

CHEMIST

1. The phrase "Stranger gas" refers to _____
 - A. Nitrous Oxide
 - B. Xenon
 - C. Argon
 - D. None of these
2. Which of the following alcohols is generally used as fuel?
 - A. Methyl alcohol
 - B. Propylene
 - C. Ethyl alcohol
 - D. Glycolic alcohol
3. Which of the following is used in photography?
 - A. Sodium thiosulphate
 - B. Potassium sulphate
 - C. Aluminum sulphate
 - D. None of these
4. Which is the solvent used in nail polish remover?
 - A. Benzene
 - B. Iodine
 - C. Acetone
 - D. None of these
5. Which of the following four elements is heaviest?
 - A. Iron
 - B. Nitrogen
 - C. Carbon
 - D. Mercury
6. Which of the following is used in manufacturing glass?
 - A. Silica
 - B. Potassium Chloride
 - C. Aluminum nitrate
 - D. None of these
7. Which of the following elements is abundant in the earth's crust?
 - A. Aluminum
 - B. Uranium
 - C. Plutonium
 - D. Silicon
8. Which of the following is mononuclear?
 - A. Hydrogen
 - B. Oxygen
 - C. Both A and B
 - D. None of the above

9. Which of the following gasses is heteronuclear?
- A. Carbon dioxide
 - B. Oxygen
 - C. Hydrogen
 - D. None of these
10. What is PVC?
- A. Polyvinyl Carbide
 - B. Polyvinyl Chloride
 - C. Polyvinyl Carbonate
 - D. Phosphoric Vinyl Chloride
11. Which of the following is used for cloud seeding?
- A. Silver iodide
 - B. Potassium Chloride
 - C. Manganese bromide
 - D. None of these
12. How many isotopes does Polonium have?
- A. 33
 - B. 40
 - C. 12
 - D. None of these
13. Which of the following is the SI unit of radioactivity?
- A. Radiances
 - B. Becquerel
 - C. Henri
 - D. None of the above
14. Which of the following is the cause for acid rain?
- A. Carbon monoxide
 - B. Nitrous oxide
 - C. Sulphur dioxide
 - D. Both B and C
15. Which of the following properties of water is responsible for water drops being spherical in shape?
- A. Surface tension
 - B. Neutral in acidity
 - C. High viscosity
 - D. None of these
16. What is a Pascal equal to?
- A. On Newton per square meter
 - B. On Newton per meter
 - C. On Newton per cubic meter
 - D. None of these

17. Which of the following statements is true with respect to the Antoine equation?
- It is a mathematical expression of the relation between the volume and the temperature of pure liquid or solid substances
 - It is a mathematical expression of the relation between the vapor pressure and the density of pure liquid or solid substances
 - It is a mathematical expression of the relation between the vapor pressure and the temperature of pure liquid or solid substances
 - None of the above
18. Which of the following statements is true?
- Only half of the isotopes of polonium are radioactive
 - All the isotopes of polonium are radioactive
 - Only one of the isotopes of polonium is radioactive
 - None of the isotopes of polonium are radio active
19. Which of the following is a Relatively more stable entities with unpaired electrons?
- CO
 - NO
 - O₂
 - None of the above
20. Atoms bond in order to _____
- Increase their potential energy and gain stability
 - Reduce their potential energy and gain stability
 - Reduce their potential energy and lose stability
 - None of the above
21. What is a polar bond?
- It is a type of bond between two atoms in which electrons are shared unequally
 - It is a type of bond between two atoms in which electrons are shared equally
 - It is a type of bond between two atoms in which electrons are not shared at all
 - None of the above
22. What is a hydrogen bond?
- it is the electrostatic attraction between polar molecules that occurs when a hydrogen (H) atom bound to any other atom
 - it is the electrostatic attraction between polar molecules that occurs when a hydrogen (H) atom bound to a highly electronegative atom
 - it is the electrostatic attraction between polar molecules that occurs when any atom bound to a highly electronegative atom such as hydrogen
 - none of the above
23. which of the following is a hydrocarbon in which all the four valencies of carbon atoms are fully utilized?
- Alkynes
 - Alkenes
 - Alkanes
 - Alkalies

24. Which of the following is used as a common industrial catalyst in the Hydrogenation of alkenes?
- platinum,
 - nickel or
 - palladium
 - All the above
25. Alkenes are also known as
- Paraffins
 - Olefins
 - Alkalis
 - None of these
26. Who among the following discovered Benzene?
- Madam Curie
 - Michael Faraday
 - Reginald Cooper
 - None of the above
27. Which of the following is a major component of natural gas?
- Ethane
 - Methane
 - Butane
 - Ketene
28. Which of the following is produced when Calcium Carbide reacts with water?
- Ethane
 - Methane
 - Acetylene
 - None of the above
29. The acylation of benzene is called
- Friedel-Crafts reaction
 - Friedel Castro Reaction
 - Frederic-Crafts reaction
 - None of these
30. Which of the following is not true with gases?
- They have mass
 - They do not mix well
 - They diffuse easily
 - They can be compressed
31. Which of the following is true with Boyle's law?
- Boyle's law states that *at constant temperature* for a fixed mass, the absolute pressure and the volume of a gas are inversely proportional
 - Boyle's law states that *at constant temperature* for a fixed mass, the absolute pressure and the volume of a gas are directly proportional
 - Boyle's law states that *at constant temperature* for a fixed mass, the absolute pressure and the volume of a gas are completely uncorrelated
 - None of the above

32. What does Graham's state?
- A. the rate of effusion of a gas is inversely proportional to the square root of the mass of its particles
 - B. the rate of effusion of a gas is directly proportional to the square root of the mass of its particles
 - C. the rate of effusion of a gas is inversely proportional to the square of the mass of its particles
 - D. the rate of effusion of a gas is directly proportional to the square of the mass of its particles
33. in general, how many different scales of temperature do we use in chemistry?
- A. One
 - B. Two
 - C. Three
 - D. Eight
34. Which of the following represents a graph plotted by Boyle's law (between pressure and volume)?
- A. A straight line passing through the origin
 - B. A parabolic curve
 - C. A curve convex to the X-axis, with a pre defined maximum
 - D. None of these
35. What will happen to the volume of the gas, if the pressure is doubled while maintaining constant temperature?
- A. The volume will double
 - B. The volume will be reduced to one-fourth
 - C. The volume will be reduced by half
 - D. None of these
36. What are the units of gas constant?
- A. Same as that of the energy
 - B. Energy per mole
 - C. Energy per constant temperature and volume
 - D. energy per temperature increment per mole
37. What is "Poises"?
- A. it is an amphibious Mediterranean fish from which many alkynes can be extracted
 - B. it is the unit of dynamic viscosity in CGS system
 - C. it is the ratio of the atomic weights of phosphorus and iodine
 - D. none of these
38. Evaporation results in lower temperature because _____
- A. molecules with high kinetic energy escape
 - B. molecules with high kinetic energy accumulate in the liquid and solidify
 - C. molecules with low kinetic energy escape
 - D. none of the above
39. What is effusion?
- A. It is a process in which a solid converts to gaseous state
 - B. It is a process in which a gas converts to liquid state
 - C. it is the process in which a gas escapes through a small hole
 - D. It is a process in which molecules of a solid evaporate under very low temperature

40. Which of the following describes conversion of solid state directly into a gaseous state without going through liquid state?
- A. Condensation
 - B. Evaporation
 - C. Effusion
 - D. Sublimation
41. What is anisotropy?
- A. It is the property of being directionally dependent
 - B. It is another name for isotropy
 - C. It is an alloy made by fusing isotopes from different radioactive elements
 - D. None of the above
42. To which of the following crystalline forms does diamond belong to?
- A. Metallic crystal
 - B. Molecular crystal
 - C. Covalent crystal
 - D. None of the above
43. Which of the following temperatures is referred to as absolute zero?
- A. 0 K
 - B. 273 K
 - C. -32 F
 - D. 0 C
44. Which of the following statements is true?
- A. Sulphur Dioxide diffuses 4 times faster than Helium
 - B. Helium diffuses 4 times faster than Sulphur Dioxide
 - C. Helium and Sulphur Dioxide diffuse at the same rate
 - D. None of the above
45. Which of the following has the lowest Prandtl number?
- A. Mercury
 - B. Water
 - C. Engine oil
 - D. Refrigerant
46. Which of the following is true with respect to Prandtl number?
- A. It is always an integer
 - B. It is a dimensionless number
 - C. It is same as the atomic number of the elements
 - D. All the above
47. In Fourier's law, the general which of the following is treated as a constant?
- A. Heat flux density
 - B. Temperature gradient
 - C. Thermal conductivity
 - D. None of the above

48. The reciprocal of resistance is known as
- Conductance
 - Negative resistance
 - Residual resistance
 - Lubricance
49. What is Biot number?
- It is heat transfer coefficient
 - it is a dimensionless quantity used in heat transfer calculations
 - it is the thermal conductivity coefficient of a conducting metal
 - none of these
50. Which of the following statements is true?
- The heat transfer co-efficient in film type condensation is less than that for dropwise condensation
 - The heat transfer co-efficient in film type condensation is four times more than that for dropwise condensation
 - The heat transfer co-efficient in film type condensation is same as that for dropwise condensation
 - None of the above
51. In a particular instance, the rate of a chemical reaction doubles for every 10°C rise of temperature. What is the rate of increases in the reaction If the temperature is raised by 40°C ?
- 32 times
 - 16 times
 - 8 times
 - 4 times
52. What is an endothermic process?
- It is a process or reaction in which the system releases or gives out energy to its surroundings in the form of heat
 - It is a process or reaction in which the system gives out electro magnetic energy to its surroundings
 - It is a process or reaction in which the system absorbs energy from its surroundings in the form of heat
 - None of these
53. What is a Zero-order reaction?
- It has a a constant rate of reaction
 - It is a reaction where the radioactivity of the reactants is reduced to zero
 - It has a rate that is independent of the concentration of the reactant
 - None of these
54. What happens when a catalyst is used in a chemical reaction?
- The rate of a chemical reaction increases due to the participation of an additional substance called a catalyst
 - The quantum of a thermal release increases due to the participation of an additional substance called a catalyst
 - The radio activity of atoms in a chemical reaction increases due to the participation of an additional substance called a catalyst

D. None of these

55. What is the SI unit of catalytic activity?

- A. Katal
- B. Catalina
- C. Catelenses
- D. None of these

56. Which of the following can never occur in a chemical reaction involving two different reactants?

- A. First order reaction
- B. Pseudo second order reaction
- C. Second order reaction
- D. Unimolecular reaction

57. Consider the reaction $\text{NO}_2 + \text{CO} \rightarrow \text{NO} + \text{CO}_2$ which is second-order in the reactant NO_2 and zero order in the reactant CO . The observed rate is given by

- A. $r = k[\text{CO} \cdot \text{NO}_2]^2$
- B. $r = k[\text{NO}_2]^2$
- C. $r = k[\text{CO} \cdot 2\text{NO}_2]$
- D. None of the above

58. Which of the following is the main reason why the reaction rates increase with increase in temperature?

- A. The rate constant increases
- B. The rate constant decreases
- C. In general, substances tend to expand with the increase in temperature
- D. The temperature acts as a catalyst

59. Consider a certain first order reaction. It is found that it takes 64 seconds for the concentration of reactant to fall from 0.20 M to 0.10 M. How much time will it take for the concentration of reactant to fall from 0.10 M to 0.05 M?

- A. 32 seconds
- B. 16 seconds
- C. 64 seconds
- D. 128 seconds

60. what is the order of the reaction $\text{H}_2 + \text{O}_2 + 2\text{HI} = \text{I}_2 + 2\text{H}_2\text{O}$?

- A. kinetically of the zero order
- B. kinetically of the second order
- C. kinetically of the first order
- D. none of the above

61. which of the following processes is used to produce hydrogen from hydrocarbons in the process of synthesis of ammonia from natural gas?

- A. Steam reforming
- B. Fractional distillation
- C. Oxidation
- D. None of these

62. Which of the following processes can be used to convert Red phosphorous into white phosphorous?
- Steam reforming
 - Fractional distillation
 - Vaporization and condensation
 - None of these
63. Which of the following plant nutrients is supplied by urea?
- Potash
 - Phosphorous
 - Nitrogen
 - All the above
64. Fertilizers such as urea are often supplied in prilled form. Which of the following best describes the prilling process?
- Prills are formed by melting prill substance and casting it in earthen moulds in a large shed usually referred to as prilling tower
 - Prills are formed by squeezing the substance under high pressure in a special compressor located inside a tall prilling tower
 - Prills are formed by allowing drops of the melted substance to freeze in mid-air after being dripped from the top of a tall prilling tower
 - None of the above
65. How do you produce sodium tripolyphosphate?
- $\text{Na}_5\text{P}_5\text{O}_{10}$
 - $\text{Na}_5\text{P}_3\text{O}_{10}$
 - $\text{Na}_3\text{P}_3\text{O}_{10}$
 - $\text{Na}_3\text{P}_3\text{O}_5$
66. Which of the following are the properties of orthophosphoric acid?
- It is a polar molecule.
 - It is infinitely soluble in water
 - It is a solid at room temperature and pressure, when pure
 - All the above
67. Which of the following is used in the Haber Process?
- Iron based catalyst
 - Nitrogen based catalyst
 - Alloy of gold and silver
 - None of these
68. What is the principle used in a jet pump?
- temperature of one fluid is used for moving another fluid
 - momentum of one fluid is used for moving another fluid
 - momentum of one fluid is used for reducing the temperature of another fluid
 - None of these

69. Why are Thiols (organosulfur compounds) are often referred to as mercaptans?
- A. Because thiolate group bonds strongly with mercury compounds\$
 - B. Because thiolate group come originally from Martian soil
 - C. Because mercury is the main element found in the thiolate group
 - D. None of these
70. What is the pour point of a liquid?
- A. The pour point of a liquid is the pressure at which it becomes a gas flows into the atmosphere
 - B. The pour point of a liquid is the temperature at which it becomes a gas and reaches evaporates
 - C. The pour point of a liquid is the temperature at which it becomes semi solid and loses its flow characteristics\$
 - D. None of these
71. What is Viscosity Index?
- A. It is an arbitrary measure for the change of viscosity with variations in temperature\$
 - B. It is an arbitrary measure for the change of temperature with variations in viscosity
 - C. It is an arbitrary measure for the change of viscosity with variations in pressure
 - D. It is an arbitrary measure for the change of viscosity with variations in light
72. What is the refinery process for extracting asphaltenes and resins from heavy vacuum gas oil is called?
- A. Vacuum extraction
 - B. Solvent deasphalting\$
 - C. Asphaltene gasification
 - D. None of these
73. Which of the following processes is used to convert hydrocarbons to aromatics?
- A. Aromation
 - B. Aro-conversion
 - C. Catalytic reforming\$
 - D. Hydrocarbonation
74. What is the main byproduct of the dehydrogenation process used to produce high-octane aromatic hydrocarbons?
- A. Hydrogen\$
 - B. Carbon dioxide
 - C. Helium
 - D. Heavy water
75. What are asphaltenes?
- A. Asphaltenes are molecular substances that are found in crude oil\$
 - B. Asphaltenes are heavy substances that are found in asparagus oil
 - C. Asphaltenes are light substances that are created by decomposition of vegetative matter under high pressure.
 - D. None of these

76. What is Doctor Sweetening Process?

- A. It is an industrial process through which large quantities of diabetic sugar molecules are produced
- B. It is an industrial chemical process for converting gasoline into other higher order hydrocarbons
- C. It is an industrial chemical process for converting mercaptans into disulfides
- D. None of these

77. Which of the following tests is used to find out the softening point of bitumen.

- A. Ball and bat test
- B. Ball and ring test
- C. Ball bearing test
- D. All the above

78. Which of the following processes is used to convert n-paraffins to i-paraffins?

- A. Isomerisation
- B. Iodination
- C. Paraffin polymerization
- D. None of these

79. Which of the following is used as a catalyst in catalytic reforming?

- A. Platinum
- B. Rhenium
- C. Both A and B
- D. None of these

80. Which of the following is an enantiomer? is the

- A. sedative thalidomide
- B. escitalopram
- C. citalopram
- D. all the above

81. what are the units used to measure the standard enthalpy of formation?

- A. KJ/ Mol
- B. KJ / meter
- C. KJ / Cubic Meter
- D. None of these

82. Which of the following is true with neutron?

- A. It has negative charge and no mass
- B. It has positive charge and no mass
- C. It has no charge and no mass
- D. It has no charge and mass

83. Which of the following can be used to deflect cathode rays?

- A. Electric field
- B. Magnetic field
- C. Both A and B
- D. None of the above

84. What is the mass of an electron?

- A. $9.10938291 \times 10^{-31}$ kilograms
- B. $9.10938291 \times 10^{-21}$ kilograms
- C. $9.10938291 \times 10^{-11}$ kilograms
- D. None of these

85. What is an atomic orbital?

- A. It is a mathematical function that describes the wave-like behavior of either one electron or a pair of electrons in an atom
- B. It is the orbit in which moving electrons collide with protons
- C. It is a mathematical function that describes the wave-like behavior of neutrons within an atom
- D. None of these

86. In a radioactive element, which of the following is the most penetrating radiation?

- A. Alpha rays
- B. Beta rays
- C. Gamma rays
- D. Delta rays

87. What does Pauli Exclusion Principle state?

- A. it is impossible for two electrons of a poly-electron atom to have the same values of the four quantum numbers
- B. Two electrons of a poly-electron atom can always have the same values of the four quantum numbers
- C. it is impossible for any electron of a poly-electron atom to have four quantum numbers
- D. none of these

88. which of the following is true with Grashof number?

- A. It approximates the ratio of the buoyancy to viscous force acting on a fluid.
- B. It involves situations of natural convection.
- C. It is named after the German engineer Franz Grashof.
- D. All the above

89. Which of the following modes of heat transfer is used in the cooling of air cooled internal combustion engine?

- A. Convection
- B. Conduction
- C. Radiation
- D. All the above

90. Which of the following has the lowest heat transfer coefficient?

- A. Water
- B. Mercury
- C. Air
- D. Steam

91. What is emissivity of the surface of a material?
- A. It is the effectiveness in emitting energy as thermal radiation
 - B. It is the effectiveness in absorbing energy as thermal radiation
 - C. It is the effectiveness in reflecting energy thermal radiation into atmosphere
 - D. None of these
92. Which of the following is not suited for heat exchanger tubes?
- A. Copper
 - B. Stainless steel
 - C. Lead
 - D. All the above
93. Which of the following has the highest thermal conductivity?
- A. Copper
 - B. Coal
 - C. Iodine
 - D. Nitrogen
94. Which of the following flows lead to maximum heat transfer rate?
- A. Turbulent
 - B. Co-planar
 - C. Co-current
 - D. Laminar
95. Which of the following properties of a solution provides highest crystal growth during crystallization process?
- A. Density
 - B. Super saturation
 - C. Viscosity
 - D. Turbidity
96. What is one BTU equal to?
- A. 105 joules
 - B. 1055 joules
 - C. 10555 joules
 - D. None of these
97. What is Karrick process?
- A. Low temperature carbonization
 - B. High temperature carbonization
 - C. Decarburization
 - D. Carbon plating
98. Which of the following is a unit of measurement for calorific value?
- A. KJ/kg
 - B. KJ
 - C. KJ/sq.M.
 - D. KJ/meter

99. Which of the following describes the combustion reaction of gasoline?

- A. Endothermic
- B. Exothermic
- C. Catalytic
- D. None of these

100. Which of the following fuels has the highest Wobbe Index?

- A. Hydrogen
- B. Methane
- C. N-butane
- D. Ethane