

GGSIPIU Chemistry 2004

1. The solubility of CaF_2 is s moles/litre. then solubility product is :

a s^2 b $4s^3$

c $3s^2$ d s^3

2. If P, T, ρ and R represents pressure, temperature, density and universal gas constant respectively, then the molar mass of the ideal gas is given by :

a $\frac{\rho RT}{P}$ b $\frac{\rho T}{PR}$ c $\frac{P}{\rho RT}$ d $\frac{RT}{\rho P}$

3. The kinetic energy of a gas molecule istemperature :

a Independent of b directly proportional to

b inversely proportional to d directly proportional to square root of

4. The ratio of rate of diffusion of SO_2 ($M = 64$) and oxygen ($M = 32$) is :

a 1:1 b 2:1

c 1:2 d 1:1.414

5. An aqueous solution freezes at -0.186°C , then elevation in boiling point is : ($K_b = 0.512, K_f = 1.86$)

a 0.512°C b 100.0512°C

c -0.0512°C d none of these

6. 0.56 g of gas occupies 280 cm^3 at NTP, then its molecular mass is :

a 4.8 b 44.8

c 2 d 22.4

7. The equivalent mass of Fe in FeO is :

- a 56 b 28
- c 36 d 18.66

8. Chemical equations convey quantitative information of the :

- a Type of atoms/molecules taking part in the reaction
- b Number of atoms/molecules of the reactants and product involved in the reaction
- c Quantity of reactant consumed and quantity of product formed
- d None of the above

9. Which one of the following is ambiguous ?

- a a mole of wlectron b a mole of sodium atoms
- c a mole of potassium ions d a mole of hydrogen

10. In hydrolysis of a salt of weak acid and strong base, $A^- + H_2O \rightleftharpoons HA + OH^-$, the hydrolysis constant k_h is equal to

- a $\frac{K_w}{K_a}$ b $\frac{K_w}{K_b}$
- c $\sqrt{\frac{K_a}{C}}$ d $\frac{K_w}{K_a \times K_b}$

11. For a reaction of the type $aA + bB \rightarrow \text{Products}$, the $\frac{d[A]}{dt}$ is equal to :

- a $-\frac{d[B]}{dt}$ ~~b~~ $-\frac{1}{b} \times \frac{d[B]}{dt}$
- c $-\frac{a}{b} \times \frac{d[B]}{dt}$ d $-\frac{b}{a} \times \frac{d[B]}{dt}$

12. In a mixture of 1g H₂ and 8g O₂, the mole fraction of hydrogen is :

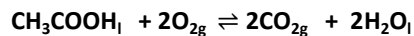
- a 0.667 b 0.5
- c 0.33 d none o f these

13. In acid medium MnO_4^- is reduced to Mn^{2+} , by a reducing agent. Then the equivalent mass of KMnO_4 is given by :

M = molecular mass)

- a $m/2$ b M c $M/5$ d $M/3$

14. For the reaction



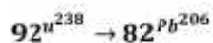
At 25°C and 1 atm pressure, $\Delta H = -874\text{ kJ}$. Then the change in internal energy ΔE is :

- a -874 kJ b -871.53 kJ
c -876.47 kJ d $+874\text{ kJ}$

15. Radioactive substances emit γ -rays, which are :

- a +vely charged particle b -vely charged particle
c massive particle d packet of energy

16. the number of α – and β - particles emitted in the reaction :



- a $8\alpha, 5\beta$ b $4\alpha, 4\beta$
c $8\alpha, 2\beta$ d $4\alpha, 6\beta$

17. Coulomb is equal to

- a Ampere X second b ampere x minute
c watt X second d volt X second

18. 1 mole of KB , reacts with 1 mole of phosphoric acid to produce HB , together with :

- a K_3PO_4 b KH_2PO_4
c Br_2 d H_2O

19. The equivalent conductances at infinite dilution for AC, BD and CD are $91, 426.2$ and $126.5 \text{ ohm}^{-1} \text{ cm}^2 \text{ g equ}^{-1}$ respectively. Then the equivalent conductance of AB will be :

- a 390.7 b 323.8
c 210.5 d 150.6

20. The specific conductivity of 0.1 N KCl solution is $0.0129 \text{ ohm}^{-1} \text{ cm}^{-1}$. The resistance of the solution in the cell is 100 phm . The cell constant of the cell will be :

- a 1.10 b 1.29
c 0.56 d 2.80

21. The standard wmf of a cell $\text{Zn}/\text{Zn}^{2+} \parallel \text{Fe}^{2+}/\text{Fe}$, if electrode potentials for Zn/Zn^{2+} and Fe^{2+}/Fe are 0.763 v and -0.44 V respectively is:

- a +0.323 V b -1.203 V
c +1.203 V d -0.323 V

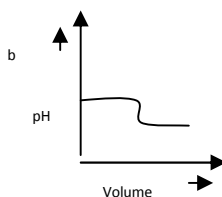
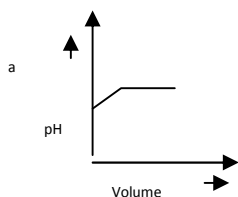
22. The energy is required to release 1 electron from He^+ is :

- a +54.4 eV b +13.6 eV
c +27.2 eV d cannot be predicted

23. ${}^6\text{C}^{14}$ is formed from ${}^7\text{N}^{14}$ in the upper atmosphere by the action of the fundamental particle :

- a Positron b neutron
c electron d porton

24. Which of the following plot represents the graph of pH against volume of alkali added in the titration of NaOH and HCl ?



25. Which among the following isotope is not found in natural uranium ?

- a ${}^{234}\text{U}_{92}$ (b) ${}^{235}\text{U}_{92}$
c ${}^{238}\text{U}_{92}$ (d) ${}^{239}\text{U}_{92}$

26. Which one out of the following statements is not correct for ortho and para hydrogen ?

- a They have different boiling point
b Ortho form is less stable than para form
c They differ in the spin of their protons
d The ratio of ortho to para hydrogen increases with increase in temperature and finally pure ortho form is obtained

27. CO_2 is a gas, while SiO_2 is a solid, but both are :

- a Acidic b ionic
c discrete molecules d covalent containing π -bonds

28. Pure conc. HNO_3 makes iron passive, as the surface is covered with protective layer of :

- a Fe_2O_3 b FeO
c Fe_3O_4 d FeNO_3

29. Which of the following is not correct for D_2O ?

- a Boiling point is higher than H_2O
b D_2O reacts slowly than H_2O
c Viscosity is higher than H_2O at 25°C

d Solubility of NaCl in it is more than H₂O

30. Ozone when reacts the potassium iodide solution liberates certain product, which turns starch paper blue. The liberated substance is :

a oxygen b iodine

c hydrogen iodide d potassium hydroxide

31. Red hot iron absorbs SO₂ giving the product :

a FeS + O₂ b Fe₂O₃ + FeS

c FeO + FeS d FeO + S

32. Ethyl iodide when heated with sodium in dry ether gives pure :

a C₄H₁₀ b C₂H₆

c C₃H₈ d C₂H₅OH

33. For the reaction

$\text{CH}_3\text{-CH}=\text{CH}_2 + \text{HOCl}$ A the product A is :

a $\text{CH}_3\text{-CHCl-CH}_2\text{OH}$

b $\text{CH}_3\text{-CH-CH}_2\text{-Cl}$

c $\begin{array}{c} \text{OH} \\ | \\ \text{CH}_3\text{-CH}_2\text{-CH}_2\text{-COCl} \end{array}$

d $\begin{array}{c} \text{Cl} \\ | \\ \text{CH}_3\text{-C-CH}_3 \end{array}$

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$\text{CH}_3\text{-C-CH}_3$

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OH

34. Which of the following is not correct for ionic crystals ?

a They possess high melting point and boiling point

b All are electrolyte

c Exhibit the property of isomorphism

d Exhibit directional properties of the bond

35. Which of the following is not true in Rutherford's nuclear model of atom ?

- a Protons and neutrons are present inside nucleus
b Volume of nucleus is very small as compared to volume of atom
c The number of protons and neutrons are always equal
d the number of electrons and protons are always equal

36. All the s-block elements of the periodic table are placed in the groups

- a IA and IIA b IIIA and IVA
c B sub groups d VA to VILA

37. The magnetic quantum number for d-orbital is given by :

- a 2 b 0, ±1, ±2
c 0, 1, 2 d 5

38. Which of the following molecule has zero dipole moment ?

- a BF_3 b NH_3
c CHCl_3 d H_2O

39. In the process, $\text{O}_2^+ \rightarrow \text{O}^{2+} + e^-$ the electron lost is form :

- a bonding π -orbital
b antibonding π -orbital
c $2p_z$ orbital
d $2p_x$ orbital

40. Bond between A and B can be represented by



I II III

If A is more electronegative than B, then least contribution to the actual structure comes from :

- a I b II
c III d all the structure have equal contribution

41. The complex formed in ring test of qualitative analysis for NO_3^- ion is :

- a $[\text{Fe}(\text{H}_2\text{O})_5\text{NO}]\text{SO}_4$
- b $[\text{Fe}(\text{H}_2\text{O})_5\text{NO}_2]\text{SO}_4$
- c $[\text{Fe}(\text{NO})_5\text{H}_2\text{O}]\text{SO}_4$
- d $\text{FeSO}_4 \cdot \text{NO}$

42. SiF_4 gets hydrolysed giving :

- a SiO_2 b SiOH_2F_2
- c H_2SiF_6 d SiOH_4

43. All ores are minerals, while all minerals are not ores, because :

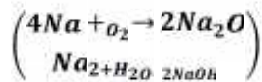
- a the metal can not be extracted economically from all the minerals
- b minerals are complex compound
- c the minerals are obtained from mines
- d all these are correct

44. In the reaction ,

$\text{P}_2\text{O}_5 + 3\text{CaO} \rightarrow \text{Ca}_3\text{P}_2\text{O}_{10}$, P_2O_5 acts as :

- a Acidic flux b basic flux
- c basic impurity d acidic impurity

45. In the given reaction, the oxide of sodium is :



- a Acidic b basic
- c amphoteric d neutral

46. When CO_2 is passed through solution of calcium hydroxide, which one of the following compound is precipitated ?

- a CaHCO_3 b CaO
- c CaCO_3 d CaOH_2

47. ferric alum has the composition $\text{NH}_4)_2\text{SO}_5 \cdot \text{Fe}_2\text{SO}_4)_3 \cdot x \text{H}_2\text{O}$ the value of x is :

- a 7 b 24
- c 6 d 15

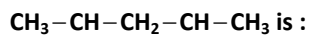
48. What is the general electronic configuration for 2nd row transition series ?

- a $[\text{Ne}]3d^{1-10},4s^2$
- b $[\text{Ar}] 3d^{1-10},4s^{1-2}$
- c $[\text{Kr}]4d^{1-10},5s^{1-2}$
- d $[\text{Xe}]5d^{1-10},5s^{1-2}$

49. The existence of two different coloured complexes of $[\text{Co}(\text{NH}_3)_4\text{Cl}_2]^+$ is due to :

- a ionization isomerism
- b co-ordination isomerism
- c linkage isomerism
- d geometrical isomerism

50. IUPAC name of the compound



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- a 4-methyl pentene-2-ol
- b 2-methyl pentanol-4
- c 4,4-dimethyl-butane-2-ol
- d 4-methyl pentane-2-ol

51. Alkyl halide on heating with alc.NH₃ in a sealed tube results

- a 1^o amine b 2^o amine
- c 3^o amine d all of these

52. Among H-CHO, CH₃CHO and C₆H₅CHO, which will undergo Cannizzaro's reaction ?

- a HCHO and CH₃-CHO
- b CH₃-CHO and C₆H₅CHO

c C_6H_5CHO and $HCHO$

d All the above

53. The main product of the reaction of CH_3CONH_2 with Br_2 in aqueous potassium hydroxide medium is :

a $CH_3-CH_2-NH_2$

b CH_3Br

c $CH_3CONHBr$

d CH_3NH_2

54. In the reaction,

H_2O

$HCHO + CH_3MgI$ A B what are A and B ?

a CH_3OMgI and CH_3-OH

b CH_3CH_2OMgI and $C_2H_5-O-C_2H_5$

c CH_3CH_2OMgI and CH_3-CH_2-OH

d CH_3-CH_2-I and CH_3-CH_2-OH

55. Acetylation of a secondary amine in alkaline medium yields :

a N,N dialky l acetamide

b N,N dialky l amine

c N,N dialky l amide

d acety l dialky l amine

56. In acid medium nitrobenzene is reduced to aniline as shown in the reaction $C_6H_5-NO_2 + 6[H]$
 $C_6H_5-NH_2 + 2H_2O$

The reducing agent used in this reaction is :

a $LiAlH_4$ b Sn/HCl

c $Na/Alcohol$ d H_2/Ni

57. PVC is used for :

a manufacture of cosmetics

b manufacture of tyres

c manufacture of nonstick pans

d manufacture of plastic pipes

58. Acetyl salicylic acid is used as :

a anti oxidant

b analgesic drug

c anti biotic drug

d anaesthetic

59. C_6H_6 consists of one ring, while naphthalene consists of two rings. Both are aromatic and obey the $4n+2$ rule. Thus the number of π -electrons inside rings of C_6H_6 and naphthalene are respectively :

a 3,5 b 5,10

c 6,10 d 6,12

60. In the oxidation of $C_6H_5-CH_2-CH_3$ by $KMnO_4$ the product formed is :

a $C_6H_5-CH_2-CHO$

b $C_6H_5-CH_2-COOH$

c C_6H_6-COOH

d $C_6H_5-CH_2-OH$