Chemistry Quiz MCQ PDF

1. Number of basic SI unit is?
(A) 2
(B) 9
(C) 5
(D) 7

2. The macro nutrient provided by inorganic fertilization are?
(A) N,P,K
(B) C,N,P
(C) Ze, K,P
(D) C,N,Fe

3. Light year is unit of?
(A) Time
(B) Distacne
(C) Speed
(D) All the above

4. Heavy metal pollution of water is caused by?
(A) Garbage
(B) Acid plaints
(C) Wood burning
(D) Paints

5. Due to rusting the weight of iron?
(A) Increased
(B) Decrease
(C) Uncertain
(D) Remain the same

6. Phosphorus is mainly extracted from?
(A) Ash
(B) Sand
(C) Bone ash
(D) All the above

7. Which is the following is the main ingredient of cement?
(A) Sand
(B) Gypsum
(C) Limestone
(D) Ash

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8. The oil used in the forth floatation process is?
(A) Olive oil
(B) Coconut oil
(C) Pine oil
(D) Mustard oil

9. Which of the following is the example of ideal blackbody?
(A) Kajal
(B) Coal
(C) Black board
(D) A pin hole box

10. Which is the best conductor of the heat is?
(A) Mercury
(B) Water
(C) Ice
(D) Alcohol

11. Nylon is prepared form?
(A) Adipic acid and hexametheylene diamine
(B) Hexaametheylene diamine and nitric acid
(C) Adipiylchloride abd adipic acid
(D) Adiponitirile and hexametheylene diamine

12. What is the molality of pure water?
(A) 51.5
(B) 50.5
(C) 55.5
(D) 52.5

13. The nucleus of an atom consists of?
(A) Electron and protons
(B) Protons and neutrons
(C) Neutrons and electrons
(D) None of these

14. The material that can deformed permanently by heat and pressure is called?
(A) Thermoplastic
(B) Polymer

(C) Chemical compound
(D) Thermoset

15. Which of the following aqueous solutions have the highest boiling points?
(A) 1.1 m Na_2SO_4
(B) 1.0 m Na_2SO_4
(C) 1.0 m Na_3SO_4
(D) 1.0 m Na_1SO_3

16. The number of moles of solute present in 1kg a solvent is called its?
(A) Molarity
(B) Quality
(C) Formality
(D) Molality

17. Which of the following have the most electronegative elements?
(A) Sodium
(B) Oxygen
(C) Fluorine
(D) All the above

18. The value of Henry's constant K_H is?
(A) Not related with solubility
(B) Greater for gases with higher solubility
(C) Greater for gases with lower solubility
(D) Constant for gases

19. What is mole fraction of solute in 1.00m aqueous solution?
(A) 0.0177
(B) 0.0176
(C) 0.0110
(D) 0.0111

20. If molality of dilute solution is double, the value of molal depression constant K_F will be?
(A) Constant
(B) Unchanged
(C) Double
(D) Triple

21. Which of the following are constituents of brass?

(A) Zinc and iron
(B) Zinc and copper
(C) Iron and copper
(D) None of these

22. Which opposite phase changes occur at the same time temperature for a pure substance?
(A) Boiling and condensation
(B) Evaporation and boiling
(C) Condensation and sublimation
(D) Sublimation and evaporation

23. Which of the following has the largest radius?
(A) C
(B) Ne
(C) F
(D) N

24. Which of the following elements has the largest ionization energy?
(A) Na
(B) K
(C) Ne
(D) Rb

25. In Bohr's model of the hydrogen atom, the radius of an orbit?
(A) Increases when a photon of light is emitted from an excited atom
(B) is proportional to n^2
(C) is smallest for the highest energy state
(D) None of these

26. What value or values of ml are allowable for an orbital with l = 2?
(A) 0
(B) 2
(C) 1
(D) All of the above

27. Which of the following species is not isolectronic with any of the others?
(A) V^{3+}
(B) S^2
(C) Ar
(D) Ca^{2+}

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28. Which of the following statements about periodic properties is incorrect?
(A) Ionization energy increases to the right across a period
(B) Atomic size increases down a group
(C) Electron affinity increases to the right across a period
(D) Both electron affinity and ionization energy decrease down a group

29. When a tube light breaks, a cracking sound is produced because?
(A) The lamp is filled with mercury vapor
(B) The lamp is filled with reactive gases
(C) Pressure inside the lamp is less than atmospheric pressure
(D) Pressure inside the lamp is more than atmospheric pressure

30. Which of the following is not a non-metallic mineral?
(A) Silica
(B) Mica
(C) Granite
(D) Bauxite

31. SI unit of equivalence conductance of?
(A) Siemens m2/ equivalent
(B) Ohm/cm
(C) Mho/cm
(D) All of the above

32. Which of the following is not a mixture?
(A) Air
(B) Milk
(C) Cement
(D) Mercury

33. The number of electron dots in the Lewis symbol for an element equals the?
(A) Number of outermost s and p electrons
(B) Period number that contains the element
(C) Number of outermost s electrons
(D) Number of outermost p electrons

34. Calculate the pressure of 0.55 mol of NH3 gas in a 2.00 L vessel at 25 °C, using the ideal gas law?
(A) 601 atm

(B) 6.0 atm
(C) 6.7 atm
(D) 6.5 atm

35. A steel tank contains carbon dioxide at 34 °C and is at a pressure of 13.0 atm. Determine the internal gas pressure when the tank and its contents are heated to 100 °C?
(A) 15.0 tam
(B) 15.8 atm
(C) 15.5 atm
(D) 15.6 atm

36. Deviations from the ideal gas law are less at?
(A) High temperatures and low pressures
(B) High temperatures and high pressures
(C) Low temperatures and low pressures
(D) Low temperatures and high pressures

37. A mixture of three gases has a pressure of 1380 mmHg at at 298 K. The mixture is analyzed and is found to contain 1.27 mol CO2, 3.04 mol CO, and 1.50 mol Ar. What is the partial pressure of Ar?
(A) 351 mm Hg
(B) 350 mm Hg
(C) 356 mm Hg
(D) 353 mm Hg

38. Which of the following exhibits the most hydrogen bonding?
(A) LiH
(B) H_2S
(C) NH_2
(D) NH_3

39. Which of the following carbon compounds has the highest melting point?
(A) CH_4
(B) CI_4
(C) CF_4
(D) CCI_4

40. Water has such a high specific heat because?
(A) It has many relatively strong hydrogen bonds
(B) The O-H single bond has a high bond energy

(C) It is rather dense
(D) None of these

41. According to Bohr Theory, which of the following transitions in the hydrogen atom will give rise to the least energetic photon?
(A) n = 7 to n = 5
(B) n = 6 to n = 5
(C) n = 6 to n = 4
(D) n = 7 to n = 4

42. Consider a $3d_{xz}$ orbital. Which of the following statements is incorrect?
(A) The xy plane divides the electron probability distribution into two identical mirror-image halves
(B) The yz plane divides the electron probability distribution into two identical mirror-image halves
(C) The nucleus is located at a node
(D) The xz plane is a nodal surface

43. The electronic configuration of the element whose atomic number is 26 is?
(A) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^6$
(B) $1s^3\ 2s^3\ 2p^6\ 3s^2\ 3p^6\ 4s^2\ 3d^6$
(C) $1s^2\ 2s^2\ 2p^6\ 3s^3\ 3p^3\ 4s^2\ 3d^6$
(D) $1s^2\ 2s^3\ 2p^6\ 3s^2\ 3p^7\ 4s^2\ 3d^6$

44. In Bohr's model of the hydrogen atom, the radius of an orbit?
(A) It is smallest for the lowest energy state
(B) It is smallest for the highest energy state
(C) is proportional to n^2
(D) All of the above

45. Which of the following statements about periodic properties is incorrect?
(A) Atomic size increases to the right across a period

(B) Atomic size increase down a group
(C) Atomic size increase top a group
(D) Ionization energy increases to the right across a period

46. The metal used to recover copper from a solution of copper sulphate is?
(A) Ag
(B) Fe
(C) Na
(D) Hg

47. The ore which is found in abundance in India is?
(A) Monazite
(B) Magnetite
(C) Monazite
(D) None of these

48. Which of the following is used to control the inherited traits of an organism?
(A) DNA molecules
(B) RNA molecules
(C) Nucleotides
(D) All of the above

49. The heat energy produced when the human body metabolisms 1 gram of fat is?
(A) 40 KJ
(B) 39 KJ
(C) 30 KJ
(D) 29 KJ

50. What are the number of moles of CO2 which contains 16g of oxygen?
(A) 0.3 mole
(B) 0.2 mole
(C) 0.1 mole
(D) 0.5 mole

51. Which one of the following is most likely to be an ionic compound?
(A) HNF_2
(B) H_2CO

(C) N_2H_4
(D) $CaCl_2$

52. In which of the following processes does the enthalpy change (ΔH) directly represent the magnitude of the lattice energy of KCl(s)?
(A) $KCl(s) \rightarrow K(s) + Cl(g)$
(B) $Cl_2(g) + 2K(s) \rightarrow 2KCl(s)$
(C) $KCl(s) \rightarrow K^+(g) + Cl^-(g)$
(D) $KCl(s) \rightarrow K(s) + Cl^-(g)$

53. Order the following by increasing bond strength: N≡N, N=N, N-N?
(A) N≡N, N=N, N-N
(B) N≡N, N-N, N=N
(C) N-N, N=N, N≡N
(D) N=N, N≡N, N-N

54. Which of the following compounds has the greatest bond polarity?
(A) CH_4
(B) NH_3
(C) HF
(D) PH_3

55. Which of the following is not planar?
(A) C_2H_4
(B) BCl_3
(C) PCl_3
(D) ClF_3

56. Use VSEPR theory to predict the ideal bond angles around the two carbon atoms in acetaldehyde, CH_3CHO. (The first carbon has single bonds to three H atoms and one C atom; the second carbon has single bonds to C and H, and a double bond to O.)?
(A) 110°, 120°
(B) 109°, 120°
(C) 108°, 125°
(D) 107°, 120°

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57. In a carbon-carbon triple bond, what is the nature of the bonding between the carbons?
(A) Two $2p_z$ overlapping
(B) Two $2p_y$ overlapping
(C) Two sp orbitals overlapping, two $2p_y$ overlapping and two $2p_z$ overlapping
(D) An sp_2 and sp_2 overlapping and 2p orbitals overlapping

58. Which of the following molecules has sp_3 hybridization and a dipole moment?
(A) SiH_4
(B) BF_3
(C) NH_3
(D) PCl_5

59. In the molecular orbital description of bonding in benzene (C_6H_6), how many electrons occupy delocalized MOs?
(A) 6
(B) 5
(C) 3
(D) 4

60. In which of the following species is the octet rule violated by the central atom?
(A) PCl_{4+}
(B) SF_4
(C) NH_3
(D) SO_2

61. The number of electron dots in the Lewis symbol for an element equal the?
(A) Number of outermost *s* and *p* electrons
(B) Number of outermost *s* electrons
(C) Number of outermost *p* electrons
(D) Period number that contains the element

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62. Calculate the pressure f 0.55 mol of NH_3 gas in a 2.00 L vessel at 25^o C, using the ideal gas law?
(A) 6.4 atm
(B) 6.5 atm
(C) 6.7 atm
(D) 6.3 atm

63. A steel tank contains carbon dioxide at 34^o C and is at a pressure of 13.0 atm. Determine the internal gas pressure when the tank and its contents are heated to 100^o C?
(A) 16.8 atm
(B) 15.8 atm
(C) 14.8 atm
(D) 13.8 atm

64. Deviations from the ideal gs law are less at?
(A) Low temperatures and low pressure
(B) Low temperatures and high pressure
(C) High temperatures and low pressure
(D) High temperatures and high pressure

65. A mixture of three gases has a pressure of 1380 mmHg at at 298 K. The mixture is analyzed and is found to contain 1.27 mol CO2, 3.04 mol CO, and 1.50 mol Ar. What is the partial pressure of Ar?
(A) 456 mm Hg
(B) 356 mm Hg
(C) 355 mm Hg
(D) 455 mm Hg

66. Which of the following exhibits the most hydrogen bonding?
(A) H_2S
(B) CH_4
(C) LiH
(D) NH_3

67. Which of the following carbon compounds has the highest melting points?
(A) CI_4
(B) CH_4
(C) NH_3
(D) CF_4

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68. Water has such a high specific heat because?
(A) It dissolves both ionic and covalent compounds
(B) It is rather dense
(C) It has many relatively strong hydrogen bonds
(D) The O-H single bond has a high bond energy

69. The triple point is?
(A) The point on a phase disgram where soild, liquid and gas are in equilibrium
(B) The coordinates of a point on a phase diagram
(C) An end to the liquid – gas line in a phase diagram
(D) The three pieces of data needed to solve the clausius- clapeyron equation

70. The main forces responsible for the structure of DNA are?
(A) Ionic bonds and covalent bonds
(B) Covalent bonds and dipole – dipole interaction
(C) Hydrogen bonds and dipole – dipole interaction
(D) Covalent bonds and ionic bonds

71. Which of the following is not likely to exhibit hydrogen bonding?
(A) $(CH_3)_3N$
(B) H_2O
(C) CH_3NH_2
(D) NH_2OH

72. What is the mass of one mole of acetylsalicylic acid (aspirin), $C_9H_8O_4$?
(A) 27 g
(B) 30 g
(C) 29 g
(D) 28 g

73. Determine the number of moles of aluminum in 2.154×10^{-1} kg of Al?
(A) 7.900 mol
(B) 8.983 mol
(C) 7.984 mol
(D) 8.950 mol

74. How many grams of zinc are there in 22.7 g of $ZnCl_2$?
(A) 10.8 g
(B) 11.9 g

(C) 10.9 g
(D) 11.8 g

75. A compound with a composition of 87.5% and 12.5% H was recently discovered. What is the empirical formula for this compound?
(A) N_2H
(B) NH_2
(C) NH
(D) N_2H_3

76. The equation is unbalanced $PCl_3 + H_2O \longrightarrow H_3PO_3 + HCl$ when it is it is correctly balanced, the coefficients are, respectively?
(A) 1,3,1,3
(B) 1,1,3,3
(C) 1,3,3,3
(D) 1,1,1,3

77. Given 6 mol of each reactant, which one would be limiting in the following reaction, 4Au + 8NaCN + O2 + 2H2O → 4NaAu(CN)2 + 4NaOH?
(A) O_2
(B) Au
(C) NaCN
(D) H_2O

78. In the direct reaction of silicon with Cl_2 the yield of $SiCl_4$ is 50%. How many grams of silicon must be reacted with excess chlorine in order to obtain 17g $SiCl_4$?
(A) 1.7g
(B) 16g
(C) 17g
(D) 15g

79. In the reaction of Fe3O4 with carbon to form carbon dioxide and iron, the number of moles of carbon required to convert 23 g of Fe3O4 to products is?
(A) 0.4
(B) 0.3
(C) 0.1
(D) 0.2

80. A 20.0 ml sample of an element with a density of 3.0 g/ml contains $4x10^{23}$ atoms?

(A) 90
(B) 70
(C) 95
(D) 80

81. How many moles of oxygen gas will react with 12.4 mol aluminum for the Equation: $4A1 + 3O_2 \rightarrow 2A1_2O_3$?
(A) 9.3 mol
(B) 5.3 mol
(C) 9.1 mol
(D) 16.8 mol

82. Balance of the following redox equation occurring in aqueous solution: $KMnO_4 + KCI + H_2SO_4 \rightarrow MnSO_4 + K_2SO_4 + H_2O + Cl_2$, what is the stoichiometric coefficient for chlorine (Cl_2) when the equation is balanced with smallest whole number coefficients?
(A) 5
(B) 8
(C) 6
(D) 7

83. Data :
(1) H2(g) + ½O2(g) → H2O(g) ΔH = -241.8 kJ
(2) H2(g) + ½O2(g) → H2O(l) ΔH = -285.8 kJ
On the basis of the above data, which of the following statement is false?
(A) The reverse of of reaction 2 is endothermic
(B) Reaction 1 is exothermic
(C) ΔH for the reaction: H2O(l) → H2O(g) is + 44 kJ/mol.
(D) None of the above

84. What is the amount of heat necessary to raise the temperature of 8.5 kg of water from 12.5^o to 84^o C?
(A) 36 j
(B) 3.0 $x10^3$ kj
(C) 2.6 $x10^3$ kj
(D) 2.5 $x10^3$ kj

85. Data:
ΔH°f values: CH4(g), -74.8 kJ; CO2(g), -393.5 kJ; H2O(l), -285.8 kJ.
Using the ΔH°f data above, calculate ΔH°rxn for the reaction below.

Reaction: $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(l)$?
(A) -890.3 kj
(B) 890.3 kj
(C) 997.7 kj
(D) -997.3 kj

86. Which of the following is not a state function?
(A) V
(B) p
(C) q
(D) ΔH

87. Two solutions (the system), each of 25.0 mL volume and at 25.0 °C, are mixed in a beaker. A reaction occurs between them, causing the temperature to drop to 20.0 °C. After the products have equilibrated with the surroundings, the temperature is again 25.0 °C and the total volume is 50.0 mL. No gases are involved in the reaction. Which one of the following relationships concerning the change from initial to final states (both at 25.0 °C) is correct?
(A) ΔE = 0
(B) ΔH = 0
(C) q = 0
(D) w = 0

88. Which one of the following processes id exothermic?
(A) $H_2(g) \rightarrow 2H(g)$
(B) $H_2O(g) \rightarrow H_2O(1)$
(C) $CO_2(s) \rightarrow CO_2(g)$
(D) $H_2(l) \rightarrow H_2(g)$

89. Data:
$2Ba(s) + O_2(g) \rightarrow 2BaO(s)$ $\Delta H° = -1107.0$ kJ $Ba(s) + CO_2(g) + ½O_2(g) \rightarrow BaCO_3(s)$ $\Delta H° = -822.5$ kJ
Given the data above,
calculate ΔH° for the reaction below.
Reaction: $BaCO_3(s) \rightarrow BaO(s) + CO_2(g)$?
(A) 284 .1 kj
(B) 269.0 kj
(C) 537 kj
(D) -284.5 kj

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90. Predict the signs of ΔH°, ΔS°, and ΔG° for the vaporization of liquid water at 150°C?
(A) ΔH° > 0, ΔS° > 0, ΔG° < 0
(B) ΔH° < 0, ΔS° < 0, ΔG° < 0
(C) ΔH° > 0, ΔS° < 0, ΔG° > 0
(D) ΔH° > 0, ΔS° > 0, ΔG° > 0

91. Which of the following substance has the lowest standard molar entropy (S^o) at 25^o C?
(A) $CH_3OH(l)$
(B) CO(g)
(C) MgO(s)
(D) $H_2O(l)$

92. When crystalline solid barium hydroxide octahydrate and crystalline solid ammonium nitrate are mixed in a beaker at room temperature, a spontaneous occurs. The temperature of the beaker contents rapidly falls to below 0_o use this information to decide whether the reaction is exothermic or endothermic and what the sign of ΔH and ΔS are?
(A) Endothermic; ΔH > 0; ΔS > 0
(B) Endothermic; ΔH < 0; ΔS > 0
(C) Endothermic; ΔH < 0; ΔS < 0
(D) Endothermic; ΔH > 0; ΔS < 0

93. Sodium carbonate can be made by heating sodium hydrogen carbonate:
$2NaHCO_3(s) \rightarrow Na_2CO3(s) + CO_2(g) + H_2O(g)$
For this reaction, ΔH° = 128.9 kJ and ΔS° = 321 J/K. At approximately what temperature will K = 1?
(A) 401.6 K
(B) 401.6^o K
(C) 402.6 C
(D) 33.1 K

94. For the overall hypothetical reaction A + 5B → 4C, the rate of appearance of C given by Δ[C]/Δt is the same as?
(A) -(5/4)(Δ[B]/Δt)
(B) Δ[A]/Δt
(C) -(4/5)(Δ[B]/Δt)
(D) None of these

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95. The initial rate of the reaction
$PCl_5 \rightarrow PCl_3 + Cl_2$
is increased a factor of four when the concentration of PCl5 is doubled. Therefore, the rate?
(A) Is second order with respect to PCl_3
(B) Is first order with respect to PCl_3
(C) Is second order with respect to PCl_5
(D) Is first order with respect to PCl_5

96. Consider the reaction A -> products. Which of the following plots is consistent with a zero-order reaction?
(A) In [A] plotted against time gives a straight line of negative slope
(B) [A] plotted against time gives a horizontal, straight line.
(C) [A] plotted against time gives a curved line of negative slope, decreasing in magnitude as time increase
(D) [A] plotted against time gives a straight line of negative slope

97. The rate constant of a first-order reaction is $3.68 \times 10^{-2}\ s^{-1}$ at 150^o C, and the activation energy is 71 kj/mol. What is the value of the rate constant at 170^o C?
(A) $9.2 \times 10^{-2}\ s^{-1}$
(B) $9.5 \times 11^{-2}\ s^{-1}$
(C) $3.7 \times 10^{-2}\ s^{-1}$
(D) $2.49\ s^{-1}$

98. The reaction
$3ClO^-(aq) \rightarrow ClO_3^-(aq)$
$+ 2Cl^-(aq)$ has been proposed to occur by the following mechanism.
$ClO^-(aq) + ClO^-(aq) \rightarrow ClO_2^-(aq) + Cl^-(aq)$ (slow)
$ClO_2^-(aq) + ClO^-(aq) \rightarrow ClO_3^-(aq) + Cl^-(aq)$ (fast)
Which rate law is consistent with this mechanism?
(A) Rate = $k[Cl^-][ClO^-]^2$
(B) Rate = $k[ClO^-]^3$
(C) Rate = $k[ClO^-]$
(D) Rate = $k[ClO^-]^2$

99. A catalyst speeds up a reaction by?
(A) Providing a new reaction pathway for molecules
(B) Increasing the number of high-energy molecules
(C) Increasing the temperature of the molecules in the reaction
(D) Increasing the activation energy for the reaction

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100. Consider the following gas-phase equilibrium:
$H_2(g) + I_2(g) \leftrightarrow 2HI(g)$ At a certain temperature, the equilibrium constant K_c is 4.0. Starting with equimolar quantities of H_2 and I_2 and no HI, when equilibrium was established, 0.20 moles of HI was present. How much H_2 was used to start the reaction?
(A) 4.0 mil
(B) 0.23 mol
(C) 0.20 mol
(D) 0.10 mol

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Answer

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
D	A	B	D	A	C	B	C	D	A	A	C	B	D	B
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
D	A	C	A	B	B	C	A	C	B	D	A	B	C	D
31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
A	D	B	C	B	A	C	D	B	A	B	D	A	C	D
46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
B	C	A	B	D	D	C	C	C	C	B	C	C	A	B
61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
A	C	B	D	B	D	A	C	A	B	A	C	C	B	D
76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
A	B	C	D	A	A	A	C	D	B	C	D	C	B	A
91	92	93	94	95	96	97	98	99	100					
C	A	A	C	C	D	A	D	A	C					