4. Aqueous solution of sodium chloride is
   (a) neutral (b) acidic
   (c) basic (d) none of the above
5. The bond present in O—H is
   (a) coordinate bond (b) polar covalent bond
   (c) pure covalent bond (d) ionic bond
6. Vinegar contains the acid which is
   (a) propionic (b) butyric
   (c) acetic (d) formic
7. Carborundum is used as
   (a) a medicine (b) a cutter
   (c) a paint (d) a roller
8. Water boils at 100°C under pressure of
   (a) 780 mm (b) 760 mm
   (c) 790 mm (d) none of the above
9. The enormous energy released in an atomic explosive is due to the conversion of
   (a) neutrons into protons
   (b) mechanical energy into nuclear energy
   (c) mass into energy
   (d) chemical energy into heat energy
10. In the process of radioactivity
   (a) beta rays consisting of helium nuclei are emitted
   (b) gamma rays are emitted from the nuclei
   (c) electrons are emitted as alpha rays
   (d) none of the above
11. The stability of ionic bond depends on
   (a) lattic energy
   (b) packing fraction
   (c) radii of the constituting ions
   (d) atomic number
12. The Dalton's law of partial pressure will not be applicable in
   (a) hydrochloric acid and ammonia at room temperature
   (b) nitrogen and oxygen at room temperature
   (c) sulphur dioxide and oxygen at room temperature
   (d) carbondioxide and carbon monoxide at room temperature
13. The entropy of a perfect crystalline solid an absolute zero is
   (a) zero (b) positive
   (c) negative (d) none of the above
14. Which of the following ionise the gas?
   (a) α-particle (b) β-particle
   (c) γ-particle (d) X-rays
15. The element which has largest atomic radius is
   (a) Li (b) Cs
   (c) Mg (d) K
16. The solution which will be closer to the ideal solution
   (a) normal solution
   (b) dilute solution
   (c) saturated solution
   (d) super-saturated solution
17. One gram-atom of gold contains
   (a) 6.02×10^{23} atoms (b) 6.02×10^{-23} atoms
   (c) 6.02×10^{22} atoms (d) 6.02×10^{-22} atoms
18. Helium atom is two times heavier than a hydrogen molecule at 298 K. The average kinetic energy of a helium atom is
   (a) half that of a hydrogen molecule
   (b) four times that of a hydrogen molecule
   (c) two times that of a hydrogen molecule
   (d) same as that of a hydrogen molecule
19. Equal weight of methane and oxygen and mixed in an empty container at 25°C. The fraction of the total pressure exerted by oxygen is
   (a) $\frac{1}{2}$ (b) $\frac{1}{3}$
   (c) $\frac{2}{3}$ (d) $\frac{3}{2}$
20. The combustion of methane takes place according to the equation

$$CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(l)$$
$$\Delta H = -890.3 KJ$$

   How many grams of methane will be required to produce 35.61.2 KJ of heat on combustion?
   (a) 16 g (b) 32 g
   (c) 64 g (d) 128 g
21. Ionic theory of electrolysis was given by
   (a) Archimedes (b) Arrhenius
   (c) Boyle (d) Charles
22. With increasing dilution of an electrolyte, the equivalent conductivity and molecular conductivity will
   (a) not change at all
   (b) acquire a maximum value

(c) acquire a minimum value
(d) none of the above

23. Electro-chemical equivalent is
(a) amount of time taken is seconds when one gram of substance is deposited by 1 ampere current
(b) amount of substance deposited by 1 ampere current passing for one second
(c) amount of current passing for one second to deposit 1 gm of substance
(d) none of the above

24. The half-life period of decomposition of a compound is 50 minutes. If initial concentration is made 4 times, the half-life period reduces to half, *i.e.*, 25 minute. What is the order of reaction
(a) 1 (b) $\frac{3}{2}$
(c) 2 (d) $\frac{5}{2}$

25. For the first order, the half-life is equal to
(a) 20 min (b) 30 min
(c) 40 mim (d) 60 min

26. $\frac{d[NO]}{dt}$ represents
(a) rate of decomposition of activated complex
(b) rate of decompostion of NO
(c) rate of formation of activated complex
(d) rate of the formation of NO

27. The rate of constant K according to collision theory is given by
(a) $K = Ze^{-E_a/RT}$ (b) $K = PZe^{-E_a/RT}$
(c) $K = PZe^{E_a/RT}$ (d) $K = Ze^{E_a/RT}$

28. Half-life period of a reaction is found to be independent of initial concentration. The reaction must be
(a) 1st order (b) 2nd order
(c) 3rd order (d) 4th order

29. For the first order reaction
$A \rightarrow B + C$, rate of the reaction is given by
(a) $k = \frac{2303}{t}\log\frac{a-x}{a}$ (b) $k = \frac{1}{t}\log\frac{a}{a-x}$
(c) $k = \frac{2.303}{t}\log\frac{a}{a-x}$ (d) $k = \frac{23.03}{t}\log\frac{a}{a-x}$

30. Rate of a reaction
$A + B \rightarrow C + D$ is found to be $[B]^{x+y}$, then the order of reaction will be
(a) x (b) y
(c) $x + y$ (d) $x - y$

31. A certain gas occupies 0.418 litres at 27°C and 740 mm of Hg. If the weight of the gas is increased to 75 gram in the same vessel and the temperature is cooled to 250 K, then what would be its pressure?
(a) 2.27 atm (b) 2.81 atm
(c) 3.26 atm (d) 4.21 atm

32. Air is
(a) a compound (b) a mixture
(c) an element (d) none of the above

33. The first metal used by man was
(a) gold (b) silver
(c) copper (d) iron

34. Gober gas contains mainly
(a) ethane (b) methane
(c) acetylene (d) butane

35. Permanent hardness of water cannot be removed by
(a) boiling
(b) distillation
(c) passing through chlorine gas
(d) adding sodium carbonate

36. Camphor can be easily purified by
(a) distillation (b) sublimation
(c) crystallization (d) solvent extraction

37. The most abundant halogen on the earth's crust is
(a) chlorine (b) bromine
(c) iodine (d) none of the above

38. Which of the following is used as an anti-knocking substance?
(a) Tetramethyl lead
(b) Tetraethyl lead
(c) Common salt
(d) Alkyl magnesium halide

39. Alcoholic fermentation can be brought about by the action of
(a) diatase (b) oxygen
(c) yeast (d) carbon dioxide

40. Which of the following used as a refrigerant
(a) Ammonia (b) Ether

(c) Acetone (d) Nitrogen

41. Why does a piece of bread when chewed taste sweet
(a) It does not taste sweet, it is just an illusion
(b) The taste buds are stimulated by chewing
(c) The sugar content of bread is drawn out
(d) Saliva's action converts starch into maltose

42. Which of the following statements is correct ?
(a) Bronze is an alloy of copper and tin
(b) Bronze is an alloy of copper and silver
(c) Bronze is an alloy of zinc and copper
(d) Bronze is an alloy of zinc and silver

43. Gasoline is the name given to the same substance is
(a) crude oil (b) natural gas
(c) petrol (d) diesel oil

44. Gun powder consists of a mixture of
(a) TNT and charcoal
(b) nitre, sulphur, and charcoal
(c) sulpur, sand and charcoal
(d) sand and TNT

45. Marsh gas which is formed from decaying organic matter and in coal mines is the common name for
(a) ethane (b) methane
(c) propane (d) butane

46. The element present in the largest amount in rocks and minerals is
(a) gold (b) carbon
(c) hydrogen (d) silicon

47. Dehydration of fruits is done before, tinning them for food which is
(a) to preserve the essence in full strength
(b) to prevent microbial growth
(c) to remove bacteria
(d) to add nutrients in the fruits

48. The chemical substance present in bones and teeth is
(a) calcium sulphate (b) calcium phosphate
(c) calcium borate (d) calcium chloride

49. Acetyl salicyclic acid is commonly used as
(a) tear gas (b) chemical fertilizer
(c) paint (d) pain reliever

50. Rice grains become swollen after boiling and occupy more space because
(a) rice has plenty of fat content
(b) starch swells in contact with water and heat
(c) carbohydrate content becomes more
(d) solids enlarge on absorbing heat

51. In any reaction to be thermodynamically feasible, the change in free energy should be
(a) negative (b) zero
(c) positive (d) none of the above

52. Kinetic studies of reaction are generally carved out at
(a) variable composition
(b) variable pressure
(c) constant temperature
(d) constant pressure

53. The member of reacting molecules whose concentration alters as a result of chemical change in terms as
(a) order of reaction
(b) molecularity of reaction
(c) enthalpy of reaction
(d) energy of reaction

54. The reactions which takes place between non-ionised molecules are
(a) ionic reactions
(b) spontaneous reactions
(c) consecutive reactions
(d) molecular reaction

55. "Reaction velocity of a chemical reaction at any instant is proportional to product of the molecular concentration of reactants" was stated as
(a) Law of mass action
(b) Le-Chatelier's Principle
(c) Ostwald dilution Law
(d) Boyle's Law

56. The distribution law holds correctly under following conditions
(a) The concentration of solute in two solvent should be light
(b) The concentration of solute in two solvent must be low
(c) The temperature should vary throughout the experiment
(d) The solute should undergo association or dissociation

57. The formation of SO_3 from SO_2 and O_2 will be favoured by
$SO_2 + O_2 \rightleftharpoons 2SO_3$; $\Delta H = -42{,}000$ cals
(a) high pressure (b) high temperature

(c) low pressure (d) none of the above

58. If the pressure on the solution of gas in equilibrium with the gas itself is increased, the solubility of gas will be
(a) decrease (b) increase
(c) remain the same (d) none of the above

59. The rate at which a substance reacts is proportional to its
(a) mass (b) weight
(c) volume (d) active mass

60. In a reaction $2H_1 \rightleftharpoons H_2 + I_2$
(a) $K_p > K_c$ (b) $K_p < K_c$
(c) $K_p = K_c$ (d) none of the above

61. Kerosene has the composition
(a) $C_{11} - C_{13}$ (b) $C_9 - C_{16}$
(c) $C_7 - C_{11}$ (d) $C - C_4$

62. When iron rusts its weight
(a) increases (b) decreases
(c) remains same (d) none of the above

63. Molten or aqueous solution of ionic compounds are
(a) insulators
(b) semi-conductors
(c) good conductors of electricity
(d) bad conductors of electricity

64. Electrical conductivity in a metal is due to
(a) movement of free elements
(b) positive and negative ions
(c) positive ions only
(d) negative ions only

65. A substance which is used as a shell filters is
(a) mixture of picric acid and charcoal
(b) mixture of tri-nitrotoluene and picric acid
(c) mixture of ammonium nitrate and tri-nitrotoluene
(d) tri-nitrotoluene

66. In an agriculture farm, potassium nitrate was repeatedly used as a nitrogeneous fertilizers. After several successive crops, the soil was left with excess of potassium ions, making it
(a) neutral (b) dry
(c) alkaline (d) acidic

67. Fixation of nitrogen refers to
(a) conversion of atmospheric nitrogen into nitrogeneous compounds
(b) nitrogen cycle in nature
(c) liquefication of nitrogen
(d) manufacturing nitrogen from air

68. Acid rain results due to
(a) oxides of nitrogen and sulphur dioxide
(b) ammonia
(c) carbon monoxide
(d) oxide of nitrogen

69. The least prone to fire is
(a) rayon (b) nylon
(c) cotton (d) terycot

70. Which of the following explains the difference between explosion and combustion?
(a) combustion is a chemical reaction while explosion is caused by physical factor
(b) combustion can take place only in air while explosion can happen anywhere
(c) in case of explosion, there is a rapid increase of pressure continued space
(d) combustion is accompained by heat given out while explosion is caused by absorption of heat

71. Which of the following sets make the terminals of the dry cell
(a) zinc-aluminium (b) zinc-copper
(c) copper-carbon (d) zinc-carbon

72. The gas which is preferred to be mixed with oxygen in an oxygen tube
(a) argon (b) carbon-dioxide
(c) helium (d) nitrogen

73. Which of the following is not a natural polymer ?
(a) silk (b) rubber
(c) plastic (d) cellulose

74. Synthetic detergents are
(a) a mixture of sodium salts of aromatic and sodium chloride
(b) a mixture of sodium carbonate and sodium chlorides
(c) sodium salts of fatty acid
(d) calcium salts of hydrochloric acid

75. The industrial preparation of the metal aluminium from bauxite involves the process of
(a) electrolysis
(b) reduction
(c) fractional distillation
(d) fractional crystallisation

76. Wood charcoal is obtained by burning the wood
(a) in contact with chlorine
(b) in contact with air
(c) out of contact with air
(d) out of contact with carbon dioxide

77. Hypo, which is used in photography, is chemically
(a) silver nitrate
(b) sodium phosphate
(c) sodium thiosulphate
(d) silver bromide

78. Sodium bicarbonate is useful as a fire extinguisher because
(a) it serves as a blanket for fire
(b) it releases water which extinguishes fire
(c) it emits a foam which extinguishes fire
(d) it decomposes on heating to give carbon dioxide

79. Why water is not a suitable means to put out petrol fire ?
(a) Water, being heavy, slips below petrol which thus remains in contact with air and burns
(b) The oxygen content of water is isolated by petrol and thus it helps in burning.
(c) Petrol is too inflammable to be extinguished by water
(d) Water and petrol mix and makes more flammable

80. Dry ice at room temperature gives
(a) water (b) CO_2 gas
(c) salty water (d) liquid CO_2

81. Osmotic pressure of a solution is directly proportional to
(a) lowering of vapour pressure
(b) relative lowering of vapour pressure
(c) molecular weight of solvent
(d) none of the above

82. The relation between pressure equilibrium constant and concentration equilibrium constant is
(a) $K_p = K_c RT$ (b) $K_p = K_c \frac{RT}{n}$
(c) $K_p = K_c nRT$ (d) $K_p = K_c (RT)^n$

83. Molality of a solute is given by
(a) $\frac{\text{Weight of solvent} \times 1000}{\text{Molecular weight of solute} \times \text{weight of solute}}$
(b) $\frac{\text{Weight of solute} \times 1000}{\text{Molecular weight of solute} \times \text{weight of solvent}}$
(c) $\frac{\text{Weight of solute}}{\text{Molecular weight of solute} \times \text{weight of solute}}$
(d) $\frac{\text{Weight of solute}}{\text{Molecular weight of solute}}$

84. From lowering of vapour pressure
(a) Molecular weight of either solute or solvent can be calculated, knowing the molecular weight of the other
(b) Molecular weight of both solute and solvent can be calculated
(c) Molecular weight of only solute can be calculated knowing the molecular weight of solvent
(d) Molecular weight of only solvent can be calculated knowing the molecular weight of the solute

85. Vapour pressure of a solution is always less than the vapour pressure of
(a) pure solvent (b) solute
(c) mole fraction (d) none of the above

86. An ideal gas is expanded against zero pressure adiabatically which of the following quantities will be equal to zero?
(a) ΔQ (b) ΔS
(c) ΔE (d) None of the above

87. Entropy change of a system depends on
(a) pressure (b) volume
(c) temperature (d) none of the above

88. A positive value of ΔS indicates that
(a) system tends to reach at equilibrium
(b) system is at equilibrium
(c) system becomes less disordered
(d) system becomes more disordered

89. For any irreversible process or cycle
(a) $\Delta S = 0$ (b) $\Delta S > 0$
(c) $\Delta S < 0$ (d) $\Delta S \geq 0$

90. Total entropy change for a reversible isothermal cycle is
(a) variable (b) zero

(c) negative (d) positive

91. Which of the following contains carbon ?
(a) Phosphorite (b) Chromite
(c) Bauxite (d) Lignite

92. Ozone is important to mankind, because
(a) it helps in releasing hydrogen into atmosphere
(b) it helps in maintaining the temperature of the earth
(c) it releases oxygen in the air
(d) it creates a protective covering against ultraviolet rays.

93. Radio carbon dating is used to find the age of
(a) building (b) fossils
(c) babies (d) rocks

94. The green colour of the grass is due to
(a) starch (b) cellulose
(c) chlorophyll (d) none of the above

95. Artificial rain is produced by seeding clouds with
(a) potassium iodide (b) silver iodide
(c) silver nitrate (d) copper sulphate

96. The best source of vitamin A is
(a) carrot (b) milk
(c) oranges (d) beans

97. Hydrolysis of oils and fats by alkali is known as
(a) hydroxylation (b) hydrolysis
(c) saponification (d) esterification

98. Mozaic gold is
(a) naturally occurring silica
(b) crystalline stannic sulphide
(c) an alloy which shines like a gold
(d) impure form of gold

99. Carbon oil is used as an application for burns is
(a) vegetable oil and lime water
(b) alcohol and lamp black
(c) vegetable oil, petrol and lamp black
(d) alcohol and lime water

100. The chief constituent of animal bones
(a) magnesium carbonate
(b) calcium sulphate
(c) calcium phosphate
(d) magnesium phosphide

101. The powder used for developing finger print on a multi-coloured surface is
(a) gold dust
(b) charcoal
(c) manganese dioxide
(d) fluorescent powder

102. Coloured glasses for goggles contain
(a) ferrous oxide (b) lanthanide oxide
(c) nickel oxide (d) ferric oxide

103. Which of the following surfaces is least likely to receive latent finger prints?
(a) Skin (b) Glass
(c) Paper (d) Porcelain

104. Plutonium is considered important, because
(a) it is a transuranic material
(b) it can be used in fusion reactions
(c) it is absolutely necessary for a nuclear reaction
(d) it can be directly used for nuclear explosion

105. Gamma radiations are used for
(a) sterilizing food stuff
(b) controlling pests
(c) cancer therapy
(d) all of the above

106. For welding the gas used is
(a) methane (b) ethane
(c) ethylene (d) acetylene

107. The skylab space station did not have a safe landing because
(a) its remote control system failed
(b) NASA failed to keep it up due to lack of enough energy provision in the spacecraft
(c) it was not intended to stay in space for so long a period it did
(d) the communication system between NASA and the spacecraft broke down after a specified period

108. In the process of electroplating
(a) electrical energy is converted into heat energy
(b) electrical energy is converted into magnetic energy
(c) electrical energy is converted into chemical energy
(d) all are true

109. Malachite is the mineral of
(a) copper (b) iron
(c) calcium (d) magnesium

110. Nitrogen fertilizer having maximum amount of nitrogen is
(a) Ammonium chloride
(b) Potassium nitrate
(c) Ammonium sulphate
(d) Urea

111. Which of the following is not related to the function of the thyroid gland ?
(a) Taxicgoiter (b) Myxedema
(c) Cretism (d) Dwarsfism

112. The compound which is not a constituent of normal urine is
(a) Urea (b) Uric acid
(c) Sodium chloride (d) Albumin

113. Which of the following accumulates in the muscle as a result of the vigorous exercise ?
(a) Carbon dioxide
(b) Lactic oxcidtyric acid
(c) Muscle glycotein acid
(d) Amino acid

114. The wrong statement is
(a) enzymes are specific in their actions
(b) enzymes are capable of initiating chemical reaction
(c) enzymes are protein in nature
(d) enzymes are sensitive to heat

115. The element which is found in all proteins
(a) O (b) N
(c) H (b) C

116. Which of the following has never been used as a sulpha drug?
(a) sulphapyridine (b) sulphanilamide
(c) sulphathiazole (d) none of the above

117. Secondary alcohols are oxidized to
(a) acids (b) ketones
(c) ethers (d) aldehydes

118. The element which is present in all organic compounds is
(a) hydrogen (b) carbon
(c) oxygen (d) nitrogen

119. Which of the following is not a property of acids ?
(a) Turning red litmus blue
(b) Having a sour taste
(c) Yielding hydrogen ions
(d) Being proton donors

120. The pH of acid gastric juice would be
(a) 7 (b) below 7
(c) above 7 (b) none of the above

121. For a spontaneous process
(a) $\Delta s > \frac{q}{T}$ (b) $\Delta s < \frac{q}{T}$
(c) $\Delta s = \frac{q}{T}$ (b) $\Delta s = 0$

122. "The heat change associated with a given chemical change is always constant and independent of the time taken and the intermediate steps involved is called
(a) Hess's Law
(b) Alhan's Law
(c) Law of Thermodynamics
(d) None of the above

123. The work performed, when 2 moles of H_2 expanded isothermally and reversibly at 25°C from 15 to 50 litres, is
(a) 427 cals (b) 142 cals
(c) 1427 cals (d) None of the above

124. The reversible process is
(a) evaporation of water of 100°C and 1 atm
(b) dissolution of NaCl
(c) mixing of two gases by diffusion
(d) mixing of two gases at constant temperature and pressure

125. The change in internal energy of an ideal gas on isothermal expansion is
(a) PdV (b) 0
(c) $+PdV$ (d) None of the above

126. Work done in isothermal reversible expansion from value V_1 to V_2 of one mole of a gas at T°K is
(a) $RT \log \frac{V_2}{V_1}$ (b) $2.303 \log \frac{V_1}{V_2}$
(c) $2.303\, RT \log \frac{V_2}{V}$ (d) $2.303\, RT \log \frac{V_1}{V_2}$

127. Work done in adiabatic expansion of one mole of an ideal gas is given by
(a) $W = C_v(T_2 - T_1)$ (b) $W = -C_v(T_2 - T_1)$
(c) $W = C_v(T_2 \quad T_1)$ (d) $\cdot C_v(T_2 - T_1)$

128. The energy of a system in a definite state is fixed and is independent of the method of formation of the system or the method of attaining the energy" is called
(a) zeroth law
(b) 1st law of thermodynamics
(c) 2nd law of thermodynamics
(d) 3rd law of thermodynamics

129. The properties of system which depend on the quantity of matter specified in the system is called
(a) physical property
(b) chemical property
(c) extensive property
(d) intensive property

130. If the system can neither exchange matter nor energy with the surrounding it is called
(a) open system (b) closed system
(c) isolated system (d) variable

131. The chemical name of urea is
(a) Chloroethane (b) Aneurin
(c) Carbamide (d) Iodomethane

132. Maximum gobar gas is produced during
(a) summer (b) winter
(c) rainy season (d) all seasons

133. Phosphorus is kept under water because
(a) it is highly sensitive in air
(b) it is highly sensitive in water
(c) water forms a protective coating on it
(d) none of these

134. A man-made element is
(a) plutonium (b) U-235
(c) thorium (d) radium

135. Zinc is not present in the alloy
(a) brass (b) bronze
(c) solder (d) german silver

136. Lead pencils
(a) contain lead
(b) contain copper
(c) do not contain lead but graphite mixed with a little of plastic clay
(d) none of the above

137. The drugs caffeine and nicotine are
(a) steroids (b) cortisones
(c) alkaloids (d) mild alkalis

138. Glass is a good
(a) insulator (b) conductor
(c) semi-conductor (d) none of the above

139. Soap is sodium salt of
(a) amyl alcohol (b) picric acid
(c) stearic acid (d) carbolic acid

140. Which of the following types of glasses is used for making optical instruments ?
(a) soft glass (b) hard glass
(c) pyrex glass (d) flint glass

141. Sodium acetate will hydrolyse to give a solution that is
(a) acidic (b) basic
(c) neutral (d) saturated

142. Which of the following when added to blood will cause the red cells to burst ?
(a) distilled water
(b) concentrated brine
(c) concentrated glucose solution
(d) physiological saline

143. A normal solution is one that contains
(a) one gram molecular weight of solute per litre of solution
(b) one gram molecular weight of solute per litre of solvent
(c) one gram equivalent weight per litre of solution
(d) one gram equivalent weight per 1,000 grams of solution

144. Which of the following will react with water to give an acidic solution ?
(a) H_2 (b) SO_2
(c) CaO (d) NH_3

145. Oxygen is prepared in the laboratory by
(a) heating potassium chlorate
(b) heating potassium oxalate
(c) heating non-metallic oxides
(d) heating sand

146. A chemical bond formed by the sharing of electrons between the reacting atoms is known as
(a) an ionic bond (b) a covalent bond
(c) a polar bond (d) a dative bond

147. Which one is not an instrument for detecting radiation ?
(a) Electroscope (b) Geiger counter
(c) Film badge (d) Cyclotron

148. The particle that initiates fission reaction is
(a) electron (b) proton
(c) neutron (d) positron

149. Alpha particles are electrically charged
(a) hydrogen atom (b) neutrons
(c) helium atoms (d) X-rays

150. When two electrons react, there is
(a) loss or gain of neutrons
(b) loss or gain of protons
(c) loss or gain sharing of valence electron
(d) noticeable loss or gain in weight

151. If a system can exchange both matter and energy with the surrounding, is called
(a) open system
(b) closed system
(c) isolated system
(d) homogeneous system

152. Specific heats of perfect gases are function only of
(a) heat (b) volume
(c) pressure (d) temperature

153. If air is saturated, the relative humidity is 1 and the specific humidity is
(a) equal to 1 (b) greater than 1
(c) less than 1 (d) none of the above

154. A reversible process can be reversed, leaving no change in the
(a) system or surroundings
(b) state
(c) properties
(d) none of the above

155. The dew point of a mixture of gases and vapour is the temperatures at which the vapour will condense if the mixture is cooled
(a) at constant volume
(b) isotropically
(c) at constant pressure
(d) adiabatically

156. What quantity is synonymous with work or heat ?
(a) Potential energy (b) Flow work
(c) Energy in transition (d) Kinetic energy

157. Work for an open or closed system in general is a function of the
(a) temperature of surroundings
(b) pressure of surroundings
(c) entropy of system
(d) enthalpy of system

158. The carnot engine violate second law of thermodynamics when its efficiency become
(a) 100% (b) 25%
(c) 50% (d) 75%

159. When a thermocouple is used to measure temperature, one obtains the e.m.f. at the ice point from the e.m.f. at the steam point and dividing by
(a) 50 (b) 75
(c) 100 (d) 125

160. When a compressed gas at a certain temperature is allowed to expand through a porous plug or small orifice, temperature of gas
(a) increases (b) decreases
(c) remains same (d) none of the above

161. In a nuclear reactor
(a) controlled fusion reaction takes place
(b) controlled nuclear fission reaction takes place
(c) uncontrolled nuclear fission reaction takes place
(d) uncontrolled nuclear fusion reaction takes place

162. Heavy water is called heavy because it is
(a) a heavy liquid
(b) denser than water
(c) an oxide of heavier isotope of oxygen
(d) an oxide of deuterium

163. Neutralization of an acid by a base is an example of
(a) combination reaction
(b) oxidation reduction reaction
(c) double decomposition
(d) displacement reaction

164. Low ionisation energy is characteristic of a
(a) metal (b) non-metal
(c) metalloids (d) inert gas

165. Lithium shows diagonal relationship with
(a) Sodium (b) Magnesium
(c) Beriliun (d) None of these

166. Without burning paper, water can be boiled in paper cup. This is because
(a) Ignition temperature of paper is more than boiling point water

water
(c) paper is a bad conductor of heat
(d) water is a good conductor of heat with high specific heat

167. India's first major steel plant was erected at
(a) Durgapur (b) Jamshedpur
(c) Bhadravathi (d) Rourkela

168. In which of the following can a nuclear explosion be useful for peaceful proposes?
(a) Producing radio isotopes
(b) Power generation
(c) Constructing roads in difficult place
(d) None of the above

169. Which of the following is used for insulating stores and refrigerators?
(a) soda glass (b) pyrex glass
(c) fibre glass (d) none of the above

170. The gas used for artificial ripening of green fruit is
(a) ethylene (b) barbituric acid
(c) benzoic acid (d) none of the above

171. Which of the following will react with dilute sulphuric acid to form hydrogen and a soluble sulphate?
(a) Hg (b) Ag
(c) Hg (d) Zn

172. Pick out the wrong statement
(a) Organic compounds cannot be made from inorganic compound
(b) Organic compounds are less ionic than inorganic compound
(c) Organic compounds are more complex in structure than inorganic compound
(d) none of the above

173. Which one of the following formulas represents a member of the alkane series ?
(a) C_3H_{12} (b) C_3H_8
(c) C_3H_{16} (d) $C_{12}H_{26}$

174. An important use of freon is
(a) dry cleaning agent
(b) refrigerant
(c) plastic coating for frying pans
(d) none of the above

175. The sugar that yields only glucose when hydrolyzed is
(a) Maltose (b) Sucrose

176. Which of the following compounds has the peptide linkage ?

(a) $H_2N-\overset{O}{\overset{\|}{C}}-NH_2$ (b) $CH_3-\overset{O}{\overset{\|}{C}}-NH_2$

(c) $CH_3-\overset{O}{\overset{\|}{C}}-OCH_2-CH_3$

(d) $H_2N-\overset{O}{\overset{\|}{C}}-OCH_3$ CH_3

177. Which of the following is a nucleoside ?
(a) Adenosine monophosphate
(b) Adenosine triphosphate
(c) Adenosine phosphate
(d) None of the above

178. The member of the ketone bodies is
(a) α-hydroxyacetic acid
(b) β-hydroxyacetic acid
(c) β-hydroxybutyric acid
(d) α-hydroxybutyric acid

179. The enzyme which catalyzes the hydrolysis of proteins
(a) insulin (b) steapsin
(c) amylopsin (d) none of the above

180. Which is not a function of inorganic salt ?
(a) Supply energy
(b) Influence the contraction of muscles
(c) Maintain proper osmotic pressure
(d) Maintain acid-base balance

181. "If two substances have the same reduced temperature and pressure, their reduced volumes will be equal" is called
(a) law of gases
(b) law of corresponding states
(c) Dalton's law
(d) Van der Waals reduced equation

182. Critical pressure of a gas is the
(a) pressure required to liquify a gas above critical temperature
(b) pressure required to liquify a gas at critical temperature
(c) pressure at the temperature below critical temperature at which it becomes liquid
(d) pressure at which it becomes liquid

closed glass containers of volume V litres at temperature T°C, pressure P atm, then the ratio of no. of molecules of the two gases

(a) 1 : 1 (b) 1 : 2
(c) 2 : 1 (d) 1 : 3

184. The root mean square velocity is given by

(a) $c^2 - \frac{\Sigma v^2}{n}$ (b) $nc^2 - \Sigma v$
(c) $nc - \Sigma v^2$ (d) none of the above

185. The velocity of ideal gas molecules is given by the relation

(a) $Mu = 3RT$ (b) $u^2M = 3RT$
(c) $u^2M = RT$ (d) None of the above

186. The partial pressure of any component in a gas mixture is proportional to

(a) the mole fraction
(b) the total pressure
(c) the square of mole fraction
(d) none of the above

187. When most of the gases are allowed to expand suddenly, there is a drop in temperature but there are two gases which do not obey this law are

(a) H_2, CO_2 (b) O_2, He
(c) H_2, He (d) Cl_2, O_2

188. There is deviation from Boyle's law, when the gas is at

(a) low pressure (b) medium pressure
(c) low temperature (d) high temperature

189. Atomicity of a gas molecule is equal to

(a) $C_p \times C_v$ (b) $C_p + C_v$
(c) $C_p - C_v$ (d) $\frac{C_p}{C_v}$

190. Laschmidt Number is the no. of

(a) molecules present in 1 c.c. of gas at N.T.P.
(b) molecules in one gm. mol. of gas at N.T.P.
(c) atoms present in 1 c.c. of gas at N.T.P.
(d) atoms present in one gm. mol. of gas at N.T.P.

191. Radioactive element which has been found to have large reserves in India is

(a) thorium (b) uranium
(c) radium (d) plutonium

(a) Na_2CO_3 (b) K_2CO_3
(c) Al_2O_3 (d) $MgSO_4$

193. Colour of solid iodine is

(a) steel grey (b) violet
(c) yellowish green (d) reddish brown

194. White phosphorous is

(a) a mild poison (b) a strong poison
(c) non-poisonous (d) none of the above

195. What is the percentage of lime in the cement ?

(a) 50% (b) 70%
(c) 80% (d) 95%

Match the following columns in questions 196-200

196.

	Column A	*Column B*
A.	Petroleum	(*i*) Cinona
B.	Lead	(*ii*) Sodium carbonate
C.	Washing soda	(*iii*) Acidic salt
D.	Quinine	(*iv*) Galena
E.	Sodium bicarbonate	(*v*) Found very deep inside the earth

(a) (A-*i*), (B-*ii*), (C-*iii*), (D-*iv*), (E-*v*)
(b) (A-*iii*), (B-*ii*), (C-*iv*), (D-*i*), (E-*v*)
(c) (A-*v*), (B-*iv*), (C-*ii*), (D-*i*), (E-*iii*)
(d) (A-*v*), (B-*iii*), (C-*ii*), (D-*i*), (E-*iv*)

197.

	Column A	*Column B*
A.	Natural gas	(*i*) Sugar cane
B.	Aluminium	(*ii*) Found along with petroleum
C.	Caustic Soda	(*iii*) Double salt
D.	Molasses	(*iv*) Bauxite
E.	Alum	(*v*) Sodium hydroxide

(a) (A-*i*), (B-*ii*), (C-*iii*), (D-*iv*), (E-*v*)
(b) (A-*ii*), (B-*iv*), (C-*v*), (D-*i*), (E-*iii*)
(c) (A-*iii*), (B-*v*), (C-*iv*), (D-*ii*), (E-*i*)
(d) (A-*iv*), (B-*v*), (C-*iii*), (D-*ii*), (E-*i*)

198.

	Column A	*Column B*
A.	Coal	(*i*) Monocite
B.	Thorium	(*ii*) Sea Kelp
C.	Blue vitriol	(*iii*) Mixed salt
D.	Iodine	(*iv*) Formed due to organic decay and high pressure
E.	Bleaching powder	(*v*) Copper sulphate

(a) (A-*ii*), (B-*iii*), (C-*iv*), (D-*v*), (E-*i*)
(b) (A-*iii*), (B-*iv*), (C-*v*), (D-*ii*), (E-*i*)

(d) (A-v), (B-i), (C-iv), (D-iii), (E-ii)

199. *Column A* *Column B*

A.	Gold	(i) Pitchblende
B.	Uranium	(ii) Normal salt
C.	Hypo	(iii) Found in small streaks on sides of the mines
D.	Sodium chloride	(iv) Hevea
E.	Rubber	(v) Sodium thiosulphate

(a) (A-ii), (B-iii), (C-iv), (D-v), (E-i)
(b) (A-ii), (B-iv), (C-iii), (D-v), (E-i)
(d) (A-iii), (B-i), (C-v), (D-ii), (E-iv)

200. *Column A* *Column B*

A.	Glass	i. Potassium
B.	Fertilizer	ii. Sodium chloride
C.	Salt	iii. Lepidolite
D.	Iron	iv. Sodium silicate
E.	Lithium	v. Hematite

(a) (A-iv), (B-i), (C-ii), (D-v), (E-iii)
(b) (A-ii), (B-i), (C-iii), (D-v), (E-iv)
(c) (A-iii), (D-ii), (C-iv), (D-vi), (E-i)
(d) (A-iv), (B-ii), (C-iii), (D-i), (E-v)

Answers

1	2	3	4	5	6	7	8	9	10
(c)	(d)	(c)	(d)	(c)	(c)	(b)	(b)	(c)	(b)
11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
(c)	(a)	(a)	(b)	(b)	(b)	(a)	(d)	(b)	(c)
21	**22**	**23**	**24**	**25**	**26**	**27**	**28**	**29**	**30**
(b)	(a)	(b)	(b)	(b)	(b)	(c)	(a)	(c)	(c)
31	**32**	**33**	**34**	**35**	**36**	**37**	**38**	**39**	**40**
(d)	(b)	(c)	(b)	(c)	(b)	(a)	(b)	(c)	(a)
41	**42**	**43**	**44**	**45**	**46**	**47**	**48**	**49**	**50**
(d)	(a)	(c)	(b)	(b)	(b)	(d)	(b)	(d)	(b)
51	**52**	**53**	**54**	**55**	**56**	**57**	**58**	**59**	**60**
(a)	(c)	(a)	(d)	(a)	(b)	(a)	(b)	(d)	(c)
61	**62**	**63**	**64**	**65**	**66**	**67**	**68**	**69**	**70**
(a)	(a)	(c)	(a)	(c)	(c)	(a)	(a)	(c)	(c)
71	**72**	**73**	**74**	**75**	**76**	**77**	**78**	**79**	**80**
(b)	(c)	(c)	(a)	(a)	(c)	(c)	(d)	(a)	(b)
81	**82**	**83**	**84**	**85**	**86**	**87**	**88**	**89**	**90**
(a)	(d)	(b)	(a)	(a)	(a)	(c)	(d)	(d)	(b)
91	**92**	**93**	**94**	**95**	**96**	**97**	**98**	**99**	**100**
(d)	(d)	(b)	(c)	(b)	(a)	(c)	(b)	(a)	(c)
101	**102**	**103**	**104**	**105**	**106**	**107**	**108**	**109**	**110**
(d)	(b)	(a)	(d)	(d)	(d)	(a)	(d)	(a)	(d)
111	**112**	**113**	**114**	**115**	**116**	**117**	**118**	**119**	**120**
(c)	(b)	(d)	(d)	(b)	(c)	(b)	(b)	(a)	(b)
121	**122**	**123**	**124**	**125**	**126**	**127**	**128**	**129**	**130**
(a)	(a)	(c)	(a)	(b)	(c)	(b)	(b)	(c)	(c)

(c)	(c)	(a)	(b)	(c)	(c)	(c)	(a)	(c)	(d)
141	**142**	**143**	**144**	**145**	**146**	**147**	**148**	**149**	**150**
(b)	(a)	(c)	(c)	(a)	(b)	(d)	(c)	(a)	(c)
151	**152**	**153**	**154**	**155**	**156**	**157**	**158**	**159**	**160**
(a)	(d)	(c)	(c)	(c)	(c)	(a)	(a)	(c)	(b)
161	**162**	**163**	**164**	**165**	**166**	**167**	**168**	**169**	**170**
(c)	(d)	(c)	(a)	(b)	(a)	(b)	(c)	(c)	(a)
171	**172**	**173**	**174**	**175**	**176**	**177**	**178**	**179**	**180**
(d)	(a)	(a)	(c)	(a)	(c)	(b)	(d)	(a)	(a)
181	**182**	**183**	**184**	**185**	**186**	**187**	**188**	**189**	**190**
(b)	(b)	(d)	(a)	(c)	(a)	(c)	(a)	(d)	(a)
191	**192**	**193**	**194**	**195**	**196**	**197**	**198**	**199**	**200**
(d)	(b)	(a)	(b)	(a)	(c)	(b)	(c)	(d)	(a)