www.zigya.com

Previous Year Paper

Chemistry - 2007

Multiple Choice Questions

1. When a solid melts reversibly :
   A. H decreases
   B. G increases
   C. E decreases
   D. S increases

   Answer

2. Enthalpy is equal to :
   A. T2∂(G/T)∂TP
   B. -T2∂(G/T)∂TP
   C. T2∂(G/T)∂TV
   D. -T2∂(G/T)∂TV

   Answer

3. Condition for spontaneity in an isothermal process is
   A. ΔA + W < 0
   B. ΔG + U <0
   C. ΔA + U>0
   D. ΔG -U<0

   Answer

4. 2C(s) + 2O2(g) → 2CO2(g); ΔH= -787 kJ ....(i)H2(g) + 12O2(g) → H2O (l); ΔH = -286 kJ ...(ii)C2H2(g) + 212O2(g) → 2CO2(g) + H2O (l) ; ΔH= -1310 kJ ...(iii)

   The heat of formation of acetylene is :
   A. -1802 kJ
   B. +1802 kJ
   C. +237 kJ
   D. -800 kJ

   Answer

5. Given the equilibrium system:

   NH4Cl(s) → NH4+(aq) + Cl-(aq) (ΔH =+3.5 kcal/mol).

   What change will shift the equilibrium to the right?
   A. Decreasing the temperature
   B. Increasing the temperature
   C. Dissolving NaCl crystals in the equilibrium mixture

D. Dissolving NH_4NO_3 crystals in the equilibrium mixture

Answer

6. Equivalent amounts of H_2 and I_2, are heated in a closed vessel till equilibrium is obtained. If 80% of the hydrogen can be converted to HI, the K_c at this temperature is :

   A. 64

   B. 16

   C. 0.25

   D. 4

   Answer

7. For the reaction H2(g) + I2(g) → 2HI(g), the equilibrium constant K_p changes with:

   A. total pressure

   B. catalyst

   C. the amount H_2 and I_2

   D. temperature

   Answer

8. In $TeCl_4$ the central atom tellurium involves :

   A. sp^3 hybridisation

   B. sp^3d hybridisation

   C. sp^3d^2 hybridisation

   D. dsp^2 hybridisation

   Answer

9. A nuclear reaction of U92235 with a neutron produces Kr3690 and two neutrons. Other element produced in this reaction is

   A. Te52137

   B. Cs55144

   C. Ba56137

   D. Ba56144

   Answer

10. A coordiante bond is a dative covalent bond. Which of the below is true?

    A. Three atom form bond by sharing their electrons

    B. Two atom form bond by sharing their electrons

    C. Two atoms form bond and one of them provides both electrons

    D. Two atoms form bond by sharing electrons obtained from third atom

    Answer

11. On an X-ray diffraction photograph the intensity of the spots depends on:

    A. neutron density of the atoms/ions

    B. electron density of the atoms/ions

    C. proton density of the atoms/ions

D. electron density of the atoms/ions

Answer

12. The standard reduction potentials at 298 K for the following half reactions are given against each:

Zn+(aq) +2e-→ Zn(s) E° = - 0.762 VCr3+ (aq) + 3e- → Cr(s) E° = - 0.7420V2H+(aq) + 2e- → H2(g) E° = 0.00VFe3+(aq) + 3e- → Fe2+ E° =+ 0.762 V

The strongest reducing agents is:

A. Zn(s)

B. Cr(s)

C. H_2 (g)

D. Fe^{2+} (aq)

Answer

13. In which of the below reaction do we find α,β-unsaturated carbonyl compounds undergoing a ring closure reaction with conjugated dienes?

A. Perkin reaction

B. Diels-Alder reaction

C. Claisen rearrangement

D. Hofmann reaction

Answer

14. Identify, which of the below does not possess any element of symmetry?

A. (+) and (-) tartaric acid

B. Carbon tetrachlorid

C. Methane

D. Meso- tartaric acid

Answer

15. An ion leaves its regular site occupy a position in the space between the lattice sites is called

A. Frenkel defect

B. Schottky defect

C. impurity defect

D. vacancy defect

Answer

16. The 8: 8 type of packing is present in

A. MgF_2

B. CsCl

C. KCl

D. NaCl

Answer

17. According to Arrhenius equation, the rate constant (K) is related to temperature (T) as

A. ln K2 K2 = EaR1T1-1T2

B. ln K2 K2 = -EaR1T1-1T2

C. ln K2 K2 = EaR1T1+1T2

D. ln K2 = - EaR1T1+1T2

Answer

18. How long (in hours) must a current of 5.0 A be maintained to electroplate 60 g of calcium from molten $CaCl_2$?

A. 27 h

B. 8.3 h

C. 11 h

D. 16 h

Answer

19. For strong electrolytes the plot of molar conductance vs C is

A. parabolic

B. linear

C. sinusoidal

D. circular

Answer

20. If the molar conductance values of Ca^{2+} and Cl^- at infinite dilution are respectively 118.88 X 10^{-4} m^2 Ωho mol^{-1} and 77.33 X $10^{-4}m^2$ Ωho mol^{-1} then that of $CaCl_2$ is (in m^2 Ωho mol^{-1}):

A. 118.88 X 10^{-4}

B. 154.66 X 10^{-4}

C. 273.54 X 10^{-4}

D. 196.21 X 10^{-4}

Answer

21. Which of the following compounds volatilises on heating?

A. $MgCl_2$

B. $HgCl_2$

C. $CaCl_2$

D. $FeCl_3$

Answer

22. AgCl dissolves in a solution of NH_3 but not in water because :

A. NH_3 is a better solvent than H_2O

B. Ag^+ forms a complex ion with NH_3

C. NH_3 is a stronger base than H_2O

D. the dipole moment of water is higher than NH_3

Answer

23. Which of the following is hexadentate ligand?

A. Ethylene diamine

B. Ethylene diamine tetra acetic acid

C. 1, 10-phenanthroline

D. Acetyl acetonato

Answer

24. Which of the following complex has zero magnetic moment (spin only)?

A. $[Ni(NH_3)_6]Cl_2$

B. $Na_3[FeF_6]$

C. $[Cr(H_2O)_6]SO_4$

D. $K_4[Fe(CN)_6]$

Answer

25. The IUPAC name of $[Ni(PPh_3)_2Cl_2]^{2+}$ is:

A. bis dichloro (triphenylphosphine) nickel (II)

B. dichloro bis (triphenylphosphine) nickel (II)

C. dichloro triphenylphosphine nickel (II)

D. triphenyl phosphine nickel (II) dichloride

Answer

26. Among the following the compound that is both paramagnetic and coloured is :

A. $K_2Cr_2O_7$

B. $(NH_4)_2(TiCl_6)$

C. $VOSO_4$

D. $K_3[Cu(CN)_4]$

Answer

27. The epoxide ring consists of which of the following

A. three membered ring with two carbon and one oxygen

B. four membered ring with three carbon and one oxygen

C. five membered ring with four carbon and one oxygen

D. six membered ring with five carbon and one oxygen

Answer

28. In the Grignard reaction, which metal forms an organometallic bond?

A. Sodium

B. Titanium

C. Magnesium

D. Palladium

Answer

29. Phenol is more acidic than :

A. *p*-chlorophenol

B. *p*-nitrophenol

C. *o*-nitrophenol

D. ethanol

Answer

30. Aldol condensation is given by

A. trimethylacetaldehyde

B. acetaldehyde

C. benzaldehyde

D. formaldehyde

Answer

31. Give the IUPAC name for

H3C-CH2-CO-H2C-CH2-CO-OCH3

A. ethyl-4-oxoheptanoate

B. methyl-4-oxoheptanoate

C. ethyl-4-oxohexanoate

D. methyl-4-oxohexanoate

Answer

32. The catalyst used in Rosenmund reaction is :

A. Zn/ Hg

B. Pd / $BaSO_4$

C. Raney Ni

D. Na in ethanol

Answer

33. (CH2CO)2O + RMgX →H2O?

A. $ROOCH(CH_2)COOR$

B. $RCOCH_2CH_2COCH$

C. RCOOR

D. RCOOH

Answer

34. The weakest acid amongst the following is :

A. $ClCH_2COOH$

B. HCOOH

C. FCH_2CH_2COOH

D. $CH_2(I)COOH$

Answer

35. Urea on slow heating gives :

A. $NH_2CONHNO_2$

B. $NH_2CONHCONH_2$

C. HCNO

D. $NH_2CONH_2.HNO_3$

Answer

36. *Trans* esterification is the process of :

A. conversion of an aliphatic acid to ester

B. conversion of an aromatic acid to ester

C. conversion of one ester to another ester

D. conversion of an ester into its components namely acid and alcohol

Answer

37. The correct sequence of base strengths in aqueous solution is :

A. $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N$

B. $(CH_3)_3N > CH_3NH_2 > (CH_3)_2NH$

C. $(CH_3)_3N > CH_3NH_2 = (CH_3)_2NH$

D. $(CH_3)_2NH > (CH_3)_3N > CH_3NH_2$

Answer

38. When aqueous solution of benzene diazoniumchloride is boiled, the product formed is:

A. $C_6H_5CH_2OH$

B. $C_6H_6 + N_2$

C. C_6H_5COOH

D. C_6H_5OH

Answer

39. Carbylamine reaction is given by aliphatic :

A. primary amine

B. secondary amine

C. tertiary amine

D. quaternary ammonium salt

Answer

40. C6H5CHO → NH3 ?

A. (C6H5CHN)2CH·C6H5

B. $C_6H_5NHCH_3$

C. $C_6H_5NHCH_2$

D. $C_6H_5NHC_6H_5$

Answer