wt :- Cu =63.5 ,S =32,O = 16 ,H=1 ]

Q.9. How many grams of NaCl should be dissolved to make 100 ml of 0.15 M NaCl ? [3]

Q 10. State Gay Lussac's law of gaseous volume . Explain with suitable example . [3]

Q 11. Q 4. Calculate number of atoms in each of the following :- (atomic wt of He = 4)

(i) 52 moles of He (ii) 52 u of He (iii) 52 gm of He [3]

**Q 12.** Complete the following table ;-

[3]

Name of the particle	Atomic no. (Z)	Mass No. (A)	No. of electron (e)	No. of proton (p)	No. of neutron (n)
Aluminium ion		27	10		
Sodium ion			10		12

**Q 13.** 80 gm H<sub>2</sub> reacted with 80 gm of O<sub>2</sub> to form water . Find out the mass of water formed . Which one is the limiting reagent . Which reactant will remain unreacted and what would be its mass? [5]

**Q.14.** A compound contains 4.07% Hydrogen, 24.47%Carbon & 71.65 % Chlorine. Its molar mass is 98.96 gm. What is its empirical formula and molecular formula? [5]

**Q 15.**Write the postulates of Bohr's model of atom and its limitations. [5]

KENDRIYA VIDYALAYA SITAPUR (I-SHIFT )

FIRST PERIODIC TEST-2019-20

SUBJECT-CHEMISTRY

CLASS-XII

TIME : 90 min

Max.Marks : 50

All questions are compulsory.

Q1. Choose the option which is correct :-

[1 x5]

- (A). What will be the van't hof factor for a solution of  $K_4[FeCN_6]$  if its dissociation is 50% :-  
(a) 5            (b) 3            (c) 4            (d) none of the above
- (B). Sea water can be converted into fresh water by :-  
(a) Osmosis    (b) Sedimentation    (c) Diffusion    (d) Reverse Osmosis
- (C). Which of the following catalyst is used in Haber's process :-  
(a) Fe            (b) Na            (c) Mo            (d)  $K_2SO_4$
- (D). Graph of  $[R]$  vs time is a straight line . The order of the reaction is :-  
(a) 3            (b) 2            (c) 0            (d) 1
- (E). The quantity of charge required to obtain one mole of aluminium from  $Al_2O_3$  is:-  
(a) 1F            (b) 3F            (c) 6 F            (d) 2 F

Q 2 . Answer the following :-

[1 x5]

- (A) Name two compounds used as adsorbent for controlling humidity.  
(B) Mention one shape selective catalyst used to convert alcohol directly into gasoline.  
(C) Name the battery which is generally used in inverters .  
(D) Is it safe to stir 1M  $AgNO_3$  solution with a copper spoon? Given  $E^0 Ag^+/Ag=0.80V$  .  
(E) What are the electrolysis products of solution of dilute sulphuric acid using Pt electrodes?

Q 3. For a reaction , the energy of activation is zero. What is the value of rate constant at 300K, if  $k = 1.6 \times 10^6 s^{-1}$  at 280 K ?  $[R = 8.314 J K^{-1}]$  [2]

Q 4.. What is pseudo first order reaction . Give example. [2]

Q 5. Write any two differences between ideal & non-ideal solution [2]

Q 6. Consider the reaction  $2A + B \xrightarrow{\hspace{2cm}} \text{Products}$  [2]

When concentration of B alone was doubled, half life time does not change. When conc. of A alone is doubled, the rate increases by two times. What is the order of the reaction?

Q 7. Explain promoter and poison with example . [2]

Q 8. What is fuel cell, write reaction involved in  $H_2-O_2$  fuel cell. [3]

Q 9. State Henry's law and mention its two important applications. [3]

Q 10. Write the difference between order and molecularity of reaction. [3]

Q 11. Explain the following :- [3]

- (a) Aquatic species are more comfortable in cold waters than in warm waters.  
(b) To avoid bends scuba divers use air diluted with helium.  
(c) Cold drinks bottles are sealed under high pressure of  $CO_2$ .

**Q 12.** Give reasons :-

[3]

- (i) Generally high temperature is favourable for chemisorption.
- (ii) Physisorption decrease with increase of temperature .
- (iii) A finely divided substance is more effective as an adsorbent .

**Q 13.(a)** Identify the reaction order from each of following units of rate constants.

[5]

(i)  $\text{L mol}^{-1}\text{sec}^{-1}$

(ii)  $\text{mol L}^{-1}\text{sec}^{-1}$

(b) The following data were obtained during the first order thermal decomposition of  $\text{SO}_2\text{Cl}_2$  at a constant volume :-



Experiment	Time (second)	Total pressure (atm)
1.	0	0.4
2.	100	0.7

Calculate the rate constant. (Given:  $\log 4=0.6021$ ,  $\log 2= 0.3010$ )

**Q14(a).** Calculate e.m.f of the cell at 298K :-  $\text{Cr} / \text{Cr}^{3+} (0.1\text{M}) \parallel \text{Fe}^{2+} (0.01\text{M}) / \text{Fe}$

[5]

[ Given:  $E^0 \text{Cr}^{3+}/\text{Cr} = -0.75\text{V}$ ,  $E^0 \text{Fe}^{2+} / \text{Fe} = -0.45\text{V}$  ]

(b) A current of 0.5 ampere is flowing through a wire for 2 hours .Then how many electrons would flow through the wire .

**Q 15.a)** Define the following terms

[5]

i) Mole fraction

ii) Molal depression constant (Kf)

b) 15 g of an unknown molecular material is dissolved in 450 g of water. The resulting solution freezes at  $-0.34^\circ\text{C}$ . What is the molar mass of the material. ( Kf for water =  $1.86 \text{ K kg mol}^{-1}$ )



