CHEMISTRY

AAKASH INSTITUTE ENGLISH

TEST 2

Exercise

1. Select the Incorrect statement among the following.

A. ZnO is white at room temperature but turns yellow on heating

B. Density of crystal remains same in Frenkel defect

C. The appearance of colour in solid alkali metal halides is generally due to F-centres

D. $Fe_{0.93}O$ compound has stoichiometric defect.

Answer:

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2. The emf of the cell, Cu(s)Cu^2+ (aq., 1M)||Ag^+ (aq, 0.1M)/Ag(s) is x volt. When the concentration of anode and cathode are interchanged then emf of cell becomes y volt. Select the correct option among the following

A. x gt y

B. x lt y

C. $x = y$

D. $y = 0$ and $x > 0$

Answer:

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3. If the values of stepwise stability constants for a series of successive reactions are $\log K_1 = 4, \log K_2 = 3.2, \log K_3 = 2.7$ and $\log K_4 = 2$, what is the value of β_4?

A. 11.9

B. 7.94 X 10^{11}

C. 1.47 X 10^5

D. 27.4

Answer:

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4. Which of the following does not form micelles in aqueous solution?

A. Pyridinium chloride

B. Cetyltrimethylammonium bromide

C. Sodium stearate

D. Dodecyl trimethyl ammonium chloride

Answer:

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5. A reaction can never be spontaneous if

A. $\Delta H > 0$ and $\Delta S > 0$

B. $\Delta H < 0$ and $\Delta S < 0$

C. $\Delta H > 0$ and $\Delta S < 0$

D. $\Delta H < 0$ and $\Delta S > 0$

Answer:

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6. If solubility of AgCl(s) in water is $10^{-5}M$ then the solubility of AgCl in 0.1 M $AgNO_3$ will be

A. $10^{-10}M$

B. $10^{-6}M$

C. $10^{-12}M$

D. $10^{-9}M$

Answer:

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7. The number of mole(s) of $K_2Cr_2O_7$ required to oxidise two moles of ferrous oxalate in acidic medium is

A. $\frac{1}{6}$

B. 1

C. $\frac{2}{3}$

D. 3

Answer:

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8. Two complexes A and B have dissociation constants 1.0 x 10^{-12} and 4.7 x 10^{-14} respectively. Which complex will be more stable?

A. A

B. B

C. Both are equally stable

D. Cannot be determined

Answer:

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9. Select the pair of ions in which both species do not contain S - S linkage

A. $S_2O_7^{-2}$, $S_2O_8^{-2}$

B. $S_2O_6^{-2}$, $S_2O_3^{-2}$

C. $S_4O_6^{-2}$, $S_2O_5^{-2}$

D. $S_2O_6^{-2}, S_2O_7^{-2}$

Answer:

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10. Jahn-Teller effect is predominantly observed in low spin complexes having configuration

A. d^5

B. d^7

C. d^6`

D. d^8

Answer:

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11. Consider the complexes : $A = [FeCl_6]^{-4}, B[Fe(H_2O)_6]^{2+}$ and $C = [Fe(CN)_6]^{4-}$, The correct order of decreasing wavelength of light absorbed for the following complexes is

A. C > B > A

B. A > C > B

C. B > A > C

D. A > B > C

Answer:

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12. For a particular complex, the dissociation equilibrium constant is given as 2.3 x 10^{-9}. What will be the overall stability constant for this complex?

A. 4.35 x 10^{-10}

B. 4.35 x 10^{10}

C. 4.35 x 10^{-8}

D. 4.35 x 10^{8}

Answer:

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13. If β is the formation constant, then the instability constant = _____

A. 1 – β

B. β-1

C. (1/β)

D. log(β)

Answer:

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14. The most acidic compound among the following is

A. Picric acid

B. Benzoic acid

C. p-nitro benzoic acid

D. Formic acid

Answer:

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15. Ethylene oxide when treated with phenyl magnesium bromide followed by hydrolysis ylelds

A. Benzene

B. Ethylene

C. 2-ethylphenol

D. 2-phenylethanol

Answer:

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16. Haemoglobin is a complex compound of which metal ion?

A. Fe^{2+}

B. Fe^{3+}

C. Co^{2+}

D. Co^{3+}

Answer:

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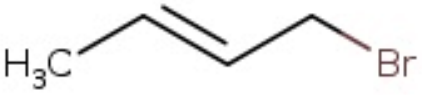
17. What is the IUPAC name of the following compound?



A. 1-Bromo-3-methylprop-2-ene

B. 3-Bromo-1-methylpropene

C. 1-Bromobut-2-ene

D. 4-Bromobut-2-ene

Answer:

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18. Incorrect statement among the following is

A. Natural rubber is a polymer of isoprene

B. Dacron is a condensation polymer

C. Chloroprene is the monomer for the neoprene polymer

D. Caprolactam is used for the manufacture of Nylon-6, 6.

Answer:

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19. Which is not an analgesic?

A. Aspirin

B. Morphine

C. Novalgin

D. Penicillin

Answer:

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20. Choose the correct statement among the following

A. Sucrose is a reducing sugar

B. Threonine is an essential amino acid

C. Vitamin A is water soluble

D. Fructose is an aldohexose

Answer:

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21. What is the general formula for haloalkanes? (X=halogen atom, n = 1, 2, 3...)

A. $C_nH_{2n}X$

B. $C_nH_{2n+1}X$

C. $C_nH_{2n-1}X$

D. $C_nH_{2n-3}X$

Answer:

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22. According to IUPAC, what is the suffix used for naming alcohols?

A. -al

B. -ol

C. -one

D. -OH

Answer:

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23. The volume strength of 10% (w/v) H_2O_2 solution is

A. 32.94 V

B. 25.64 V

C. 18.17 V

D. 28.42 V

Answer:

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24. Thermally most stable carbonate among the following is

A. $MgCO_3$

B. K_2CO_3

C. Li_2CO_3

D. $CaCO_3$

Answer:

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25. The basic structural unit of pyrosilicates is

A. $(Si_3O_9)^{6-}$

B. $\left(SiO_3^{2-}\right.$

C. $(Si_2O_7)^{6-}$

D. `(Si_2O_6)^(4-)

Answer:

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26. If partial pressure of N_2 in gaseous mixture containing equal mass of CO and N_2 is 0.5 atm then the total pressure of gaseous mixture is

A. 0.33 atm

B. 1.25 atm

C. 0.75 atm

D. 1 atm

Answer:

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27. Under low pressure, minimum deviation from ideal gas behaviour is expected from

A. NH_3

B. SO_2

C. N_2

D. CO_2

Answer:

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28. Molality of an aqueous solution having 0.9 mole fraction of solvent is

A. 6.17 m

B. 4.25 m

C. 3.10 m

D. 5.11 m

Answer:

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29. How many maximum number of electron(s) can be identified with the following quantum numbers? $n = 4, I = 2, S = +\left(\frac{1}{2}\right)$

A. 5

B. 3

C. 2

D. 1

Answer:

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30. If the uncertainty in velocity of electron is $1 \cdot 10^{7} ms^{-1}$ then the uncertainty in position of electron will be (mass of an electron is `9 *10^-28 g)

A. $4.85 \cdot 10^{-13} m$

B. $5.86 \cdot 10^{-12} m$

C. $3.12 \cdot 10^{-13} m$

D. $6.45 \cdot 10^{-11} m$

Answer:

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31. What is the common name of Butan-2-ol?

A. n-Butyl alcohol

B. sec-Butyl alcohol

C. Isobutyl alcohol

D. tert-Butyl alcohol

Answer:

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32. The pair of species having same bond order is

A. O_2, NO^+

B. O_2^-, N_2^+

C. C_2, O_2

D. O_2^{2-}, N_2

Answer:

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33. The pair of iso-structural species is

A. SF_4 and SiF_4

B. CO_2 and SO_2

C. ClO_3^- and NF_3

D. XeF_2 and I_3^+

Answer:

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34. How many carbon atoms are present in the parent chain of tert-Butyl alcohol?

A. 2

B. 3

C. 4

D. 5

Answer:

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35. 0.23 g of a nitrogen containing organic compound was Kjeldahlised and the ammonia obtained requires 23 ml of $\frac{M}{10}$ H_2SO_4 for neutralization. The percentage of nitrogen in the organic compound is

A. 0.14

B. 0.28

C. 0.35

D. 0.21

Answer:

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36. Among the given options, the correct order of decreasing reactivity of compounds towards an electrophilic reagent is

A. Phenol > Anisole > Chlorobenzene

B. Benzene > Phenol > Chlorobenzene

C. Toluene > Nitrobenzene > Benzene

D. Chlorobenzene > Toluene > Benzene

Answer:

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37. What is the IUPAC name of Isopropyl alcohol?

A. Propan-1-ol

B. Propan-2-ol

C. 2-Methylpropan-1-ol

D. 2-Methylpropan-2-ol

Answer:

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38. Select the incorrect statement among the following

A. Photochemical smog are oxidising agents

B. Clean water would have a BOD value less then 5 ppm

C. During formation of classical smog the level of ozone in the atmosphere goes down

D. Ozone depletion potential is maximum in CFC's

Answer:

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39. If the freezing point of 0.1 molal solution of X in water is more than 0.1 molal solution of Y in water then which among the following conclusion can be drawn?

A. X is undergoing dissociation but not Y

B. Y is undergoing dissociation but not X

C. Both X and Y do not dissociate or associate

D. Molecular mass of X is smaller than molecular mass of Y

Answer:

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40. The heating of benzyl methyl ether with HI produces majorly

A. Benzyl iodide and methanol

B. Benzyl alcohol and iodomethane

C. Benzyl alcohol and methanol

D. Benzyl iodide and methane

Answer:

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41. A biomolecule contains 2% magnesium by mass. The minimum molecular mass of biomolecule is

A. 1200 u

B. 1800 u

C. 2400 u

D. 2000 u

Answer:

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42. The correct statement among the following is

A. All the lanthanoids are radioactive elements

B. Lanthanoid contraction is the accumulation of successive shrinkages

C. Actinoids have +4 as most common oxidation state

D. All lanthanoids are very hard metals

Answer:

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43. For the reversible reaction $NaNO_3(s) \Leftrightarrow NaNO_2(s) + \left(\frac{1}{2}\right)O_2(g)$ .The equilibrium shifts in forward direction

A. By decreasing the temperature

B. By Increasing the pressure of reaction vessel

C. By adding $NaNO_2(s)$

D. By increasing the volume of reaction vessel

Answer:

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44. A metal crystallizes in BCC lattice. If the diameter of metal atom is 200 pm then the edge length of unit cell is

A. 288.85 pm

B. 140.41 pm

C. 230.95 pm

D. 405.56 pm

Answer:

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45. Choose the incorrect statement among the following.

A. Zeolites are biochemical catalyst

B. Coenzyme increases the catalytic activity of enzymes

C. In Haber's process molybdenum(Mo) acts as Promoter

D. V_2O_2 acts ras catalyst in Contact process for the manufacture of H_2SO_4

Answer:

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46. Two chemically non-reactive gases are separately contained in two vessels of same capacity at pressure P_1 and P_2 respectively. If two vessels are connected, the total pressure of gaseous mixture will

A. More than $(P_1 + P_2)$

B. Equal to $(P_1 \cdot P_2)$

C. Less than $(P_1 + P_2)$

D. Equal to $(P_1 + P_2)$

Answer:

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47. 28 g of N_2 at 299.6 K having a pressure of 2.46 atm occupy

A. 8.45 L

B. 10.5 L

C. 5 L

D. 10 L

Answer:

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48. Numerical value of universal gas constant 'R' depends on

A. Units of measurement

B. Volume of gas

C. Nature of gas

D. Pressure of gas

Answer:

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49. Units of van der Waal's constants 'a' and 'b' are respectively

A. L atm mol^{-1} and mol^{-2} L

B. L^{-1} atm mol^{-1} and mol L^{-1}

C. L^2atm mol^{-2} and mol^{-1} L

D. L^{-2}atm mol^2 and mol^{-1} L

Answer:

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50. A system absorbs 600 J of heat and does a work of 200 J on its surroundings. ΔE of system is

A. 800 J

B. (-395.5) J

C. 400 J

D. (-400) J

Answer:

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51. For an isothermal expansion of an ideal gas

A. $q=0$

B. $\Delta V=0$

C. $W=0$

D. $\Delta E=0$

Answer:

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52. ΔH - ΔE for the combustion of gaseous propane at temperature T is

A. (-RT)

B. (+RT)

C. (-3RT)

D. (+3RT)

Answer:

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53. Calculate ΔH for the reaction- $Al + Cr_2O_3 \rightarrow Cr + Al_2O_3$ When enthalpy of

formation of Al_2O_3 and Cr_2O_3 are -1596 kJ and -1133 kJ respectively.

A. (-463) KJ

B. (-1265) KJ

C. (-2710) KJ

D. (+2730) KJ

Answer:

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54. Which of the following is strongest reducing agent?

A. Al

B. Ba

C. Be

D. K

Answer:

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55. Number of electrons involved in the conversion of one nitrate ion to hydrazine will be

A. 7

B. 14

C. 4

D. 5

Answer:

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56. $xI^{-1} + ylO_3 + zH^+ \rightarrow I_2 + H_2O$. x, y, z in the given redox reactions are

A. 3, 6, 1

B. 3, 1, 6

C. 5, 6, 1

D. 5, 1,6

Answer:

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57. Oxidation states in nitrogen can range from

A. (-3) to +5

B. (+3 to +5)

C. O to +5

D. (-3 to +4)

Answer:

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58. Glycerol is a _____ alcohol.

A. monohydric

B. dihydric

C. trihydric

D. tetrahydric

Answer:

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59. 1 g equivalent of V_2O_5 in the given reaction is equal to $V_2O_5 + Zn \rightarrow ZnO + V$ (Given at. wt. of V = A)

A. $\frac{2A}{5}$

B. $\frac{A}{10}$

C. $\frac{2A + 80}{10}$

D. $\frac{2A + 80}{5}$

Answer:

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60. Find out the statement which is not correct for the following reaction

$$4CrO_5 + 6H_2SO_4 - \rightarrow 2Cr_2(SO_4)3 + 6H_2O + 7O_2$$

A. It is intramolecular redox reaction

B. It is disproportionation reaction

C. CrO_5 is both an oxidising as well as reducing agent

D. Both (2) & (3)

Answer:

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61. One mole of an ideal gas expands isothermally from 10 L to 100 L. Change in entropy of the process will be

A. 10 R

B. 0.203 R

C. R/(10)

D. 2.303 R

Answer:

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62. Find out the correct statement(s) with respect to following transition C (Diamond) $\rightarrow$ C (Graphite) , ΔH = -1.6 kJ

A. Diamond is exothermic substance

B. Graphite is endothermic substance

C. Graphite is more stable than diamond

D. Both (1) & (2)

Answer:

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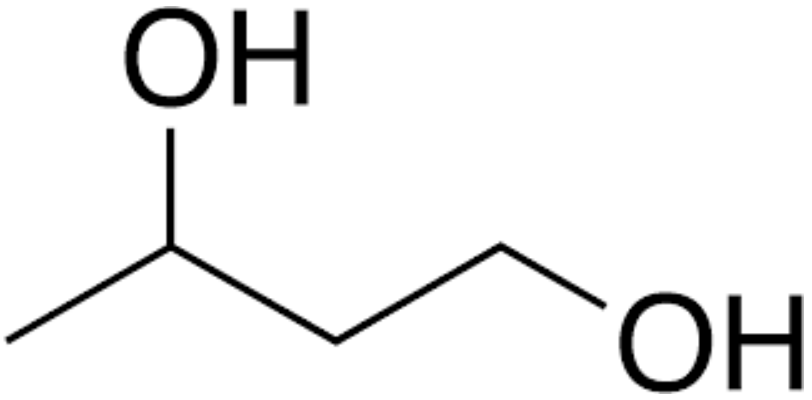
63. Identify the correct IUPAC name for the given compound.



A. Butane-diol

B. Butylene glycol

C. Butane-1,3-diol

D. Butane-1,4-diol

Answer:

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64. Which of the following is not a polyhydric alcohol?

A. Cyclohexanol

B. Ethylene glycol

C. Propylene glycol

D. Benzene-1,2-diol

Answer:

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65. Which of the following is/are correct?

A. NH_3 is protic solvent

B. HCO_3^- is Bronsted acid as well as Bronsted base

C. SO_3 is Lewis acid

D. All are correct

Answer:

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66. EDTA is a/an

A. Lewis base

B. Arrhenius acid

C. Bronsted base

D. All of these

Answer:

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67. pH of 10^{-10} M NaOH solution will be near to

A. 9

B. 7

C. 10

D. 4

Answer:

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68. In the reaction $SO_2 + O_3 \rightarrow SO_3 + O_2$ Equivalent weight of SO_2 will be

A. M/3

B. M/6

C. M/1

D. M/2

Answer:

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69. Conjugate acid of NH_2^- is

A. NH_2OH

B. NH_3

C. N_2H_4

D. NH_4^+

Answer:

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70. Which of the following is possible acid base reaction?

A. $PH_3 + NH_4^+ \rightarrow PH_4^+ + NH_3$

B. $NH_3 + PH_4^+ \rightarrow NH_4^+ + PH_3$

C. $PCl_5 \rightarrow PCl_3 + Cl_2$

D. None of these

Answer:

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71. A weak acid shows K_a = 0.0001. Calculate equilibrium constant for its reaction with strong base.

A. 10^{-11}

B. 10^{-10}

C. 10^4

D. 10^{10}

Answer:

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72. Will a precipitate of $Mg(OH)_2$ be formed in a $0.002M$ solution of $Mg(NO_3)_2$ if the pH of solution is adjusted to 9. K_{sp} of $Mg(OH)_2 = 8.9 \times 10^{-12}$.

A. Precipitates will be formed initially and starts dissolving after some time

B. Precipitates of $Mg(NO_3)_2$ will form

C. Precipitate of $Mg(OH)_2$ will be formed

D. Precipitate of $Mg(OH)_2$ will not be formed

Answer:

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73. 1 L of methane weighs 1.2 g and 2 L of an alkyne 'X' weighs 8.09 g under identical conditions of temperature and pressure. Unknown gas 'X' is

A. C_4H_6

B. C_5H_6

C. C_2H_2

D. C_3H_4

Answer:

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74. Which of the following liquid shows highest surface tension?

A. CH_3OH

B. C_2H_5OH

C. H_2O

D. `CCl4

Answer:

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75. Which of the following is an acidic salt?

A. NaH_2PO_3

B. Na_2HPO_3

C. Na_2HPO_4

D. All of these

Answer:

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76. Find out the extensive property.

A. Heat capacity

B. Refractive index

C. Boiling point

D. Specific volume

Answer:

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77. Calculate the bond energy of N-N bond if heat of atomisation of NH_3 and N_2H_4 are 'x' and 'y' kcal mol^{-1} respectively.

A. $\frac{3y-4x}{4}$

B. $\frac{4y-3x}{3}$

C. $\frac{y-4x}{3}$

D. $\frac{3y-4x}{3}$

Answer:

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78. Which of the following is best fuel? Given heats of combustion of CH_4, C_2H_4, C_2H_2 and C_2H_6 are -891, -1412, 1299, -1550 kJ `mol^(-1)

A. C_2H_2

B. C_2H_6

C. CH_4

D. C_2H_4

Answer:

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79. An open flask contains air at $27^\circ C$ Calculate the temperature at which it should be heated so that $\frac{1}{3}$ rd of air measured at $27^\circ C$ escapes out

A. 127 K

B. 400 K

C. 177 K

D. 450 K

Answer:

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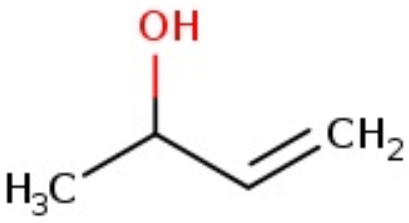
80. What is the correct name of the following compound?



A. But-3-enol

B. But-3-en-2-ol

C. But-1-en-3-ol

D. But-2-en-3-ol

Answer:

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81. Calculate the volume of 0.1 M $FeSO_4$ reacted with 20 mL of 0.2 N $K_2Cr_2O_7$ in acidic medium.

A. 80 ML

B. 25 ML

C. 40 ML

D. 20 ML

Answer:

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82. Equal moles of each H_2, CH_4 and SO_3 are kept in a vessel. A hole is made in vessel. After an hour the partial pressures of gases will be in the order of

A. $P_{CH_4} > P_{H_2} > P_{SO_3}$

B. $P_{CH_4} > P_{SO_3} > P_{H_2}$

C. $P_{H_2} > P_{CH_4} > P_{SO_3}$

D. $P_{SO_3} > P_{CH_4} > P_{H_2}$

Answer:

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83. Calculate enthalpy change for

$C_6H_5COOH \rightarrow C_6H_5COO^{-} + H^{+}$ (p break)

$C_6H_5COOH + OH^{-} \rightarrow C_6H_5COO^{-} + H_2O + q_1$

$H^{+} + OH^{-} \rightarrow H_2O + q_2$

A. $-q_1 + q_2$

B. $-q_1 - q_2$

C. $q_1 + q_2$

D. $q_1 - q_2$

Answer:

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84. When 20 mL of a strong acid is mixed to 20 mL of strong alkali, the temperature rises by 10°C. What would be the temperature rise if 200 mL of each liquid are mixed?

A. 0.5°C

B. 0.10°C

C. 5°C

D. 10°C

Answer:

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85. Calculate percentage purity of hydrogen peroxide, 0.2 g of which has been reacted with 20.0 mL of decimolar $KMnO_4$ in acidic medium?

A. 0.85

B. 0.9

C. 0.17

D. 0.65

Answer:

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86. Calculate the percentage of AB_3 dissociated in the following reaction $AB_3(g) \rightleftharpoons AB_2(g) + \frac{1}{2}B_2(g)$ Given initial pressure 800 mm and total pressure at equilibrium is 900 mm of Hg.

A. 0.4

B. 0.5

C. 0.2

D. 0.25

Answer:

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87. Which of the following is/are true for Boyle's law?

A. $\left(\frac{dP}{dV}\right)_T = \frac{K}{V}$

B. $\left(\frac{dP}{dV}\right)_T = \frac{K}{V^2}$

C. PV = constant

D.

Answer:

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88. Compare the average molar kinetic energies of He and Ar at 300 K

A. $K.E_{(He)} > K.E_{(Ar)}$

B. Cannot be compared

C. $K.E_{(He)} = K.E_{(Ar)}$

D. $K.E_{(He)} > \frac{1}{2}K.E_{(Ar)}$

Answer:

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89. Number of molecules present in $1dm_3$ of N_2 at NTP_1 whose compressibility factor is 1.5 will be

A. $1.79 \cdot 10^{21}$

B. $0.029 \cdot 10^{23}$

C. $1.79 \cdot 10^{23}$

D. $1.79 \cdot 10^{22}$

Answer:

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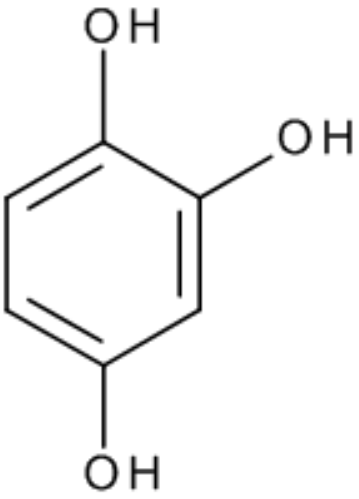
90. What is the correct IUPAC name of the following phenol?



A. Benzene-1,2,4-triol

B. 1,3,4-Benzenetriol

C. Benzene-1,2,4-triphenol

D. 1,2,4-Triphenol

Answer:

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91. In froth floatation method, potassium ethyl xanthate is added to

A. x gt y

B. x lt y

C. $x = y$

D. $y = 0$ and $x > 0$

Answer:

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92. If $A\Delta_o$ is the octahedral crystal field splitting energy, then the CFSE for $\left[Fe(CN)_4\right]^{4-}$ is (ignore pairing energy)

A. 0

B. 3

C. 1

D. 2

Answer:

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93. Which of the following is true regarding polyhydric alcohols?

A. It should have one or more OH groups

B. It should have two or more OH groups

C. It should have three or more OH groups

D. It should have more than four OH groups

Answer:

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94. Which of the following types of alcohol contain a bond between sp2 hybridised carbon and OH group?

A. Primary allylic alcohols

B. Secondary allylic alcohols

C. Tertiary allylic alcohols

D. Vinylic alcohols

Answer:

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95. Consider the following statements. Br I.Extraction of gold and silver involves leaching with CN^- . Br II. Cast iron is the purest form of commercial iron. Br III. Copper matte contains Cu_2S and FeS. The correct statement(s) is/are

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96. Which of the following terms does not describe $CH_2 = CH - CH_2OH$?

A. Primary

B. Monohydric

C. Allylic

D. Vinylic

Answer:

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97. According to Werner's theory, the primary valency and secondary valency in complex $\left[Co(NH_3)_4Cl_2\right]CI$ is respectively

A. a(i), b(v), c(iv), d(i)

B. a(iv), b(i), c(ii), d(v)

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

D. a(ii), b(iii), c(i), d(iv)

Answer:

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98. Strong Jahn-Teller distortion is observed for

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99. Which of the following is not a vinylic alcohol?

A. $CH_2 = CH - OH$

B. $HO - CH = CH - CH_3$

C. $CH_2 = CH - CH_2 - OH$

D. $CH_3 - CH_2 - CH = CH - OH$

Answer:

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100. The molecular weight of a gas is 45. Its density at STP is

A. 22.4 g/L

B. 11.2 g/L

C. 5.7 g/L

D. 2.0 g/L

Answer:

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101. What is the correct common name for $CH_3OC_2H_5$?

A. Methyl methyl ether

B. Methyl ethyl ether

C. Ethyl ethyl ether

D. Ethyl methyl ether

Answer:

Watch Video Solution

102. Which of the following compounds is ethoxyethane?

A. CH_3OCH_3

B. $CH_3OC_2H_5$

C. $C_2H_5OC_2H_5$

D. $C_2H_5OC_3H_7$

Answer:

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103. The possible number of enantiomeric pair(s) for the complex ion $\left[Co(en)(NH_3)_2Cl_2\right]^+$ is

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104. The oxide of which of the following metal is reduce by carbon reduction method?

A. Fe

B. Cu

C. Zn

D. All of these

Answer:

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105. Identify the incorrect name for $CH_3 - O - C_6H_5$.

A. Methyl phenyl ether

B. Methoxybenzene

C. Anisole

D. Phenetole

Answer:

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106. Which of the following is not an analgesic drug?

A. Aspirin

B. Morphine

C. Novalgin

D. Penicillin

Answer:

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107. $HgCl_2$ reacts with excess of KI to give a red precipitate A which becomes soluble in excess of KI to form compound B. A and B are respectively

A. $HgI_2, k4HgI$

B. $K_2HgI_4, (NH_4)_2HgI_4$

C. K_2HgI_4, Hg_2NH_2OI

D. HgI_2, K_2HgI_4

Answer:

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108. In neutral and faintly alkaline solutions, permanganate ion oxidises thiosulphate ions to form

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109. Hybridization of the central atom in the anionic part of the product formed when XeF_2 reacts with PF_5 is

A. sp^3

B. sp^3d

C. sp^3d^2

D. sp^2

Answer:

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110. In the following statements, which combination of true (T) or false (F) options is correct? I. Hydroxides of lanthanoides are less basic than actinoides br II. Eu2+ is a good reducing agent. br III. Actinoides show greater range of oxidation states than lanthanoides. br IV. Aqueous solution of Ce^{3+} is green

A. I,II,IV

B. II,III,IV

C. I,II,III

D. I,III,IV

Answer:

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111. The species which cannot be oxidized by O_3 is

A. KI

B. FeSO_4

C. KMnO_4

D. K_2MnO_4

Answer:

Watch Video Solution

112. What is the IUPAC name of $CH_3 - O - CH_2 - CH_2 - OCH_3$?

A. 1,2-Dimethoxyethane

B. 1,2-Dimethoxyethane

C. 2,3-Dimethoxyethane

D. 1,4-Dimethoxypropane

Answer:

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113. Identify the incorrect match related to structure of given interhalogen compounds.

A. IF_7- PENTAGONAL BIPYRAMIDAL

B. ClF_5- TRIGONAL BIPYRAMID

C. BrF_3 - BENT T SHAPE

D. ClF- LINEAR

Answer:

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114. How many P-O-P bonds are present in P_4O_{10} ?

A. NH_3

B. SO_2

C. N_2

D. CO_2

Answer:

Watch Video Solution

115. The lanthanoid ion which contains unpaired electrons is

A. Ce^4+

B. Yb^2+

C. Lu^{3+}

D. Eu^{2+}

Answer:

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116. On reaction with excess ammonia, chlorine gas gives nitrogen gas along with a compound X. X reacts with $Ca(OH)_2$ and gives Y, a colorless gas with pungent smell. Y on reaction with excess of chlorine gives Z and HCl. What is Z?

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117. During the oxidation of iodine by concentrated nitric acid, the oxidation state of iodine atom changes from

A. $4.85 \cdot 10^{-13} m$

B. $5.86 \cdot 10^{-12} m$

C. $3.12 \cdot 10^{-13} m$

D. $6.45 \cdot 10^{-11} m$

Answer:

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118. What is the IUPAC name of $CH_3(CH_2)_6 - OC_6H_5$?

A. Heptyl phenyl ether

B. 1-Phenoxyheptane

C. 1-Hepoxybenzene

D. Phenyl heptyl ether

Answer:

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119. In which of the following arrangements, the order is according to the property indicated against it?

A. O_2, NO^+

B. O_2^-, N_2^+

C. C_2, O_2

D. O_2^{2-}, N_2

Answer:

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120. How many of the following ore(s) contain(s) copper `

A. Chalopyrite, Cuprite, Chalococite, Malachite, Azurite, Bornite, Limonite, Zicite, Braunite

B.

C.

D.

Answer:

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121. The oxidation state of chlorine atom in hypochlorous acid is

A. Both (i) and (iv)

B. Only (i)

C. Both (i) and (ii)

D. All (i), (ii), (iii) and (iv)

Answer:

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122. Gas A is formed on the hydrolysis of calcium cyanamide. The gas can turn moist litmus paper blue and forms a brown precipitate with Nessler's reagent. The gas, A is

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123. Propene when reacted with water in the presence of H_2SO_4 gives _____

A. Propan-1-ol

B. Propan-2-ol

C. 2-Methylpropan-1-ol

D. 2-Methylpropan-2-ol

Answer:

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124. Thermal decomposition of barium azide produces the same gas as produced in the thermal decomposition of

A. X is undergoing dissociation but not Y

B. Y is undergoing dissociation but not X

C. Both X and Y do not dissociate or associate

D. Molecular mass of X is smaller than molecular mass of Y

Answer:

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125. Cumene hydroperoxide on hydrolysis with dilute H_2SO_4 gives __

A. alcohol and phenol

B. only phenol

C. phenol and acetone

D. alcohol and acetone

Answer:

Watch Video Solution

126. Consider the following oxoacids of sulphur I.H_2SO_3 II. $H_2S_2O_7$ III. H_2SO_3 IV. $H_2S_2O_8$ V. $H_2S_2O_6$ VI. $H_2S_2O_4$ The oxoacids containing peroxy linkage are

A. 1200 u

B. 1800 u

C. 2400 u

D. 2000 u

Answer:

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127. The type and number of chelate rings present in complex, $[Fe(EDTA)]^-$ are

A. All the lanthanoids are radioactive elements

B. Lanthanoid contraction is the accumulation of successive shrinkages

C. Actinoids have +4 as most common oxidation state

D. All lanthanoids are very hard metals

Answer:

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128. In 3d series, the elements which exhibit highest and lowest melting point are respectively

A. 288.85 pm

B. 140.41 pm

C. 230.95 pm

D. 405.56 pm

Answer:

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129. The value of Boyle's law constant (in S.I. unit) for 100ml of gas at 1.2atm is about:

A. 0.0012 atm-ml

B. 120atm-ml

C. 12J

D. 1.2J

Answer:

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130. Number of molecules present in $1dm^3$ of N_2 at `NTP, whose compressibility factor is 1.5 will be

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131. The value of Boyle's law constant (in S.I. unit) for 200ml of gas at 1.2atm is about:

A. 240atm-mL

B. 0.0024atm-L

C. 24.3J

D. 0.24 J

Answer:

Watch Video Solution

132. The value of Boyle's law constant (in S.I. unit) for 350ml of gas at 1.2atm is about:

A. 42J

B. 4.2J

C. 0.0042atm-ml

D. 420atm-ml

Answer:

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133. Calculate percentage purity of hydrogen peroxide, 0.2 g of which has been reacted with 20.0 mL of decimolar $KMnO_4$ in acidic medium?

A. 800 J

B. (-395.5) J

C. 400 J

D. (400) J

Answer:

134. When 20 mL of a strong acid is mixed to 20 mL of strong alkali, the temperature rises by 10°C. What would be the temperature rise if 200 mL of each liquid are mixed?

A. q=0

B. $\Delta V=0$

C. W=0

D. ΔE=0

Answer:

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135. Calculate enthalpy change for

$C_6H_5COOH \rightarrow C_6H_5COO^{-} + H^{+}$ (p break)

$C_6H_5COOH + OH^{-} \rightarrow C_6H_5COO^{-} + H_2O + q_1$

$H^{+} + OH^{-} \rightarrow H_2O + q_2$

A. (-RT)

B. (+RT)

C. (-3RT)

D. (+3RT)

Answer:

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136. Equal moles of each H_2, CH_4, and SO_3, are kept in a vessel A hole is made in vessel. After an hour the partial pressures of gases will be in the order of

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137. Calculate the volume of 0.1 M $FeSO_4$, reacted with 20 mL of 0.2 N $K_2Cr_2O_7$, in acidic medium

A. 10 ml

B. 20 ml

C. 40 ml

D. 60 ml

Answer:

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138. The weight of 350 ml of diatomic gas at $0^{\circ}C$ and 2 atm pressure is 1 gm. What is the atomic weight of the substance?

A. 27.7

B. 17.7

C. 15.57

D. 16

Answer:

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139. An open flask contains air at $27^\circ C$ Calculate the temperature at which it should be heated so that $\frac{1}{3}$ rd of air measured at $27^\circ C$ escapes out

A. 3, 6, 1

B. 3, 1, 6

C. 5, 6, 1

D. 5, 1,6

Answer:

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140. Which of the following is best fuel? Given heats of combustion of $CH_4, C_2H_4, C_2H_2,$ and C_2H_6, are -891, -1412, - 1299, -1550 kJ mol^{-1}

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141. Calculate the bond energy of N-N bond if heat of atomisation of NH_3, and N_2H_4, are 'x' and 'y' kcal mol^{-1} respectively

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142. Find out the extensive property.

A. $\frac{2A}{5}$

B. $\frac{A}{10}$

C. $\frac{2A+80}{10}$

D. $\frac{2A+80}{5}$

Answer:

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143. Which of the following is an acidic salt?

A. Na_2SO_4

B. Na_2SO_3

C. K_2SO_4

D. $NaHSO_3$

Answer:

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144. Which of the following liquid shows highest surface tension?

A. 10 R

B. 0.203 R

C. R/(10)

D. 2.303 R

Answer:

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145. 1 L of methane weighs 1.2 g and 2 L of an alkyne 'X' weighs 8.09 g under identical conditions of temperature

and pressure. Unknown gas 'X' is

A. Diamond is exothermic substance

B. Graphite is endothermic substance

C. Graphite is more stable than diamond

D. Both (1) & (2)

Answer:

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146. Will a precipitate of $Mg(OH)_2$ be formed in a $0.002M$ solution of $Mg(NO_3)_2$ if the pH of solution is adjusted to 9. K_{sp} of $Mg(OH)_2 = 8.9 \times 10^{-12}$.

A. Q = K = 1

B. Q = K = 1.732

C. Q gt K

D. QltK

Answer:

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147. A weak acid shows K_a = 0.0001. Calculate equilibrium constant for its reaction with strong base.

A. Highly spontaneous reaction

B. Non-spontaneous reaction

C. Exothermic reaction

D. Endothermic reaction

Answer:

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148. Which statement is correct?

A. NH_3 is protic solvent

B. HCO_3^- is Bronsted acid as well as Bronsted base

C. SO_3 is Lewis acid

D. All are correct

Answer:

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149. The weight of 250 ml of diatomic gas at $0^\circ C$ and 2 atm pressure is 1 gm. What is the atomic weight of the substance?

A. 44.84 g

B. 4.484 g

C. 22.42 g

D. none of these

Answer:

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150. The conjugate acid of NH_2^- is

A. 9

B. 7

C. 10

D. 4

Answer:

Watch Video Solution

151. In the reaction $SO_2 + O_3 \rightarrow SO_3 + O_2$ Equivalent weight of SO_2 will be

A. M/3

B. M/6

C. M/1

D. M/2

Answer:

Watch Video Solution

152. pH of 10^{-10} M NaOH solution will be near to

A. NH_2OH

B. NH_3

C. N_2H_4

D. NH_4^+

Answer:

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153. EDTA is a/an

A. Monodentate ligand

B. Didentate ligand

C. Tridentate ligand

D. Hexadentate ligand

Answer:

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154. Which of the following is possible acid base reaction?

A. $PH_3 + NH_4^+ \rightarrow PH_4^+ + NH_3$

B. $NH_3 + PH_4^+ \rightarrow NH_4^+ + PH_3$

C. $PCI_5 \rightarrow PCI_3 + Cl_2$

D. None of these

Answer:

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155. The weight of 150 ml of diatomic gas at $0^{\circ}C$ and 2 atm pressure is 1 gm. What is the atomic weight of the substance?

A. 74.8 g

B. 77.8 g

C. 37.31 g

D. 74.62 g

Answer:

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156. A flask of capacity 3 L is heated from 25°C to 35°C. What volume of air will escape from the flask?

A. 20 ml

B. 40ml

C. .10L

D. 60L

Answer:

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157. Find out the correct statement(s) with respect to following transition C (Diamond) → C (Graphite) ,

$\Delta H = -1.6KJ$

A. Diamond is exothermic substance

B. Graphite is endothermic substance

C. Graphite is more stable than diamond

D. Both 1 & 2

Answer:

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158. One mole of an ideal gas expands isothermally from 10 L to 100 L. Change in entropy of the process will be

A. CH_3OH

B. C_2H_5OH

C. H_2O

D. $\mathbb{C}I_4$

Answer:

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159. A flask of capacity 4 L is heated from 35°C to 45°C. What volume of air will escape from the flask?

A. 100ml

B. 90ml

C. 130ml

D. 60ml

Answer:

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160. 1 g equivalent of V_2O_5 in the given reaction is equal to $V_2O_5 + Zn \rightarrow ZnO + V$ (Glven at wt. of V = A)

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161. 11.2L of gas at STP weight 14g. The gas would be :

A. H_2

B. CO

C. B_2H_6

D. All of these

Answer:

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162. Oxidation states in nitrogen can range from

A. C_2H_2

B. C_2H_6

C. CH_4

D. C_2H_4

Answer:

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163. $xl^{-} + ylO_3^{-} + zH^{+} \rightarrow l_2 + H_2O$. X, y, z in the given redox reactions are

A. $5, 1, 6$

B. $1, 5, 6$

C. $6, 1, 5$

D. $5, 6, 1$

Answer:

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164. The number of electrons involved in the reduction of nitrate $\left(NO_3^{\ominus}\right)$ to hydrazine (N_2H_4) is

A. 

B. 

C. 

D. 

Answer:

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165. Which of the following is strongest reducing agent?

A. K

B. Mg

C. Al

D. Ba

Answer:

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166. Calculate ΔH for the reaction $Al + Cr_2O_3 \rightarrow Cr + Al_2O_3$ When enthalpy of formation of Al_2O_3 and Cr_2O_3, are -1596 kJ and -1133 kJ respectively.

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167. $\delta H - \delta E$ for the combustion of gaseous propane at temperature T is

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168. For an isothermal expansion of an ideal gas

A. 0.5°C

B. 0.10°C

C. 5°C

D. 10°C

Answer:

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169. A system absorbs 600 J of heat and does a work of 200 J on its surroundings. ΔE of system is

A. 0.85

B. 0.9

C. 0.17

D. 0.65

Answer:

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170. Units of van der Waal's constants 'a' and 'b' are respectively

A. 0.4

B. 0.5

C. 0.2

D. 0.25

Answer:

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171. The value of universal gas constant R depends on :

A. $\left(\frac{dP}{dV}\right)_T = \frac{K}{V}$

B. $\left(\frac{dP}{dV}\right)_T = \frac{K}{V^2}$

C. PV = constant

D.

Answer:

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172. 28 g of N_2 at 299.6 K having a pressure of 2.46 atm occupy

A. $K.E_{(He)} > K.E_{(Ar)}$

B. Cannot be compared

C. $K.E_{(He)} = K.E_{(Ar)}$

D. $K.E_{(He)} > \frac{1}{2}K.E_{(Ar)}$

Answer:

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173. Two chemically non-reactive gases are separately contained in two vessels of same capacity at pressure P_1, and P_2, respectively. If two vessels are connected, the total pressure of gaseous mixture will be

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174. Which of the following is relatively least reactive?

A. Ca

B. Au

C. Cu

D. Na

Answer:

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175. How many lone pairs are present in N_2O_2?

A. Six

B. Eight

C. Ten

D. Twelve

Answer:

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176. 11.2 litre of a gas at STP weighs 14 g The gas could not be

A. N_2

B. CO

C. C_2H_4

D. N_2O

Answer:

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177. Which of the following does not exist?

A. XeO_2F_2

B. XeO_2

C. XeF_6

D. XeF_5

Answer:

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178. Pick out incorrect statement

A. PH_3 is more basic than AsH_3

B. Cl_2 disproportionates in hot and concentrated NaOH

C. Bond angle of H_2S is greater than H_2O

D. HOCI has more oxidising power than $HCIO_4$

Answer:

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179. Which element does not combine directly with nitrogen at high temperatures?

A. Li

B. Rb

C. Sr

D. Mg

Answer:

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180. The hybridisation state of central atom of phosphonic acid is

A. sp^2

B. sp^3

C. sp

D. sp^3d

Answer:

Watch Video Solution

181. Which of the following compounds can be hydrolysed?

A. SF_6

B. CCl_4

C. SF_4

D. NaCl

Answer:

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182. The compound which reacts with ozone to liberate oxygen is

A. NO

B. CO_2

C. NO_2

D. SO_2

Answer:

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183. Which is not an ore of copper?

A. $Cu(NO_3)_2$

B. Cu_2O

C. Cu_2S

D. $CuFeS_2$

Answer:

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184. Consider the following ores: Haematite, Magnetite, Siderite, Iron pyrites. How many of above ores can be concentrated by magnetic separation method?

A. 2

B. 1

C. 4

D. 3

Answer:

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185. Which is not self reducing throughout the metallurgical process?

A. ZnS

B. HgS

C. Cu_2S

D. PbS

Answer:

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186. Which of the following can be extracted by thermite process?

A. Iron

B. Mercury

C. Titanium

D. Both (1) & (3)

Answer:

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187. Vapour density of a gas is 11.2. Volume occupied by 2.4 g of this at STP will be

A. 2.4 L

B. 2.24 L

C. 22.4 L

D. 11.2 L

Answer:

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188. If 300 ml of a gas weigh 0.368 g at STP, what is its molecular weight ?

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189. Which of the following is most stable oxidation state of manganese?

A. $+2$

B. $+3$

C. $+4$

D. $+6$

Answer:

Watch Video Solution

190. 4.4 g of a gas at STP occupies a volume of 2.24 L. The gas can be :

A. N_2O

B. N_2

C. CO

D. CO_2

Answer:

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191. Which of the following exhibits only one type of lattice structure?

A. Cr

B. Fe

C. Ti

D. V

Answer:

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192. Which of the following carbide is not possible with Lanthanides (Ln)?

A. LnC

B. Ln_3C

C. Ln_2C_3

D. LnC_2

Answer:

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193. Consider the following conversion $CrO_4^{2-} \rightleftharpoons Cr_2O_7^{2-}$ Dominance of $Cr_2O_7^{2-}$ and CrO_4^{2-} is observed in

A. Basic and acidic medium respectively

B. Acidic and basic medium respectively

C. Acidic and neutral medium respectively

D. Basic and neutral medium respectively

Answer:

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194. Least acidic among following is

A. ortho-nitrophenol

B. ortho-methoxyphenol

C. phenol

D. meta-methoxyphenol

Answer:

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195. Potassium dichromate reacts with potassium iodide in acidic medium. What is oxidation state of product formed from reductant?

A. $+1$

B. Zero

C. $+3$

D. $+5$

Answer:

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196. Which of the following does not have dπ - pπ bond?

A. NO3^-

B. SO3^-2

C. BO3^-3

D. CO3^-2

Answer:

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197. Titration of $KMnO_4$ in acidic medium is not satisfactory in presence of

A. H_2SO_4

B. HCl

C. HNO_3

D. Both (2) & (3)

Answer:

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198. Which is not a bidentate ligand?

A. Cyanido

B. Ethylene diamine

C. Glycinato

D. Oxalato

Answer:

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199. 1 mole of $CrCl_{3.4}NH_3$ reacts with excess of $AgNO_3$ solution then 1 mole of AgCl is precipitated out. How many chloride ions are coordinated with chromium ion?

A. 2

B. 3

C. 1

D. Zero

Answer:

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200. Effective atomic number of chromium in $[Cr(NH_3)_6]Cl_3$ complex is

A. 36

B. 35

C. 34

D. 33

Answer:

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201. Total number of stereoisomers in $[Co(en)_2Br_2]^+$ complex are

A. 4

B. 3

C. 2

D. 6

Answer:

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202. Which is outer orbital complex?

A. $\left[Cr(NH_3)_6\right]Cl_3$

B. $K_4\left[Fe(CN)_6\right]$

C. $\left[Ni(NH_3)_6\right]SO_4$

D. $\left[Co(en)_3\right]Cl_3$

Answer:

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203. Correct order of crystal field splitting strength of ligands is

A. $NO_3^{\Theta} > NO_2^{\Theta} > NH_3 > CN^{\Theta}$

B. $NO_2^{\Theta} > NO_3^{\Theta} > CN^{\Theta} > NH_3$

C. $N^{\Theta} > NO_3^{\Theta} > NH_3 > NO_2^{\Theta}$

D. $CN^{\Theta} > NO_2^{\Theta} > NH_3 > NO_3^{\Theta}$

Answer:

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204. The value of CFSE (Crystal field stabilisation energy) for $Na_4[FeF_6]$ complex is (ignore pairing energy)

A. $-2.4\Delta_0$

B. $-1.6\Delta_0$

C. $-0.4\Delta_0$

D. $-10.6\Delta_0$

Answer:

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205. The most stable complex among following is

A. $\left[Fe(CN)_6\right]^{3-}$

B. $\left[Fe(NH_3)_6\right]^{3+}$

C. $\left(Co(NH_3)_6\right]^{2+}$

D. $\left[Ag(CN)_2\right]^{-1}$

Answer:

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206. Correct statement is

A. $\left[Zn(NH_3)_4\right]^{2+}$ is tetrahedral and paramagnetic

B. $[Nicl_4]^{2-}$ is square planar and paramagnetic

C. $\left[Zn(NH_3)_4\right]^{2+}$ is square planar and diamagnetic

D. $\left[Ni(CN)_4\right]^{2-}$ is square planar and diamagnetic

Answer:

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207. Which is a π-acid ligand?

A. NH_3

B. CO

C. NO_2

D. H_2O

Answer:

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208. Overall formation constant of $\left[Cu(NH_3)_4\right]^{2+}$ ion is found to be 2.1 x 10^{13} unit. $Cu_{aq}^{2} + 4NH_{3aq} \leftrightharpoons \left[Cu(NH_3)_4\right]_{aq}^{2+}$ Overall instability constant for $\left[Cu(NH_3)_4\right]^{2+}$ ion shall be

A. $2.1 \cdot 10^{13}$

B. $7 \cdot 10^{13}$

C. $4.7 \cdot 10^{-14}$

D. $73 \cdot 10^{-16}$

Answer:

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209. Number of bond(s) between Mn atoms in $[Mn_2(CO)_{10}]$ is/are

A. 1

B. Zero

C. 3

D. 4

Answer:

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210. $EDTA^{4-}$ i9s ethylenediamine tetraacetate ion The total number of $N-CO-O$ bond angles in $[Co(EDTA)]^{-1}$ complex ion is .

A. 5

B. 4

C. 3

D. 6

Answer:

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211. Which configuration exhibits strong Jahn-Teller distortion in strong ligand field?

A. d^7

B. d^3

C. d^4

D. d^5

Answer:

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212. Which of the following ligand exhibits highest 'Trans-effect'?

A. CO

B. H^{Θ}

C. NO_2^-

D. Br^{Θ}

Answer:

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213. Best oxidizing agent out of the following is

A. Na^+

B. Fe^{3+}

C. Au^{3+}

D. Cu^{2+}

Answer:

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214. A sample of a gas occupies 100 dm^3 at 1 bar pressure and at 27^oC.If the volume of the gas is reduced to $5dm^3$ at the same temperature, what additional pressure must be be applied?

A. 20 bar

B. 19 bar

C. 18 bar

D. 16 bar

Answer:

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215. How many grams of NaOH is required to react with 3.1 g of P_4 to form PH_3 and NaH_2PO_2?

A. 2 g

B. 1 g

C. 4 g

D. 3 g

Answer:

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216. In which of the following compound the oxidation state of sulphur is different from other three?

A. $Na_2S_2O_3$

B. $Na_2S_2O_7$

C. K_2SO_4

D. SF_6

Answer:

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217. In which metal container we can store salt of Sn^{2+} ?

A. Cu

B. Mg

C. Al

D. Fe

Answer:

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218. Which of the following is correct if $E^0_{\frac{x+}{x}} > E^0_{\frac{y+}{y}} > E^0_{\frac{z+}{z}}$

A. Z acts as stronger reducing agent

B. $Z^{\oplus}$ acts as stronger reducing agent

C. $X^{\oplus}$ acts as stronger oxidizing agent

D.

Answer:

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219. What is the equivalent weight of the reactant in the following equation?

$$\left[Fe(CN)_6\right]^{4-} \rightarrow Fe_2O_3 + CO_2 + NO_2$$

A. M/(45)

B. M/(50)

C. M/(42)

D. M/(55)

Answer:

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220. Equivalent weight of H_2SO_4 in the reaction $H_2SO_4 \rightarrow H_2S$

A. M/4

B. M/8

C. M/2

D. M/3

Answer:

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221. Oxidation states of sulphur in $H_2S_2O_7$, H_2SO_3 and $H_2S$are respectively

A. Both +1 and -1

B. Both -1 and -2

C. (+6)

D. (+5)

Answer:

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222. n-factor of HCl in the given reaction is

$$K_2Cr_2O_7 + HCl \rightarrow KCl + CrCl_3 + Cl_2 + H_2O$$

A. 1

B. 6

C. (7/3)

D. (3/7)

Answer:

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223. Which of the following is not a Lewis acid?

A. CO_2

B. K^+

C. H^+

D. PCI_5

Answer:

Watch Video Solution

224. In the equilibirum mixture br $CaCO_3(s) \rightleftharpoons CaO(s) + CO_2(g)$. Pressure of $CO_2(g)$ at 27°C is 2 atm. What will be the pressure of $CO_2(g)$ when 2 moles of CO_2 are added into equilíbirum mixture?

A. 6 atm

B. 5 atm

C. 4 atm

D. 2 atm

Answer:

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225. pH of a 1 L buffer solution changes from 4.5 to 4.6 when 0.2 mole of a strong base is added to it. Its buffer capacity will be

A. 3

B. 4

C. 1

D. 2

Answer:

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226. K_p for the equation $A(s) \leftrightharpoons B(g) + C(g) + D(s)$ is 9 atm^2 . Then the total pressure at equilibrium will be

A. 6 atm

B. 12 atm

C. 3 atm

D. 9 atm

Answer:

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227. For (i) $A + B \leftrightharpoons CK_c = K_1$ (ii) $2C \leftrightharpoons DK_c = K_2$

Then the value of K_c for $2D + A + B \leftrightharpoons 5C$ will be

A. $\sqrt{\frac{K_1}{K_2}}$

B. $\frac{1}{K_1 K_2^2}$

C. $\frac{K_2^2}{K_1}$

D. $\frac{K_1}{K_2^2}$

Answer:

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228. Which of the following salt will have pH less than 7 when dissolved in water?

A. Na_3PO_4

B. KCN

C. $CuSO_4$

D. K_2CO_3

Answer:

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229. If the value of K_a of 1 M HCN is 10^{-5} then its degree of dissociation in 0.1 M HCI will be ($\alpha << 1$)

A. 10^{-3}

B. 10^{-2}

C. 10^{-5}

D. 10^{-4}

Answer:

Watch Video Solution

230. NH_4OH is highly soluble in

A. $CuSO_4(aq)$

B. $AgNO_3(aq)$

C. NH_4Cl

D. Both (1) & (2)

Answer:

Watch Video Solution

231. pH of which salt is same for 1 M and 5 M solution both?

A. NH_4CN

B. $NaCN$

C. $HCOONa$

D. $C_6H_3NH_3^+CI$

Answer:

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232. Which of the following is most soluble in water?

A. $MnCO_3$

B. $CaSO_4$

C. Ag_2SO_4

D. Hg_2SO_4

Answer:

Watch Video Solution

233. pH of an acidic buffer solution is 5.74 and Pka $(CH_3COOH) = 4.74$ then the ratio of [Salt]/[Acid] will be

A. 30

B. 40

C. 10

D. 20

Answer:

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234. If pressure applied on the following reaction becomes four times $H_2(g) + l_2(g) \leftrightharpoons 2HI(g)$ then

A. No change

B. Can't be predicted

C. Reaction moves forward

D. Reaction moves backward

Answer:

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235. A sample of a gas occupies 100 dm^3 at 1 bar pressure and at 27^oC.If the volume of the gas is reduced to $25dm^3$

at the same temperature, what additional pressure must be be applied?

A. 5 bar

B. 9 bar

C. 3 bar

D. 1 bar

Answer:

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236. For the following reaction $Ag_2SO_4(s) \leftrightharpoons 2Ag^+(aq) + SO_4^{2-}(aq)$ More SO_4^{2-} can be produced by

A. Adding $AgNO_3$

B. Adding K_2SO_4

C. Adding Na_2SO_4

D. Adding NH_3

Answer:

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237. 1.7 g of an unknown gas occupies 2.24 L at N.T.P Calculate its molecular mass.

A. 22 g/mol

B. 22.4 g/mol

C. 17 g/mol

D. 16 g/mol

Answer:

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238. In which of the following maximum amount of heat is released if one mole of each reactant is taken?

A. HF + NaOH

B. $CH_3COOH + KOH$

C. $H_2SO_4 + NaOH$

D. HCl + NaOH

Answer:

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239. The Zeroth law of thermodynamics leads to the concept of

A. Heat transfer takes place till thermal equilibrium is achieved

B. Entropy is conserved

C. Heat is path function

D. Energy is conserved

Answer:

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240. Which of the following can be correct?

A. $\Delta H - \Delta U = \Delta nRT$

B. $C_p - C_v = R$

C. $\left(\frac{dH}{dT}\right)_p - \left(\frac{dU}{dT}\right)_v$ = R

D. All of these

Answer:

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241. The difference between the value of C_p of H_2 and C_v of He will be

A. 3 R

B. 4 R

C. R

D. 2 R

Answer:

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242. Expansion of ideal gas takes place from 1 L to 10 L in vacuum isothermally at 300 K. Which of the following is

correct?

A. ΔH=0

B. q=0

C. w=0

D. All of these

Answer:

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243. The value of ΔH and ΔU will be same for

A. $CaCO_3(s) \rightarrow CaO(s) + CO_2(g)$

B. $SO_2(g) + \frac{1}{2}O_2(g) \rightarrow SO_3(g)$

C. $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$

D. $H_2(g) + l_2(g) \rightarrow 2HI(g)$

Answer:

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244. ΔU = 0 always when in a process

A. ΔV=0

B. W=0

C. ΔH=0

D. ΔT=0

Answer:

Watch Video Solution

245. Surface tension is

A. Property of gas only

B. Extensive properites

C. Intensive property

D. Temperature independent

Answer:

Watch Video Solution

246. Volatility and vapour pressure will be highest for

A. H_2O

B. $CH_3 - O - CH_3$

C. C_2H_5OH

D. CH_3OH

Answer:

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247. The ratio of V_rms of O_2 and V_MP of SO_2 at room temperature will be

A. (1 : 2)

B. (2 : 1)

C. $\sqrt{3}:1$

D. $1:\sqrt{2}$

Answer:

Watch Video Solution

248. If the critical temperature of a gas is 300 K then the ratio of its inversion and Boyle's temperature will be

A. (1 : 4)

B. (4 : 1)

C. (2 : 1)

D. (1 : 2)

Answer:

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249. Two gases H_2 and O_2 fuse from two different containers having same pressure and temperature. If the ratio of area of cross section of hole is 1:2 then the ratio of rate of effusion will be

A. (1 : 4)

B. (4 : 1)

C. (8 : 1)

D. (2 : 1)

Answer:

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250. If the value of excluded volume of O_2 is $5.2cm^3$ then its critical volume will be

A. $5.2cm^3$

B. $10.6cm^3$

C. $1.73cm^3$

D. $15.6cm^3$

Answer:

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251. What is the ratio of volume of 1 mole of nitrogen gas to 16 g oxygen gas at STP?

A. (0.92 : 1)

B. (0.98 : 1)

C. (1 : 0.5)

D. (1 : 0.92)

Answer:

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252. Density of a gas 'd' is

A. $d \propto P$ (at const. T)

B. $d \propto (1/T)$ (at const. P)

C. $d \propto M$ (at const. P and T)

D. All of these

Answer:

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253. What should be the value of final temperature so that 1 L gas becomes 2.5 L at constant pressure if initial temperature was 300 K?

A. 750 K

B. 850 K

C. 550 K

D. 650 K

Answer:

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254. Which of the following has dimensions of energy?

A. Joule

B. $P\Delta V$

C. PV

D. All of these

Answer:

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255. The value of absolute temperature at which ice starts melting is

A. 373 K

B. (-273) K

C. $1^{\circ}C$

D. 273 K

Answer:

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256. The density of a gas is 1.964 g/ dm^{-3} at 273 K and 76 cm Hg. Calculate the molecular weight of the gas.

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257. Calculate the temperature of 2.0 mol of a gas occupying $3dm^3$ at 3.32 bar pressure. (R = 0083 bar $dm^3 K^{-1} mol^{-1}$)

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258. Which among the following is a Lewis acid?

A. H_2O

B. B_2H_6

C. NH_3

D. CH_3OH

Answer: 1

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259. Which one of the following salt is least soluble in water?

A. $\left[MX\left(K_sp = 10^{-18}\right)\right]$

B. $\left[MY\left(K_sp = 10^{-20}\right)\right]$

C. $[MZ(K_sp = 10^{-70})]$

D. All are equally soluble

Answer: 2

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260. If 100 ml of 0.1 M CH_3COOH and 200 ml of 0.03 M NaOH solutions are mixed together, then the pH of resulting mixture will be given $[pk_a(CH_3COOH) = 4.74 \text{ and } \log 1.5 = 0.18)]$

A. 3.97

B. 4.92

C. 4.35

D. 5.52

Answer: 3

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261. If enthalpy of hydrogenation of cyclohexene is $[-xkJmol^{-1}]$ and resonance energy of benzene is $[-ykJmol^{-1}]$ then the enthalpy of hydrogenation of benzene will be

A. $[(y-3x)kJmol^{-1}]$

B. $[-(x+y)kJmol^{-1}]$

C. $[(y+3x)kJmol^{-1}]$

D. $[(x+y)kJmol^{-1}]$

Answer: 4

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262. Vapour pressure of a liquid depends on

A. Volume of container

B. Amount of liquid

C. Surface area of container

D. Temperature

Answer: 2

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263. Heat of combustion of C(s), $H_2(g)$ and $CH_4(g)$ respectively are -94, -68 and -213 kcal/mol, thenδH for the reacton $[C(s) + 2H_2(g) \rightarrow CH_4(g)]$ is

A. -17 kcal

B. -34 kcal

C. -886 kcal

D. -51 kcal

Answer: 1

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264. If one mole of monoatomic ideal gas expanded from 2 atm to 0.5 atm at 27°C, then the entropy change will be

A. R In 2

B. 4R In 2

C. 3 Rin 2

D. 2R In 2

Answer: 1

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265. 2 moles monoatomic ideal gas is expanded isothermally and reversibly from 5 L to 20 L at 27°C. ΔH,

ΔU, q and w for the process respectively are (log 2 = 0.3)

A. Zero, Zero, Zero and Zero

B. Zero, Zero, Zero and -6.9 kJ

C. Zero, +6.9 kJ, +6.9 kJ and -6.9 kJ

D. Zero, Zero, +6.9 kJ and -6.9 kJ

Answer: 3

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266. The internal energy change for the vapourisation of one mole water at 1 atm and 100°C will be (Enthalpy of vapourization of water is 40.66 kJ

A. Zero

B. 37.56 kJ

C. -37.56 kJ

D. 40.6 kJ

Answer: 3

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267. At $0^\circ C$, ice and water are in equilibrium and $\Delta H = 6.0 kJ mol^{-1}$ for the process

$H_2O(s) \Leftrightarrow H_2O(l)$

What will be ΔS and ΔG for the conversion of ice to liquid water?

A. $[21.98 Jmol^{-1}K^{-1}, 5227.17J]$

B. $[4.396 Jmol^{-1}K^{-1}, 5227.17J]$

C. $[21.98 Jmol^{-1}K^{-1}, zero]$

D. $[43.96 Jmol^{-1}K^{-1}, zero]$

Answer: 1

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268. Compressibility factor for H_2 behaving as real gas is

A. Z = 1

B. $\left[Z = 1 + \frac{a}{V_m RT}\right]$

C. $\left[Z = 1 - \frac{a}{V_m RT}\right]$

D. $\left[Z = 1 + P\frac{b}{R}t\right]$

Answer: 2

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269. Given the density of air is 1.29 kgm^{-3}. Then, the relative density of air is _____.

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270. At STP , the density ofCH_4vapour in g/L will be nearest to

A. 6.87

B. 0.71

C. 3.84

D. 1.87

Answer: 3

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271. Equal mass of oxygen and helium gases are mixed in a container at 27°C Fraction of total pressure exerted by helium gas is

A. $\frac{1}{8}$

B. $\frac{8}{9}$

C. $\frac{1}{9}$

D. $\frac{3}{4}$

Answer: 2

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272. if equal volume of O.1 M NH_4OH and 0.1 M HCl are mixed, then the pH of resulting mixture will be $[GivenpK_b(NH_4OH) = 4.75, \log 5 = 0.7)]$

A. 8.72

B. 6.28

C. 7.28

D. 5.28

Answer: 1

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273. In which of the following equilibrium, $(K_c = K_p)$?

A. $[N_2(g) + O_2(g) < \Rightarrow 2NO(g)]$

B. $[4NH_3(g) + 5O_2(g) < \Rightarrow 4NO(g) + 6H_2O(g)]$

C. $[N_2(g) + 3H_2(g) < \Rightarrow 2NH_3(g)]$

D. $[2NO(g) + O_2(g) < \Rightarrow 2NO_2(g)]$

Answer: 4

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274. Select the correct option among following at 298 K temperature

A. In neutral aq. solution, $\left\{\left[H^{+}\right]=\sqrt{K_{w}}\right\}$

B. In acidic aq. solution, $\left\{\left[H^{+}\right]<\sqrt{K_{w}}\right\}$

C. In basic aq. solution, $\left\{\left[H^{+}\right]>\sqrt{K_{w}}\right\}$

D. In basic aq. solution, $pH<pOH$

Answer: 1

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275. Equilibrium concentrations of A and B involved in following equilibrium are 0.01 M and 0.02 M respectively: $[A(g) \Leftrightarrow B(g)]$ If 0.01 M of A is added at equilibrium, then at new equilibrium concentration of B will be

A. 6.67×10^{-2} M

B. 2.67×10^{-2} M

C. 1.33×10^{-2} M

D. 1.33×10^{-1} M

Answer: 4

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276. At STP , the density ofCO_2vapour in g/L will be nearest to

A. 2

B. 2.45

C. 1.5

D. 7.5

Answer: 2

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277. Solubility of AgCl in the solution containing 0.01 M NaCl is $\left[given, K_sp(AgCL) = 1.6x10^{-10}\right]$

A. $8x10^{-9}$

B. $1.6x10^{-9}$

C. $2x10^{-8}$

D. $1.6x10^{-8}$

Answer: 44

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278. Aqueous solution having highest pH is

A. $0.1MNH_4Cl$

B. $0.1MNaCl$

C. $0.1M(NH_4)_2SO_4$

D. $0.1MCH_3COONa$

Answer: 1

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279. if equal volumes of 0.1 M H_2SO_4 and 0.1 M HCl are mixed then the pH of resulting solution will be (log 15 = 1.176)

A. 0.82

B. 1.64

C. 2.82

D. 1.82

Answer: 4

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280. pH of saturated solution of $Al(OH)_3$ is9. The solubility product (K_sp) of $Al(OH)_3$ is

A. $\frac{1}{2} \cdot 1^{-20}$

B. $\frac{1}{3} \cdot 1^{-20}$

C. $\frac{1}{3} \cdot 1^{-15}$

D. $\frac{1}{4} \cdot 1^{-15}$

Answer: 2

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281. The K of AgCl, AgBr and Agl are X, y and z respectively. On addition of $AgNO_3$, in the equimolar solution of CI^- Br^- and I^- ions, Agl Ist appears as precipitate followed by AgBr, and then AgCl. The relation between x y and z is

A. x > y > z

B. y < z < X

C. y < z < X

D. X= y = Z

Answer: 4

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282. For a reaction $[CaCO_3(s) \rightarrow CaO(s) + CO(g)]$ $\left(K_c = 0.5 mol l^{-1}\right)$, the maximum moles of CO (g) formed at equilibrium in 5 L container is

A. 5

B. 2.5

C. 1.24

D. 10

Answer: 4

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283. Standard entropy of A, B and C are 30, 60 and 100 JK^{-1} mol^{-1} respectively. For the reaction $(2A + 5B \rightarrow 6C)$, If the AH of the reaction is 300 kJ then the temperature at which the reaction will become spontaneous is

A. 1150 K

B. 1240 K

C. 1000 K

D. 1260 K

Answer: 1

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284. At constant temperature and pressure, correct order of entropy of gases for their equal moles is

A. He < Ne < Ar < Kr

B. $H < O_2 < CO_2 < PCI_3$

C. $He = Ne = O_2 < Ar < Kr = Xe$

D. $O_2 = 0_3 < N_2 < Cl_2$

Answer: 2

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285. Standard boiling point of water is

A. 100°C

B. 99°C

C. 99.6°C

D. 110°C

Answer: 1

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286. A certain gas takes 8 times as long to effuse out as compared to hydrogen gas for same volume at constant temperature and pressure. Its molecular mass will be

A. 16 u

B. 32 u

C. 64 u

D. 128 u

Answer: 2

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287. Select the correct relation of interaction energy of dipole-dipole force in stationary polar molecule with internuclear distance ®

A. Interaction energy $\propto \frac{1}{r}$

B. Interaction energy $\propto \frac{1}{r^2}$

C. Interaction energy $\propto \frac{1}{r^3}$

D. Interaction energy $\propto \frac{1}{r^5}$

Answer: 3

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288. The conjugate acid of HPO_4^{2-} is:

A. H_2PO_4

B. H_3PO_4

C. $PO_4^{3\hat{}-}$

D. $HPO_3^{2\hat{}-}$

Answer: 2

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289. Unit of equilibrium constant K_p for the reaction $PCl_5(g) \Leftrightarrow PCl_3(g) + Cl_2(g)$ is

A. atm

B. atm^{-1}

C. atm^2

D. atm^{-2}

Answer: 3

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290. If solubility product of A_3B_2 is 'K' then the solubility of A_3B_2 will be

A. $\frac{K^1}{5}$

B. $2\frac{K^1}{5}$

C. $\frac{(108K)^1}{5}$

D. $\left[\frac{\left(\frac{K}{108}\right)^1}{5}\right]$

Answer: 2

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291. pH of a solution of 0.1 M $[CH_3COONH_4(aq)]$ is

$[given: K_a(CH_3COOH) = K_b(NH_4OH) = 1.8x10^{-5})]$

A. 1

B. 9

C. 7

D. 13

Answer: 1

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292. pH of 0.1 N NaOH(aq) solution

A. 2.7

B. 4.7

C. 7

D. 13

Answer: 1

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293. Which among the following is an acidic buffer?

A. $CH_3COOH + HCI$

B. $CH_3COOH + CH_3COONa$

C. $HCI + H_2SO_4$

D. $NH_4OH + NaOH$

Answer: 2

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294. The value of equilibrium constant for the reaction $\left[N_2O_5(g) \Leftrightarrow 2NO_2(g) + \frac{1}{2}O_2(g)\right]$ is 0.5. The equilibruim constant for the reaction $[4NO_2(g) + O_2(g) \Leftrightarrow 2N_2O_5(g)]$ is

A. 0.4

B. 0.5

C. 2

D. 4

Answer: 4

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295. Active mass of 5.6 g CaO(s) is

A. 0.1

B. 2

C. 0.2

D. 1

Answer: 3

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296. Universe is an example of

A. Open system

B. Close system

C. Isolated system

D. Closed isothermal system

Answer: 2

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297. The correct thermodynamic conditions for the spontaneous reaction at all temperature is

A. $(\delta H < 0 \text{ and } \delta S > 0)$

B. $(\delta H < 0 \text{ and } \delta S = 0)$

C. $(\delta H > 0 \text{ and } \delta S < 0)$

D. $(\delta H > 0 \text{ and } \delta S > 0)$

Answer: 1

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298. For which reaction, $(\Delta H > \Delta U)$? (ΔH= change in enthalpy,ΔU = change in internal energy)

A. $\left[Fe(s) + 5CO(g) \rightarrow Fe(CO)_5(l)\right]$

B. $[C(\text{graphite}) + O_2(g) \rightarrow CO_2(g)]$

C. $\left[H_2O(l) \rightarrow H^+(aq) + OH^-(aq)\right]$

D. $[CaCO_3(s) \rightarrow CaO(s) + CO_2(g)]$

Answer: 3

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299. Density of ideal gas of molecular mass 32 u at 1.2 atm pressure and 327 °C is

A. $0.072gL^{-1}$

B. $0.78gL^{-1}$

C. $7.8gL^{-1}$

D. $7.2gL^{-1}$

Answer: 4

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300. Average molar kinetic energy of NH_3 (g) is

A. RT

B. $\frac{1}{2}RT$

C. $\frac{3}{2}RT$

D. 2RT

Answer: 2

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