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Previous Year Paper

Chemistry - 2016

Multiple Choice Questions

1. The element with the electronic configuration $1s^2\ 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^1$ is

   A. Cu

   B. Ca

   C. Cr

   D. Co

   Answer

2. Among the following, the isoelectronic specie (s) is/are

   (i) O^{2-}, F^-, Na^+, Mg^{2+}

   (ii) Na^+, Mg^+, Al^{3+}, F^-

   (iii) N^{3-}, O^{2-}, F^-, Ne

   A. (i) and (ii)

   B. (i), (ii) and (iii)

   C. (ii) and (iii)

   D. (i) and (iii)

   Answer

3. What is the atomic number of the element with symbol Uus?

   A. 117

   B. 116

   C. 115

   D. 114

   Answer

4. Match the following

List I	List II
(a) PCl_3	(i) Square planar
(b) BF_3	(ii) T-shape
(c) ClF_3	(iii) Trigonal pyramidal
(d) XeF_4	(iv) See- saw
	(v) Trigaonal planar

A. (a) (b) (c) (d)
(iv) (ii) (i) (iii)

B. (a) (b) (c) (d)
(iii) (v) (ii) (iv)

C. (a) (b) (c) (d)
(iii) (v) (ii) (i)

D. (a) (b) (c) (d)
(iii) (v) (ii) (v)

Answer

5. If the kinetic energy in J, of CH_4 (molar mass =16 g mol^{-1}) at T(K) is X, the kinetic energy in J, of O_2, (molar mass = 32 g mol^{-1}) at the same temperature is

A. X

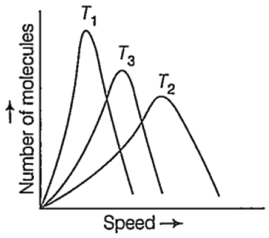
B. 2X

C. X^2

D. X/2

Answer

6. The given figure shows the Maxwell distribution of molecular speeds of a gas at three different temperatures $T_1, T_2,$ and T_3. The correct order of temperature is



A. $T_1 > T_2 > T_3$

B. $T_1 > T_3 > T_2$

C. $T_3 > T_2 > T_1$

D. $T_2 > T_3 > T_1$

Answer

7. The hybridisation of each carbon in the following compound respectively is CH_3-CO-CH_2CN

A. sp^3, sp^2, sp^3, sp

B. sp^3, sp^3, sp^2, sp

C. sp^3, sp^2, sp, sp^3

D. sp^2, sp, sp^3, sp^3

Answer

8. Given that $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$; $\Delta_r H° = -92$kJ, the standard molar enthalpy of formation in kJ mol^{-1} of $NH_3(g)$ is

A. -92

B. +46

C. +92

D. -46

Answer

9. Which one of the following is correct?

A. The equilibrium constant (K_c) is independent of temperature

B. The value of K_c is independent of initial concentrations of reactants and products

C. At equilibrium, the rate of the forward reaction is twice the rate of the backward reaction.

D. The equilibrium constant (K_c) for the reaction

Ni(s) + 4CO(g) ⇌ Ni(CO)4(g) is, Ni(CO)4CO

Answer

10. pH of an aqueous solution of NH_4Cl is

A. 7

B. >7

C. <7

D. 1

Answer

11. The order of covalent character of KF, KI, KCl is

A. KCl < KF < KI

B. KI < KCl < KF

C. KF < KI < KCl

D. KF < KCl < KI

Answer

12. Which one of the following has highest boiling point?

A. $H_3CCH_2CH_2CH_2Cl$

B. $(H_3C)_2CHCH_2Cl$

C. $(H_3C)_3CCl$

D. $H_3CCH_2CHClCH_3$

Answer

13. The product Z of the following reaction is $H_3CC{\equiv}CH \rightarrow 2HBr\ Z$.

A. $H_3CCH_2CHBr_2$

B. $H_3CCBr_2CH_3$

C. $H_3CCHBrCH_2Br$

D. $BrCH_2CH_2CH_2Br$

Answer

14. Identify X and Y in the following reaction sequence

X	Y
$(CH_3)_2CHBrCH_3$	$CH_3CH=CHCH_3$

X	Y
$(CH_3)_2CHCH_2Br$	$CH_3CH=CHCH_3$

X	Y
$(CH_3)_2CBrCH_2Br$	$(CH_3)_2C=CH_2$

X	Y
$(CH_3)_2CHCHBr_2$	$(CH_3)_2C=CH_2$

Answer

15. Which one of the following will not give flame test?

    A. Ca

    B. Ba

    C. Sr

    D. Be

    Answer

16. Which one of the following forms a basic oxide?

    A. B

    B. Tl

    C. Al

    D. Ga

    Answer

17. The gas produced by the passage of air over hot coke is

    A. carbon monoxide

    B. carbon dioxide

    C. producer gas

    D. water gas

    Answer

18. In environmental chemistry, the medium which is affected by a pollutant is called as the.....

    A. sink

    B. slag

C. solvent
D. receptor

Answer

19. Assertion (A) : Atoms with completely filled and half-filled sub-shells are stable.
Reason (R): Completely filled and half-filled sub-shells have symmetrical distribution of electrons and have maximum exchange energy.
The correct answer is

A. (A) and (R) are correct, (R) is the correct explanation of (A)
B. (A) and (R) are correct, (R) is not the correct explanation of (A)
C. (A) is correct, but (R)is not correct
D. (A) is not correct, but (R) is correct

Answer

20. Which one of the following does not exhibit geometrical isomerism?

A. Octahedral complex with formula $[MX_2L_4]$
B. Square planar complex with formula $[MX_2L_2]$
C. Tetrahedral complex with formula [MAB XL]
D. Octahedral complex with formula $[MX_2(L\text{ -}L)_2]$

Answer

21. Which of the following metal ions has a calculated magnetic moment value of ✓24. BM?

A. Mn^{2+}
B. Fe^{2+}
C. Fe^{3+}
D. Co^{2+}

Answer

22. Xenon reacts with fluorine at 873 Kand 7 bar to form XeF_4. It his reaction, the ratio of xenon and fluorine required is

A. 1:5
B. 10:1
C. 1:3
D. 5:1

Answer

23. The packing efficiency of simple cubic (sc), body centred cubic (bcc) and cubic close packing (ccp) lattices follow the order

A. bcc <ccp <sc
B. ccp <bcc <sc
C. sc <ccp <bcc
D. sc <bcc <ccp

Answer

24. The experimental depression in freezing point of a dilute solution is 0.025 K. If the van't Hoff factor (i) is 2.0, the calculated depression in freezing point (in K) is

A. 0.00125

B. 0.025

C. 0.0125

D. 0.05

Answer

25. The molality of an aqueous dilute solution containing non-volatile solute is 0.1 m. What is the boiling temperature (in °C) of solution? (Boiling point elevation constant, K_b = 0.52 kg $mol^{-1}K$; boiling temperature of water = 100°C).

A. 100.0052

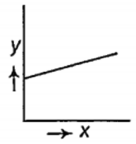
B. 100.052

C. 100.0

D. 100.52

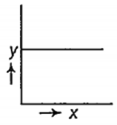
Answer

26. Which one of the following is correct plot of Λ_m (in S cm^2 mol^{-1}) and √C (in $mol/L^{1/2}$) for KCl solution? (y= $\Lambda_{m;}$ x= √C)

A. 

B. 

C. 

D. 

Answer

27. For the reaction 5Br-(aq) + 6H+(aq) + BrO3- → 3Br2(aq) + 3H2O (l) if, -Δ[BrO3-]Δt= 0.01 mol L-1min-1, Δ[Br2]Δtin mol L-1min-1is

A. 0.01

B. 0.3

C. 0.03

D. 0.005

Answer

28. Which one of the following is an emulsion?

A. Milk

B. Soap lather

C. Butter

D. Vanishing cream

Answer

29. Copper matte contains .....

A. Cu_2O, Cu_2S

B. Cu_2O, FeO

C. Cu_2S, FeS

D. Cu_2S, FeO

Answer

30. X reacts with dilute nitric acid to form 'laughing gas'. What is X ?

A. Cu

B. P_4

C. S_8

D. Zn

Answer

31. What is the change in the oxidation state of Mn in the reaction of MnO4- with H_2O_4 in acidic medium?

A. 7 ➔4

B. 6➔4

C. 7➔2

D. 6➔2

Answer

32. In Haber's process, 50.0 g of N_2(g) and 10.0 g of H_2(g) are mixed to produce NH_3 (g). What is the number of moles of NH_3 (g) formed?

A. 3.33

B. 2.36

C. 2.01

D. 5.36

Answer

33. The following reaction occurs in acidic medium $KMnO_4 + 8H^+ + 5e^- \rightarrow K^+ + Mn^{2+} + 4H_2O$. What is the equivalent weight of $KMnO_4$?

(Molecular weight of $KMnO_4$ = 158)

A. 79.0

B. 31.6

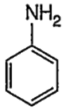
C. 158.0

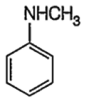
D. 39.5

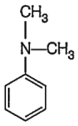
Answer

34. Which is the strongest base among the following?

A. H_3CNH_2

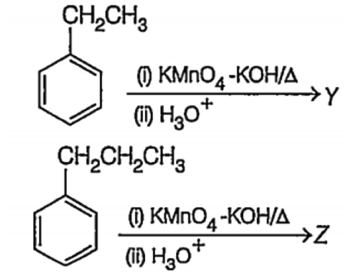
B. 

C. 

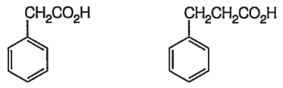
D. 

Answer

35. Consider the following reactions,



1.

A. 

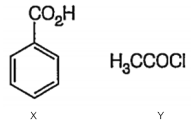
B. 

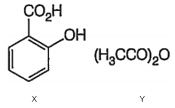
C. 

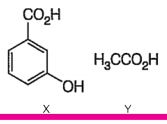
D. 

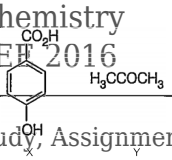
Answer

36. X + Y →H+ Aspirin + H_3CCOOH. Identify X and Y from the following

A. 

B. 

C. 

D. 

Answer

37. R-CN →(ii) H3O+(i) SnCl2+ HCl R-CHO. What is the name of the above reaction?

A. Rosenmund

B. Williamson

C. Stephen

D. Kolbe

Answer

38. Chloroxylenol is an example of.....

A. antiseptic

B. antipyretic

C. analgesic

D. tranquiliser

Answer

39. Hormone that maintains the blood glucose level within the limit is

A. thyroxine

B. Insulin

C. testosterone

D. epinephrine

Answer

40. The poly dispersity index (PDI) of a polymer is ($M-_w$ = weight average molecular mass and $M-_n$ = number average molecular mass)

A. the product Mn- and Mw-

B. the sum of Mn- and Mw-

C. the difference between Mw- and Mn-

D. the ratio between Mw- and Mn-

Answer