**Time :** 10:17:00 **CHEMISTRY**

**Marks :** 2468

5.STATES OF MATTER

**Single Correct Answer Type**

1. Select incorrect statement

 a) The properties of liquid crystals are intermediate between liquids and solids

 b) Surface tension of a liquid is maximum at critical temperature

 c) Viscosity decreases with increases in temperature

 d) and show the unusual properties of supercritical fluids

2. The relation between molecular weight and vapour density is:

 a) b) c) d)

3. Analysis shows that an oxide ore of nickel has formula The percentage of nickel as ions is nearly

 a) 2 b) 96 c) 4 d) 98

4. In the calcium fluoride structure, the coordination number of the cation and anion are respectively

 a) 4, 4 b) 6, 6 c) 4, 8 d) 8, 4

5. In deriving the kinetic equation we make use of the root mean square speed of the molecules which is:

 a) The average speed of molecules

 b) The most probable speed of molecules

 c) The square root of the average of the square of the speed of the molecules

 d) The most accurate form in which speed can be used in the calculations

6. Bravais lattices are of

 a) 8 types b) 9 types c) 12 types d) 14 types

7. One poise is equal to:

 a) b) c) d)

8. The rate of diffusion of hydrogen is about

 a) One half that of helium b) 1.4 times that of helium

 c) Twice that of helium d) Four times that of helium

9. The pressure of 2 moles of ammonia at when its volume is 5 L according to van der Waals’ equation is (Given, )

 a) 10.33 atm b) 9.33 atm c) 9.74 atm d) 9.2 atm

10. The gases in the liquid form are held together by a weak attraction among the molecules, called as:

 a) Nuclear attraction

 b) Bond attraction

 c) Van der Waals’ attraction

 d) Gravitational attraction

11. The value of the molar gas constant is

 a) b)

 c) d)

12. For hydrogen gas and for oxygen gas so the relation between and is:

 a) b) c) d)

13. The solid is a bad conductor of electricity since

 a) In solid there is no velocity of ions b) In solid there are no ions

 c) In solid , there are no electrons d) Solid is covalent

14. A gas deviates from ideal behaviour at a high pressure because its molecules

 a) Attract one another b) Show the Tyndall effect

 c) Have kinetic energy d) Are bound by covalent bonds

15. A closed vessel contains equal numbers of and molecules at same . Which of the following is not true?

 a) The average speed of the hydrogen molecules is greater

 b) The hydrogen molecules strike the walls of the vessel more often

 c) The average kinetic energy of the two gases is the same

 d) The weight of is the same as the weight of oxygen

16. Two identical cylinders contain helium at and argon at 1 atm respectively. if both the gases are filled in one of the cylinders, the pressure would be:

 a) b) c) d)

17. gas are introduced simultaneously from the two ends of a long tube. A white ring of appears first

 a) Nearer to the HCl end b) At the centre of the tube

 c) Throughout the tube d) Nearer to the end

18. The molecular weight of and are 32 and 64 respectively. If one litre of at and 759 mm pressure contains molecules, the number of molecules in two litre of under the same conditions of temperature and pressure will be:

 a) b) c) d)

19. The pressure of a real gas is less than the pressure of an ideal gas because of

 a) Increases in the number of collisions b) Finite size of the molecules

 c) Increase in the kinetic energy d) Intermolecular forces

20. 32 g of , 2 g of and 28 g of at STP occupy separately a volume of

 a) 1 L b) 2 L c) 22.4 L d) 2.24 L

21. At what temperature is the rms speed of hydrogen molecules the same as that of oxygen molecules at ?

 a) 173 K b) 100 K c) 400 K d) 523 K

22. Mark out the wrong expression

 a) Boyle’s temperature b) Critical pressure

 c) Critical temperature, d) Critical volume

23. Which is true statement?

 a) All liquid have concave meniscus

 b) All liquid have convex meniscus

 c) Mercury has convex and other liquids have concave meniscus

 d) Mercury has concave and other liquids have convex meniscus

24. If is the number of atoms in the unit cell that represents the closest packing sequence….. *…..* , the number of tetrahedral voids in the unit cell is equal to

 a) b) c) d)

25. A Dewar flask is usually used to:

 a) Measure the amount of liquid

 b) Measure known volumes of a gas

 c) Store distilled water

 d) Store liquid air

26. What is the coordination number of sodium in ?

 a) 2 b) 4 c) 6 d) 8

27. For a given crystal, the lattice parameter ‘’ is 318 pm. The -spacing for a (III) plane is

 a) 318 pm b) 184 pm c) 390 pm d) 225 pm

28. Select correct statement(s)

 a) The standard boiling temperature is the temperature at which the vapour pressure of the substance is 1 bar

 b) The normal boiling temperature is the temperature at which the vapour pressure of the substance is 1 atm

 c) Substances for which and are called super critical fluids

 d) All the above are correct statements

29. The ratio of Boyle’s temperature and critical temperature for a gas is:

 a) b) c) d)

30. Positive deviation from ideal behaviour takes place because of

 a) Molecular interaction between atoms and

 b) Molecular interaction between atoms and

 c) Finite size of atoms and

 d) Finite size of atoms and

31. are van der Waals’ constants for gases. Chlorine is more easily liquefied than ethane because

 a)

 b)

 c)

 d)

32. Longest mean free path under similar conditions of and stands for:

 a) b) c) d)

33. Ferrous oxide has a cubic structure and each edge of the unit cell is . Assuming density of the oxide as 4.0g/then the number of and ions present in each unit cell will be

 a) Two and four b) Three and three

 c) four and two d) four and four

34. Which one of the following is correct about surface tension (ST) and viscosity ?

 a) Both decrease with temperature b) Both increase with temperature

 c) ST increases and decreases d) ST decreases and increases

35. In which of the following crystals alternate tetrahedral voids are occupied?

 a) b) c) d)

36. For an ideal gas, number of mol per litre in terms of its pressure temperature and gas constant is

 a) b) c) d)

37. For a gas the gas is made up of molecules which are:

 a) Monoatomic b) Diatomic c) Polyatomic d) Mixture of gases

38. As the speed of molecules increases, the number of collisions per second:

 a) Decreases b) Increases c) Does not change d) None of these

39. To an evacuated vessel with movable piston under external pressure of 1 atm, 0.1 mole of He and 1.0 mole of an unknown compound (vapour pressure 0.68 atm at) are introduced. Considering the ideal gas behaviour, the total volume (in litre) of the gases at is close to

 a) 3 b) 5 c) 7 d) 9

40. A closed vessel contains equal number of nitrogen and oxygen molecules at a pressure of mm. If nitrogen is removed from the system, then the pressure will be:

 a) b) c) d)

41. The molar volume of is maximum at

 a) NTP b) and c) and d) and

42. An example of a metallic crystalline solid is

 a) P b) Si c) W d) C

43. The density of neon will be highest at

 a) STP b) c) d)

44. A 4 : 1 mixture of helium and methane is contained in a vessel at 10 bar pressure. Due to a hole in the vessel, the gas mixture leaks out. The composition of mixture effusing out initially is

 a) 8 : 1 b) 8 : 3 c) 4 : 1 d) 1 : 1

45. Which of the following set of variables give a straight line with a negative slope when plotted?

axis axis

 a) b) c) d)

46. Volume occupied by molecules of acetylene at NTP is:

 a) b) c) d)

47. According to Charles’ law:

 a) b) c) d) None of these

48. Which of the following is a Boyle’s plot at very low pressure?

 a)  b) 

 c)  d) 

49. Gaseshave the van der Waals’ constants (in CGS units) as shown below

The gas with the highest critical temperature is

 a) b) c) d)

50. At what temperature will be total kinetic energy of mole of He be the same as the total of mole of at

 a) b) c) d)

51. At constant temperature, in the given mass of an ideal gas

 a) The ratio of pressure and volume always remains constants

 b) Volume always remains constant

 c) Pressure always remains constant

 d) The product of pressure and volume always remains constant

52. At what temperature will the volume of a gas at double itself, pressure remaining constant?

 a) b) c) d)

53. Which of the following is non-crystalline solid?

 a) b) c) d) Glass

54. The ratio of close packed atoms to tetrahedral holes in cubic close packing is

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

55. Which of the following statement is not true?

 a) The pressure of a gas is due to collision of the gas molecules with the walls of the container.

 b) The molecular velocity of any gas is proportional to the square root of the absolute temperature.

 c) The rate of diffusion of a gas is directly proportional to the density of the gas at constant pressure.

 d) Kinetic energy of an ideal gas is directly proportional to the absolute temperature.

56. When air is blown to balloon (at constant temperature) its pressure and volume both increases. This violates:

 a) Boyle’s law b) Charles’ law c) Gas law d) None of these

57. The joule Thomson coefficient is zero at

 a) Absolute temperature b) Critical temperature

 c) Inversion temperature d) Below

58. The rms velocity of molecules of a gas of density and pressure is

 a) b) c) d)

59. The rms speed of hydrogen is times the rms speed of nitrogen. If is the temperature of the gas, then

 a) b)

 c) d)

60. The most unsymmetrical crystal system is

 a) hexagonal b) Triclinic c) Cubic d) orthorhombic

61. If the rms speed of a gaseous molecule is at a pressure atm, then what will be the rms speed at a pressure atm and constant temperature?

 a) b) c) d)

62. A litre cylinder containing gas at and is found to develop a leakage. When the leakage was repaired, the pressure dropped to of Hg at The number of mole of gas escaped out during leakage is:

 a) b) c) d)

63. Avogadro’s number is the number of molecules present at NTP in:

 a) 1 mL of gas b) 1 litre of gas c) 22.4 litre of gas d) 22.4 mL of gas

64. The ratio of rate of diffusion of helium and methane under identical conditions of pressure and temperature is:

 a) 4 b) 2 c) 1 d)

65. At what temperature will be rate of effusion of be times the rate of effusion of at

 a) b) c) d)

66. When a sample of gas is compressed at constant temperature from 15 atm to 60 atm, its volume changes from. Which of the following statements are possible explanations of this behaviour?

1. The gas behaves non-ideally

2. The gas dimerises

3. The gas is absorbed into the vessel walls

 a) 1, 2, and 3 b) 1 and 2 only c) 2 and 3 only d) 1 only

67. The root mean square velocity of a gas is double when the temperature is

 a) Increased four times b) Increased two times

 c) Reduced to half d) Reduced to one fourth

68. A flask is of a capacity one . What volume of air will escape out from it on heating from to Assume pressure constant:

 a) b) c) d) None of these

69. The correct statement in the following is

 a) The ionic crystal of has Schottky defect

 b) The coordination number of ion in NaCl is 4

 c) In ionic compounds having Frenkel defect, the ratio is high

 d) The unit cell having crystal parameters, is hexagonal

70. An element occurring in the bcc structure has unit cells. The total number of atoms of the element in these cells will be

 a) b) c) d)

71. An ideal gas expands according to constant. On expansion, the temperature of gas:

 a) Will rise

 b) Will drop

 c) Will remain constant

 d) Cannot be determined because the external pressure is not known

72. The temperature at which the second virial coefficient of a real gas is zero is called:

 a) Critical temperature b) Eutectic point c) Boiling point d) Boyle’s temperature

73. Total energy of one mole of an ideal gas (monoatomic) at is:

 a) b) c) d)

74. of one mole of He at is:

 a) b) c) d) None of these

75. At lower temperatures, all gases except and show:

 a) Negative deviation

 b) Positive deviation

 c) Positive and negative deviation

 d) None of the above

76. For a real gas, deviations from ideal gas behaviour are maximum at:

 a) and atm b) and atm c) and atm d) and atm

77. Effect of temperature on viscosity is given by

 a) Hole theory b) Arrhenius theory c) Adsorption theory d) Collision theory

78. In a closed flask of 5 L, 1.0 g of is heated from 300 to 600 K. Which statement is not correct?

 a) Pressure of the gas increases b) The rate of collision increases

 c) The number of mole of gas increases d) The energy of gaseous molecules increases

79. If latent heat of vaporization is at boiling point then entropy of vaporisation is

 a) b) c) d) None of these

80. Equal volumes of two gases are kept in separate containers at the same temperature and pressure. Then:

 a) Masses of the two gases are same

 b) Molecular structure of two gases would be similar

 c) The two gases contain the same number of molecules

 d) The two gases, if allowed to diffuse would do so at the same rate

81. 300 mL of a gas at is cooled to at constant pressure. The final volume is

 a) 350 L b) 270 mL c) 540 mL d) 135 mL

82. Which one of the following will give a linear plot at constant pressure?

 a) b) c) d) None of these

83. When gases are heated from to at constant pressure, the volume:

 a) Increase by the same magnitude

 b) Become double

 c) Increase in the ratio of their molecule masses

 d) Increase but to different extent

84. In which one of the following does the given amount of chlorine exert the least pressure in a vessel of capacity

 a) 0.0355g b) 0.071

 c) d) 0.02 moles

85. A crystalline solid

 a) Changes abruptly from solid to liquid when heated

 b) Has no definite melting point

 c) Has an irregular three-dimensional arrangements

 d) Undergoes deformation of its geometry easily

86. . If pressure is increased

 a) Steam is liquefied b) b.p. of is elevated

 c) Both (a) and (b) d) None of these

87. At NTP, of a gas weighs The vapour density of the gas is:

 a) 32 b) 40 c) 16 d) 8

88. Which of the following will increase with the increase in temperature?

 a) Surface tension b) Viscosity c) Molality d) Vapour pressure

89. The condition of SATP refers for:

 a) and 2 atm b) and 1 atm c) and 2 atm d) and 1 bar

90. The equation,

 a) Is equation for law of corresponding states.

 b) States that under similar conditions of reduced pressure and reduced temperature gases possess same reduced volume

 c) Provides better results at boiling point of two liquids

 d) All of the above

91. The compressibility of a gas is less than unity as STP. Therefore,

 a) L b) L c) Ld) L

92. If the pressure is halved and absolute temperature doubled the volume of the gas will be:

 a) 4 b) 2 c) Same d) 8

93. Which form of matter is highly compressible?

 a) Solid b) Liquid c) Gas d) Colloidal

94. Two sealed containers of the same capacity and at the same are filled with of gas in one and of in other. If the of is in other, the of in its container will be:

 a) b) Zero c) d)

95. Vapour pressure increases with increase in

 a) Concentration of solution containing non-volatile solute

 b) Temperature up to boiling point

 c) Temperature up to triple point

 d) Altitude of the concerned place of boiling

96. An alloy of Cu, Ag and Au is found to have Cu forming the simple cubic close packed lattice. If the Ag atoms occupy the face centres and Au is present at the body centre, the formula of the alloy will be

 a) b) c) d)

97. The root mean square speed of the molecules of diatomic gas is When the temperature is doubled, the molecules dissociates into two atoms. The new speed of the atom is:

 a) b) c) d)

98. The kinetic energy of molecules at constant temperature in gaseous state is:

 a) More than those in the liquid state

 b) Less than those in the liquid state

 c) Equal to those in the liquid state

 d) None of the above

99. At a constant pressure, what should be the percentage increase in the temperature in Kelvin for a increase in volume?

 a) b) c) d)

100. A mixture of helium and argon contains 3 mole of for every 2 mole of Ar. The partial pressure of argon is:

 a) the total pressure

 b) the total pressure

 c) the total pressure

 d) the total pressure

101. Boyle’s law is applicable in:

 a) Isobaric process b) Isochoric process c) Isothermal process d) Adiabatic process

102. Which defect causes decreases in the density of crystal?

 a) Frenkel b) Schottky c) Interstitial d) F-centre

103. A perfect gas of a given mass is heated first in a small vessel and then in a large vessel, such that their volume remains unchanged. The - curves are:

 a) Parabolic with same curvature

 b) Parabolic with different curvatures

 c) Linear with same slope

 d) Linear with different slopes

104. The three states of matter are solid, liquid and gas. Which of the following statements is/ are true about them?

 a) Gases and liquids have viscosity as a common property

 b) The molecules in all the three states posses random translational motion

 c) Gases cannot be converted into solids without passing through the liquid phase

 d) Solids and liquids have vapour pressure as a common property

105. The kinetic theory of gases predicts that total kinetic energy of a gaseous assembly depends on

 a) Pressure of the gas b) Temperature of the gas

 c) Volume of the gas d) Pressure, volume and temperature of the gas

106. If two moles of a ideal gas at 546 K occupy volume 44.8 L, then pressure must be

 a) 2 atm b) 3 atm c) 4 atm d) 1 atm

107. What is kinetic energy of 1 g of

 a) b) c) d)

108. If volume containing gas is compressed to half, how many moles of gas remained in the vessel?

 a) Just double b) Just half c) Same d) More than double

109. At constant volume, the pressure of a monoatomic gas depends upon:

 a) Thickness of the walls of the container

 b) The absolute temperature

 c) The atomic number of the element

 d) The number of valency electrons

110. If two moles of an ideal gas at 246 K occupy a volume of 44.8 L, the pressure must be

 a) 4 atm b) 2 atm c) 8 atm d) 6 atm

111. Example of unit cell with crystallographic dimensions, is

 a) Calcite b) rhombic sulphur c) Graphite d) Monoclinic sulphur

112. The unit of van der Waals’ constant is:

 a) b) c) d) All of these

113. Use of hot air balloons in sports and meteorological observations is an application of:

 a) Boyle’s law b) Newtonic law c) Charles’ law d) Brown’s law

114. The circulation of blood in human body supplies and releases The concentration of and is variable but on the average, blood contains of and The volume of and at and body temperature assuming blood in human body is:

 a) b) c) d)

115. If the distance between and ions in NaCl crystal is ‘’ pm what is the length of the cell edge?

 a) b) c) d)

116. Normal temperature and pressure of gases refers to:

 a) and mm Hg

 b) and mm Hg

 c) and mm Hg

 d) and 76 mm Hg

117. absorbs:

 a) b) c) d) All of these

118. Under which of the following conditions, van der Waals’ gas approaches ideal behaviour?

 a) Extremely lower pressure b) Low temperature

 c) High pressure d) Low product of

119. The compressibility factor of an ideal gas is

 a) 1 b) 2 c) 4 d) 0

120. A vessel has two equal compartments and containing and respectively, each at 1 atm pressure. If the wall separating the compartment is removed, the pressure:

 a) Will remain unchanged in and

 b) Will increase in and decrease in

 c) Will decrease in and increase in

 d) Will increase in both and

121. Quartz is a crystalline variety of

 a) Silica b) Silicon c) Silicon carbide d) Sodium silicate

122. A sample of gas at and 1 atmospheric pressure occupies a volume of At what temperature should the gas be kept, if it is required to reduce the volume to litre at the same pressure?

 a) b) c) d)

123. Air at sea level is dense. This is a practical application of:

 a) Boyle’s law b) Charles’ law c) Avogadro’s law d) Dalton’s law

124. The strength of van der Waals’ forces increases with:

 a) Increase in molecular size

 b) Increase in the number of electrons in the molecule

 c) Increases in molecular weight

 d) All of the above

125. The vacant space in the bcc unit cell is

 a) 23% b) 26% c) 32% d) None of these

126. Pressure remaining constant, the volume of a given sample of gas at will be doubled at:

 a) b) c) d)

127. The numerical value of the van der Waals’ constant is maximum for:

 a) b) c) d)

128. To which of the following gaseous mixtures is Dalton’s law not applicable?

 a) b) c) d)

129. At critical temperature of a liquid, surface tension is

 a) Zero b) Infinite

 c) Varies liquid to liquid d) Can’t be measured

130. The rms speed of hydrogen is times the rms speed of nitrogen. If is the temperature of the gas, then

 a) b) c) d)

131. Equal masses of nitrogen and ethylene are mixed in an empty container at The total pressure exerted by the gaseous mixture is The partial pressure exerted by ethylene gas is :

 a) b) c) d)

132. At a constant temperature what should be the percentage increase in pressure for a decrease in the volume of gas?

 a) b) c) d)

133. At a gas was compressed to half its volume. To what temperature must it be heated so that it occupies the original volume? ( constant)

 a) b) c) d)

134. A solid is made of two elements and . The atoms are in ccp arrangement while the atom occupy all the tetrahedral sites. What is the formula of the compound?

 a) b) c) d)

135. For cubic coordination, the value of radius ratio is

 a) b) c) d)

136. An example of fluorite structure is

 a) b) c) d)

137. Clausius-Clapeyron equation is

 a) b)

 c) Both (a) and (b) d) None of the above

138. The concept of critical temperature for a gas was given by:

 a) Andrew b) Boyle c) Charles d) None of these

139. Correct gas equation is

 a) b) c) d)

140. The edge of unit cell of fcc Xe crystal is 620 pm. The radius of Xe atom is

 a) 189.37 pm b) 209.87 pm c) 219.25 pm d) 235.16 pm

141. The following is not a function of an impurity present in a crystal

 a) Establishing thermal equilibrium b) Having tendency to diffuse

 c) Contributing to scattering d) Introducing new electronic energy levels

142. Which one of the following statements is not true about the effect of an increase in temperature on the distribution of molecular speeds in a gas?

 a) The area under the distribution curve remains the same as under the lower temperature

 b) The distribution becomes broader

 c) The fraction of the molecules with the most probable speed increases

 d) The most probable speed increases

143. Identify the pair of gases that have equal rates of diffusion

 a) b) c) d)

144. Oxygen gas is collected by downward displacement of water in a jar. The level of water inside the jar is adjusted to the height of water outside the jar. When the adjustment is made, the pressure exerted by the oxygen is:

 a) Equal to the atmospheric pressure

 b) Equal to the vapour pressure of oxygen at that temperature

 c) Equal to atmospheric pressure plus aqueous tension at that temperature

 d) Equal to atmospheric pressure minus aqueous tension at that temperature

145. The maximum radius of sphere that can be fitted in the octahedral hole of cubical closed packing of sphere of radius is

 a) b) c) d)

146. The root mean square velocity of a gas is doubled when temperature is

 a) Increased four times b) Increased two times

 c) Reduced to half d) Reduced to one fourth

147. Assume that air is oxygen and nitrogen by volume. If the barometric pressure is the partial pressure of oxygen is closest to which one of the following?

 a) b) c) d)

148. and are two identical vessels. contains of ethane at and The vessel contains gas at the same temperature and pressure. The vapour density of is:

 a) 75 b) 150 c) d) 300

149. Which gas contains larger number of molecules?

 a) b) c) d)

150. A gas is found to have formula Its is 70. The value of must be:

 a) 3 b) 5 c) 6 d)

151. Which one of the following metal oxides is antiferromagnetic in nature?

 a) b) c) d)

152. If of a gas at 600 mm and 0.5 litre of gas at 800 mm are taken in a bulb. The resulting pressure is:

 a) 1500 mm b) 1000 mm c) 2000 mm d) 500 mm

153. Which of the following gases would have the highest speed at

 a) b) c) d)

154. Which statement violates the assumptions of the kinetic theory of gases?

 a) Gases consist of large number of small particles called molecules

 b) The molecules are at rest

 c) The molecules possess random and chaotic motion

 d) There is no attraction between the molecules

155. Space lattice of is

 a) fcc b) Bcc c) hcp d) simple cubic

156. In zinc blende structure, the coordination number of ion is

 a) 2 b) 4 c) 6 d) 8

157. At 500 mL of helium diffuses in 30 min. What is the time (in hours) taken for 1000 mL of to diffuse under same experimental conditions?

 a) 240 b) 3 c) 2 d) 4

158. Indicate which of the following statements is correct?

 a) At constant temperature, the KE of all gas molecules will be the same

 b) At constant temperature, the KE of different molecules will be different

 c) At constant temperature, the KE will be greater for heavier gas molecules

 d) At constant temperature, the KE will be less for heavier gas molecules

159. Which of the following represents total kinetic energy of one mole of gas?

 a) b) c) d)

160. Gay-Lussac’s law of gaseous volumes is derived from:

 a) Law of reciprocal proportions

 b) Law of multiple proportions

 c) Experimental observations

 d) None of the above

161. The ratio of average speed of an oxygen molecule to the , speed of a nitrogen molecule at the same temperature is:

 a) b) c) d)

162. The following is a method to determine the surface tension of liquids

 a) Single capillary method b) Refractometric method

 c) Polarimetric method d) Boiling point method

163. Which phrase would be incorrect to use?

 a) A molecule of an element

 b) An atom of an element

 c) A molecule of a compound

 d) None of the above

164. In which of the following substances the carbon atom is arranged in a regular tetrahedral structure?

 a) Diamond b) Benzene c) Graphite d) Carbon black

165. In two separate bulbs containing ideal gases and respectively, the density of gas is twice that of gas while molecular weight of gas is half that of gas at the same temperature, pressure ratio will be:

 a) b) c) 4 d) 1

166. are ideal gases. Their molecular weights are 2, 4 and 28 respectively. The rate of diffusion of these gases follow the order

 a) b) c) d)

167. of argon has pressure and temperature in a vessel. On keeping the vessel at higher temperature, of argon was given out to maintain the pressure The original temperature was:

 a) b) c) d)

168. The inversion temperature for a gas is given by:

 a) b) c) d)

169. The van der Waals’ equation for real gas is:

 a)

 b)

 c)

 d) All of the above

170. Amorphous solids are

 a) Supercooled liquids b) solid substances

 c) Liquids d) Substances with definite m.p.

171. The temperature of 20 L of nitrogen was increased from 10 K to 30 K at a constant pressure. Change in volume will be

 a) 20 L b) 40 L c) 60 L d) 80 L

172. A flask of methane was weighed. Methane was then pushed out and the flask again weighed when filled with oxygen at the same temperature and pressure. The mass of oxygen would be:

 a) The same as the methane

 b) Half of the methane

 c) Double of that of methane

 d) Negligible in comparison to that of methane

173. When a solid vaporizes directly without melting, it is known as:

 a) Evaporation b) Sublimation c) Sedimentation d) Saponification

174. For an ionic crystal of the general formula and coordination number 6, the value of radius ratio will be

 a) in between 0.732 and 0.414 b) in between 0.414 and 0.225

 c) less than 0.225 d) greater than 0.732

175. A gas at 298 K is shifted from a vessel of capacity to that of 1 L capacity. The pressure of the gas will

 a) Becomes four times b) Becomes doubled

 c) Decrease by one-fourth d) Decrease by half

176. Two vessels containing gases are interconnected as shown in the figure. The stopper is opened, the gases are allowed to mix homogeneously. The partial pressures of in the mixture will be, respectively

 a) 8 and 5 atm b) 9.6 and 4 atm c) 4.8 and 2 atm d) 6.4 and 4 atm

177. Different gases at the same temperature have same

 a) Pressure b) Number of moles

 c) Volume d) Average kinetic energy

178. Certain crystals produces electric signals on application of pressure. This phenomena is called

 a) Ferroelectricity b) Ferrielectricity c) Pyroelectricity d) Piezoelectricity

179. If air contains and in volume ratio The average vapour density of air is:

 a) b) c) d)

180. In face centred cubic unit cell edge length is

 a) b) c) d)

181. When an ideal gas undergoes unrestricted expansion, no cooling takes place because the molecules:

 a) Exert no attractive forces on each other

 b) Do work equal to loss of

 c) Collide without loss of energy

 d) Are above the inversion temperature

182. If volume of a given mass of gas at constant becomes three times, the pressure will be:

 a) b) c) d)

183. The relationship between and is:

 a) b) c) d)

184. The speed of gas molecules at a temperature and pressure is If both temperature and pressure are raised three times, the speed of the gas will be:

 a) b) c) d)

185. The number of equidistance oppositely charged ions in a sodium chloride crystal is

 a) 2 b) 4 c) 6 d) 8

186. Equal volumes of two gases which don’t react together are confined in separate vessels. Their pressure is 100 mm and 300 mm of Hg respectively. If the two vessels are joined together, then what will be the pressure of the resulting mixture? (Temperature remains constant)

 a) 400 mm b) c) 300 mm d) 200 mm

187. The mean free path of a gas sample is given by:

 a) b) c) d) None of these

188. Which of the following is ferroelectric compound?

 a) b) c) d)

189. Gas

Critical temp, 134 190 324 430

In the context of given values of critical temperature, the greater ease of liquefication is of

 a) b) c) d)

190. The unit of van der Waal’s constant is:

 a) b) c) d) All of these

191. The number of atoms in 100 g of an fcc crystal with density / and cell edge equal to 100 pm, is equal to

 a) b) c) d)

192. Which of the following pair of gases contain the same number of molecules?

 a) b) c) d)

193. Two closed vessels of equal volume containing air at pressure and temperature are connected to each other through a narrow tube. If the temperature in one of the vessels is now maintained at and that in the other at , what will be the pressure in the vessels?

 a) b) c) d)

194. In case of hydrogen and helium the van der Waals’ forces are:

 a) Strong b) Very strong c) Weak d) None of these

195. The volume of ammonia obtained by the complete combination of of and of is:

 a) b) c) d)

196. If the value of ionic radius ratio is 0.52 in an ionic compound, the geometrical arrangement of ions in crystal is

 a) Planar b) Pyramidal c) Tetrahedral d) Octahedral

197. The constituent particles of a solid have

 a) Rotatory motion only b) Vibratory motion only

 c) Translatory motion only d) All of these

198. At relatively high pressure, van der Waals’ equation reduces to:

 a) b) c) d)

199. Crystals can be classified into…. basic crystal lattices

 a) 3 b) 7 c) 6 d) 14

200. Which type of solid crystals will conduct heat and electricity?

 a) Ionic b) Covalent c) Molecular d) Metallic

**Time :** 10:17:00 **CHEMISTRY**

**Marks :** 2468

5.STATES OF MATTER

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| **: ANSWER KEY :** |

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| **1) b 2) b 3) c 4) d****5) c 6) d 7) b 8) b****9) b 10) c 11) d 12) d****13) a 14) a 15) d 16) a****17) a 18) c 19) d 20) c****21) b 22) a 23) c 24) b****25) d 26) b 27) b 28) d****29) b 30) a 31) d 32) c****33) d 34) a 35) d 36) c****37) a 38) b 39) c 40) c****41) c 42) c 43) b 44) a****45) c 46) b 47) a 48) d****49) b 50) c 51) d 52) d****53) d 54) b 55) c 56) d****57) c 58) a 59) c 60) b****61) a 62) a 63) c 64) b****65) b 66) d 67) a 68) b****69) d 70) c 71) c 72) d****73) b 74) a 75) c 76) a****77) a 78) c 79) b 80) c****81) b 82) c 83) d 84) a****85) a 86) c 87) c 88) d****89) d 90) d 91) b 92) a****93) c 94) c 95) b 96) b****97) c 98) c 99) a 100) c****101) c 102) b 103) d 104) a****105) b 106) a 107) a 108) c****109) b 110) b 111) d 112) d****113) c 114) c 115) c 116) a****117) d 118) a 119) a 120) a****121) a 122) a 123) a 124) d****125) c 126) b 127) a 128) b****129) a 130) b 131) c 132) c****133) d 134) c 135) d 136) c****137) c 138) a 139) c 140) c****141) a 142) c 143) c 144) d****145) b 146) a 147) a 148) a****149) a 150) b 151) a 152) d****153) d 154) b 155) a 156) b****157) d 158) a 159) b 160) c****161) b 162) a 163) a 164) a****165) c 166) d 167) c 168) b****169) d 170) a 171) b 172) c****173) b 174) a 175) c 176) c****177) d 178) d 179) c 180) d****181) a 182) b 183) d 184) d****185) c 186) d 187) b 188) a****189) a 190) d 191) d 192) a****193) a 194) c 195) a 196) d****197) b 198) c 199) b 200) d** |