

## GENERAL AND PHYSICAL CHEMISTRY

Q.1) Sal ammoniac is:

- [1]  $\text{NH}_4\text{OH}$
- [2]  $\text{NH}_4\text{Cl}$
- [3]  $\text{NaCl}$
- [4]  $\text{Na}_2\text{SO}$

Q.2) The liquid left after crystallization is:

- [1] distillate
- [2] sublimate
- [3] mother liquor
- [4] residue

Q.3) When  $\text{NaCl}$  is dissolved in water,  $\text{Na}^+$  ion becomes

- [1] oxidized
- [2] reduced
- [3] hydrolyzed
- [4] hydrated

Q.4) A metallic oxide contains 60% of metal. The equivalent weight of metal is

- [1] 12
- [2] 24
- [3] 40
- [4] 48

Q.5) In the reaction:  $2\text{Na}_2\text{S}_2\text{O}_3 + \text{I}_2 \rightarrow \text{Na}_2\text{S}_4\text{O}_6 + 2\text{NaI}$  The equivalent weight of  $\text{Na}_2\text{S}_2\text{O}_3$  equal to

- [1]  $M$
- [2]  $M/2.5$
- [3]  $M/3$
- [4]  $M/2$

Q.6) One gram equivalent of a substance is equal to

- [1] 16 g of Oxygen
- [2] 0.025 mole of Oxygen
- [3]  $3.011 \times 10^{23}$  molecules of Oxygen

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[4] 8 atoms of Oxygen

Q.7) The rate of diffusion of methane at given temperature is twice that of gas A, the molar mass of A is

[1] 32

[2] 64

[3] 16

[4] 8

Q.8) Diamond crystal is an example of

[1] covalent crystal

[2] ionic crystal

[3] molecular crystal

[4] metallic crystal

Q.9) The enthalpy of vaporization of  $\text{H}_2\text{O}$ ,  $\text{C}_2\text{H}_5\text{OH}$  and  $\text{CS}_2$  are 40, 38 and 29  $\text{KJ mol}^{-1}$  respectively. The order of decreasing intermolecular forces in these liquid is

[1]  $\text{H}_2\text{O} < \text{C}_2\text{H}_5\text{OH} < \text{CS}_2$

[2]  $\text{H}_2\text{O} < \text{C}_2\text{H}_5\text{OH} > \text{CS}_2$

[3]  $\text{H}_2\text{O} > \text{C}_2\text{H}_5\text{OH} < \text{CS}_2$

[4]  $\text{H}_2\text{O} > \text{C}_2\text{H}_5\text{OH} > \text{CS}_2$

Q.10) For endothermic process solubility \_\_\_\_\_ with increase in temperature.

[1] decreases

[2] increases

[3] first increases then decreases

[4] can't be predicted

Q.11) Which of the following gases have same rate of diffusion?

[1]  $\text{N}_2\text{O}$  and  $\text{NH}_3$

[2]  $\text{NH}_3$  and  $\text{CO}_2$

[3]  $\text{N}_2\text{O}$  and  $\text{CO}_2$

[4]  $\text{CO}$  and  $\text{NO}$

Q.12) Magnetic quantum number specifies

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- [1] orbital size
- [2] orbital orientation
- [3] orbital shape
- [4] nuclear stability

Q.13) When azimuthal quantum number,  $l = 1$ , the shape of orbital is

- [1] circular
- [2] spherical
- [3] pear-shaped
- [4] elliptical

Q.14) Which of the following has maximum no. of unpaired  $e^-$

- [1]  $Zn^+$
- [2]  $Co^{++}$
- [3]  $Fe^{+++}$
- [4]  $Mn^{4+}$

Q.15) Which of the following set of quantum number is not possible?

- [1]  $n=2, l=1, m=0, s=+1/2$
- [2]  $n=2, l=2, m=0, s=+1/2$
- [3]  $n=2, l=1, m=-1, s=+1/2$
- [4]  $n=2, l=1, m=0, s=-1/2$

Q.16) The maximum energy is required for transition in H atom from

- [1]  $n=1$  to  $n=2$
- [2]  $n=2$  to  $n=3$
- [3]  $n = \infty$  to  $n=2$
- [4]  $n=0$  to  $n=1$

Q.17) Which of the following has coordinate covalent bond?

- [1] NaOH
- [2]  $NH_4^+$
- [3]  $H_2O$
- [4]  $NH_3$

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Q.18) When a chemical bond is formed, the energy of the system

- [1] increases
- [2] decreases
- [3] does not change
- [4] either increase or decrease

Q.19) Dissolution of NaCl in water is explained by:

- [1] Ion-dipole interaction
- [2] Dipole-dipole interaction
- [3] Dipole induced dipole interaction
- [4] Instantaneous Dipole induced dipole interaction

Q.20) Which of the following has highest value of bond angle?

- [1]  $\text{BF}_3$
- [2]  $\text{NH}_3$
- [3]  $\text{PCl}_3$
- [4]  $\text{NCl}_3$

Q.21) Which of the following has identical geometry?

- [1]  $\text{BCl}_3$  and  $\text{PCl}_3$
- [2]  $\text{CH}_3\text{Cl}$  and  $\text{CHCl}_3$
- [3]  $\text{CH}_4$  and  $\text{CCl}_4$
- [4]  $\text{XeF}_4$  and  $\text{SiF}_4$

Q.22) Which of the following ion has largest size?

- [1]  $\text{N}^{3-}$
- [2]  $\text{O}^{2-}$
- [3]  $\text{F}^-$
- [4]  $\text{Na}^+$

Q.23) Which of the following does not reflect the periodicity of an element?

- [1] bonding pattern
- [2] ionization energy
- [3] electronegativity
- [4] neutron-proton ratio

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Q.24) Which is correct for ionization energy?

- [1]  $\text{Na} > \text{Mg} < \text{Al} < \text{Si}$
- [2]  $\text{Na} < \text{Mg} < \text{Al} < \text{Si}$
- [3]  $\text{Na} < \text{Mg} > \text{Al} < \text{Si}$
- [4]  $\text{Na} > \text{Mg} > \text{Al} > \text{Si}$

Q.25) Which is the incorrect statement?

- [1] Element with atomic no. 80 lies in d-block.
- [2] Atomic no. of Gold is 79.
- [3] Se lies in Group-15.
- [4] Fluorine is the most electronegative element in periodic table.

Q.26) Oxidation state of Ni in  $\text{Ni}(\text{CO})_4$  is

- [1] 0
- [2] +4
- [3] -4
- [4] +7

Q.27) Which is correct among the following?

- [1] O.N. of Cr in  $\text{CrO}_5$  is +3
- [2] O.N. of Cl in  $\text{Ca}(\text{OCl})\text{Cl}$  is +1
- [3] Acid Base reaction is redox reaction
- [4]  $\text{FeCl}_3$  is a base

Q.28) Oxidation state of Ni in  $\text{Ni}(\text{CN})_4$  is

- [1] 0
- [2] +4
- [3] -4
- [4] +7

Q.29) Oxidation no. of S in  $\text{H}_2\text{SO}_5$  is

- [1] +2
- [2] +4
- [3] +6

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[4] +8

Q.30) The value of x in  $\text{ClO}_3^- + 6\text{H}^+ + x \rightarrow \text{Cl}^- + 3\text{H}_2\text{O}$  is

[1] 5e

[2] 4e

[3] 7e

[4] 6e

Q.31)  $K_P$  and  $K_C$  are related as:

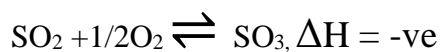
[1]  $K_C = K_P (RT)^{\Delta n}$

[2]  $K_c = K_P RT^{\Delta n}$

[3]  $K_P = K_C (RT)^{\Delta n}$

[4]  $K_P = K_C RT^{\Delta n}$

Q.32) What are the most favorable conditions for given reaction to occur?



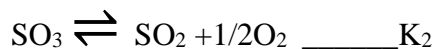
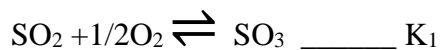
[1] low T, high P

[2] low T, low P

[3] high T, high P

[4] high T, low P

Q.33) Relation between equilibrium constant in these reactions is:



[1]  $K_1 = K_2$

[2]  $K_1 = K_2^2$

[3]  $K_1 = 1/K_2$

[4]  $K_1 = 1/K_2^2$

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Q.34) 2 g of  $\text{CaCO}_3$  sample is required for the complete neutralization of 10ml of 2N HCl. The purity of  $\text{CaCO}_3$  is

- [1] 50%
- [2] 66.67%
- [3] 33.33%
- [4] 100%

Q.35) When 10ml of 5% NaOH is mixed with 10ml of 5% HCl, the resulting solution is

- [1] Acidic
- [2] Basic
- [3] Neutral
- [4] Data is not sufficient to predict.

Q.36) In titration between strong acid and weak base,

- [1] Methyl orange is used as indicator
- [2] pH transition occurs at 8-10
- [3] Phenolphthalein is used as indicator
- [4] All of above are correct.

Q.37) Solubility of AgCl is minimum in

- [1]  $\text{H}_2\text{O}$
- [2] 0.1M KCl
- [3] 0.1M NaCl
- [4] 0.1M  $\text{BaCl}_2$

Q.38) pH of  $10^{-12}$  M HCl is:

- [1] 12
- [2] 6
- [3] -12
- [4] <7

Q.39) Which of the following is not an acid salt?

- [1]  $\text{COOH.COONa}$
- [2]  $\text{HCOONa}$
- [3]  $\text{Na}_2\text{H}_2\text{PO}_4$

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[4]  $\text{NaHSO}_4$

Q.40) Which is correct among the following?

[1] O.N. of Cr in  $\text{CrO}_5$  is +3

[2] O.N. of Cl in  $\text{Ca}(\text{OCl})\text{Cl}$  is +1

[3] Acid Base reaction is redox reaction

[4]  $\text{FeCl}_3$  is a base

Q.41) Lewis base is defined as

[1] electron pair donor

[2] electron pair acceptor

[3] proton donor

[4] proton acceptor

Q.42)  $\text{CuSO}_4$  cannot be safely stored in

[1] Al vessel

[2] Ag vessel

[3] Au vessel

[4] Pt vessel

Q.43) Electricity can be passed through molten  $\text{PbCl}_2$  because of presence of

[1] movable atoms

[2] movable ions

[3] free electrons

[4] lead in molten state

Q.44) Volume of  $\text{Cl}_2$  gas evolved at NTP from aq.  $\text{CaCl}_2$  when 1L of  $\text{O}_2$  is evolved from water using same current is

[1] 1L

[2] 2L

[3] 3L

[4] 4L

Q.45) Which of the following statement is incorrect?

[1] Standard enthalpy of graphite is zero.



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- [2] A reaction is not feasible when  $\Delta H = -ve$ ,  $\Delta S = +ve$ .  
[3] In spontaneous reactions, free energy of system always increases.  
[4] Second law of thermodynamics depicts the spontaneity.

Q.46) The factor which does not influence the rate of reaction is

- [1] nature of reactants  
[2] concentration  
[3] temperature  
[4] molecularity

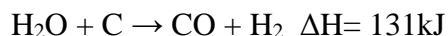
Q.47) The rate of reaction is  $5.4 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1}$  then its half life is represented by

- [1]  $t = \frac{a}{2k}$   
[2]  $t = \frac{0.693}{k}$   
[3]  $t = \frac{1}{ak}$   
[4]  $t = 0.693k$

Q.48) 75% of a reaction having rate constant  $10^{-3} \text{ min}^{-1}$  is completed in 32 minutes, when will be 50% of the reaction completed?

- [1] 8 min.  
[2] 16 min.  
[3] 32 min  
[4] 64 min.

Q.49) Based on the following thermochemical equations, find the value of x.



- [1] +393 kJ  
[2] -393 kJ  
[3] +655 kJ  
[4] -655 kJ

Q.50) Which one is a colligative property?

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- [1] Boiling Point
- [2] Freezing Point
- [3] Osmotic Pressure
- [4] Vapour Pressure