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1) **The reason for high boiling point of H_2O as compared to HF is**
a) Absence of Hydrogen bonding b) The high electronegativity of O
c) **The presence of more extensive hydrogen bonding in water**
d) none of these

2) **Boiling points of different substances are given below**
CH_4 = -161°C C_2H_6 = -89 °C Cl_2 = -34.6 °C F_2 = -168 °C
a) **$Cl_2 > C_2H_6 > CH_4 > F_2$** b) $C_2H_6 > CH_4 > F_2 > Cl_2$
c) $Cl_2 > F_2 > CH_4 > C_2H_6$ d) $F_2 > CH_4 > C_2H_6 > Cl_2$

3) **Ice is less dense than liquid water because of**
a) More hydrogen bonds present in ice
b) **Regular arrangement of water molecules in ice**
c) Impurity of ice d) None of these

4) **The vapor pressure of liquid depends on**
a) The amount of liquid taken b) Both amount and temperature
c) The volume of the vessel **d) The temperature of liquid**

5) **Increasing the temperature increases the rate of evaporation because**
a) **The intermolecular forces go on weakening**
b) Molecules lose their energies
c) Molecules collide with the walls of container more freely
d) None of these

6) **Phenol has B.P of 182°C at 1 atm pressure. If atmospheric pressure were increased to 5 atm then boiling point of phenol**
a) Does not change **b) Increases** c) Decreases d) None of these

7) **Which of the following is not a crystalline solid?**
a) Graphite b) Rhombic Sulfur **c) Crystal glass** d) Grey tin

8) **Ionic solids are non-conductors of electricity because**
a) They lack charged particles. b) They are neutral as a whole
c) **The ions can't show translator motions**
d) Ions are static completely

9) **All of the following are wrong except,**
a) Ionic crystals are highly flexible
b) Brittleness in a crystal is due to the strong attractive forces between particles
c) Lattice energy of NaF is smaller than that of NaCl
d) **Diamond and silicon carbide are only soluble in benzene as both have non-polar structures**

10) **Ethanol is more soluble in water than ethyl ethanoate. Which one of following statements correctly accounts for this?**
a) Ethanol is polar but ethyl ethanoate is non-polar
b) A hydrogen bond forms, between the H-atoms of the –OH group in ethanol and O-atom of water molecule
c) Ethanol is non-polar but ethyl ethanoate is polar
d) A Hydrogen bond between the O-atoms of the –OH group in ethanol and hydrogen atom of water molecule

11) **Which of the followings elements in crystalline form, will have the lowest enthalpy change in vaporization?**
a) Chlorine b) Phosphorous **c) Argon** d) Silicon

12) **Which of the following form molecular crystal?**
a) **Naphthalene** b) CO_2 at -10 °C and room pressure
c) Diamond d) Copper sulphate

13) **Which of the followings is not true?**
a) Evaporation causes cooling
b) Evaporation is a surface phenomenon
c) **Evaporation is directly proportional to the external pressure**
d) Evaporation is directly proportional to the temperature

14) **Compounds with same Crystal shape but different composition and properties are called as**
a) Allotrope b) Polymorphs **c) Isomorphs** d) Isotopes

15) **Which of the following has high heat of vaporization?**
a) F_2 b) Cl_2 c) Br_2 **d) I_2**

16) **Which of the following is most important characteristic property of the crystalline solids?**
a) They are transparent b) **They have sharp melting point**
c) They are quite hard d) They are non-conductor of electricity in molten state

17) **Vapor pressure increases as temperature increases, this is because of _?**
a) K.E of the molecules increases
b) Intermolecular forces are weakened
c) Capability of the molecules to leave surface increases d) **All of the above**

18) **Which of the following is not true?**
a) $NaNO_3$ and $CaCO_3$ are isomorphic
b) **Rhombic sulfur and monoclinic sulfur are isomorphic to each other**
c) The transition temperature of grey tin and white tin is 13.2 °C
d) SO^{2-} and CrO^{2-} are tetrahedral in geometry

19) **Which of the following is not a property of crystalline solids?**
a) Definite shape **b) Isotropy** c) High density d) Low compressibility

20) **Some substances are good conductor of electricity in both solid and liquid states. These substances are generally**
a) **Metallic Substances** b) Molecular solids c) Ionic substances d) Covalent network solids

21) **All of the following have cleavage planes except**
a) Ionic Crystals b) Molecular crystals
c) Covalent Crystals d**) Metallic Crystals**

22) **All of the following are network solids except**
a) SiO_2 b) Graphite c) S_8 d) Diamond

23) **All of the following acids have hydrogen bonding in liquid state except**
a) Sulfuric acid b) Nitric acid
c) **Hydrochloric acid** d) Hydrofluoric acid

24) **Out of seven crystal systems how many can have both body-centered unit cell?**
a) 3 b) 4 c) 3 d) 5

25) **The empty spaces left in a hexagonal close packing of spheres in three dimensions is**
a) 64% **b) 26%** c) 14% d) 52.4%

26) **Which of the following is not a close packed arrangement?**
a) BCC b) CCP c) HCP d) All of these

27) **Which substances will conduct electric current in a solid state?**
a) Diamond b) Sodium Chloride **c) Graphite** d) Both 'b' and 'c'

28) **Which choice is the best for the occurrence of hydrogen bonding?**
a) **$H_2O > C_2H_5OH > CHCl_3$** b) $C_2H_5OH > CHCl_3 > H_2O$
c) $CHCl_3 > H_2O > C_2H_5OH$ d) None of these

29) **Dipole-dipole interactions are not present in**
a) Ethanol b) Acetone c) n-butaned) Highly compressed CO_2

30) **Which of the following is the correct order for the strength of intermolecular forces?**
a) Ion-dipole > dipole-dipole > Hydrogen bonding > London forces
b) dipole-dipole > Hydrogen bonding > London forces > Ion-dipole
c) **Hydrogen bonding > dipole-dipole > Ion-dipole > London forces**
d) None of these

31) **Which of the followings has the weakest intermolecular forces?**
a) He b) Ne c) Ar d) Xe

32) **A permanent dipole is present in**
a) Benzene b) Xenon c) Chloro-benzene d) Iso-octane

33) **The London-forces are not affected by**
a) The number of atoms per molecule b) The intermolecular distances
c) The size of the electronic cloud d) None of these

34) Which of the followings is true for liquid crystals?
a) These cannot diffract light when heated b) These can never conduct electricity at normal temperature
c) These may appear colored upon illumination by light, although previously colorless d) All of these

35) The whole molecule of a liquid crystal
a) Has the same response towards change in temperature
b) is a single unit
c) Is in motion alike when the substance is in the liquid state d) All of these above are true

36) A crystal system with the crystallographic description $A = b \neq c$ and $\alpha = \beta = Y = 90^o$ is called
a) Trigonal b) Hexagonal **c) Tetragonal** d) Monoclinic

37) Rhombohedral system is also called
a) trigonal system b) Hexagonal system c) Rhombic system d) Orthorhombic system

38) High value of lattice energy shows
a) Strong attractions among the particles
b) Non-motile nature of particles
c) High charge density d) Particles have a natural tendency to be in crystalline form

39) All of the followings are correct except
a) Molar heat of sublimation is greater than molar heat of vaporization
b) Change of matter from one state to the other is due to change in the energy content
c) Liquid crystals are sensitive to temperature
d) At dynamic equilibrium between a liquid and its vapors the rate of change on both sides is different

40) The crystal size of a solid may be changed by
a) Presence of an impurity b) Time for crystallization c) Solvent used for crystallization d) All of these

41) The share that a particular unit cell gains from each of particles present at corners of a face centered cube is
a) **One eight** b) One sixth c) Two eight d) None of these

42) Keeping in mind the concept of charge density compound having highest lattice energy is
a) KCl b) LiBr c) MgO d) **NaF**

43) Isomorphic crystals always show
a) Same chemical properties **b) Same crystalline form**
c) Same physical properties d) Same melting point

44) Honey contain glucose and fructose along with some other ingredients, it has greater viscosity dye to
a) **Hydrogen bonding** b) Irregular shape of the molecules
c) Irregular shape of the molecules and strong intermolecular forces
d) Greater molecular size

45) Boiling point of phosphine (PH_3) is -87.8 °C while that of saline (SiH_4) is -111°C. Phosphine has greater boiling point because
a) **Dipole moment of PH_3 is greater than that of SiH_4**
b) PH_3 has greater molecular size
c) Molecular weight of SiH_4 is less than that of PH_3
d) actually the boiling of SiH_4 is greater than that of PH_3

46) If four different compounds have same molecular formula but different structures and hence intermolecular forces, the compound with the lowest boiling point would be that which has
a) Dipole-Dipole forces b) Hydrogen bonding
c) Debye forces **d) London forces**

47) Which of the following compounds do you expect to have the highest boiling point at the surface of the Dead Sea, the lowest place on the surface of earth?
a) H_2S **b) H_2O** c) NH_3 d) PH_3

48) Amorphous solids
a) Have sharp melting point b) Undergo clean cleavage
c) Have regular geometry **d) Are isotropic in nature**

49) Which of the following statements regarding covalent solids is incorrect?
a) These are very hard b) These are very high melting points
c) **These are good conductors of heat**
d) These have high heats of fusion

50) Dry ice a
a) **Molecular solid** b) Ionic solid c) Atomic solid d) Metallic solids

51) For a certain reaction, PV= 2 dm^3 atm and volume is 4 dm^3 then corresponding pressure is
a) 1 atm **b) 0.5 atm** c) 4 atm d) 2 atm

52) The collision of molecules of gases at reduced volume causes?
a) Lower pressureb) Medium pressure **c) Higher pressure** d) No effect on pressure

53) A graph between pressure and inverse of volume and constant temperature and number of moles?
a) Straight line parallel to y-axis b) Straight line parallel to x-axis
c) **Straight line passing through the origin** d) The curve showing the maximum

54) A gas occupies a volume of 4 dm^3 at 25 °C and 1 atm pressure. What volume it occupies at STP?
a) 4.36 dm^3 b) 325.4 dm^3 c) 40.4 dm^3 **d) 3.66 dm^3**

55) If both temperature and volume of a gas doubled the pressure?
a) Also doubled b) Is reduced to half c) Increases four times **d) Remain unchanged**

56) The gas which behaves more ideal under similar conditions of temperature and pressure?
a) He b) CO_2 **c) H_2** d) N_2

57) Standard temperature and pressure (STP) of gases refers to?
a) 273 K and 760 mm Hg b) 273 K and 76 mm Hg **c) 273 °C and 760 mm Hg** d) 273 °C and 76 mm Hg

58) Vapor pressure of mercury at 20 °C is
a) 87 torr b) 170 torr **c) 0.012 torr** d) 44 torr

59) Cubic crystal of NaCl become needle like by the addition of
a) 20% urea **b) 10% urea** c) 50% urea d) None of these

60) Evaporation cause
a) **cooling** b) heating c) both of these d) none of these

61) Rhombic sulfur is converted into monoclinic sulfur
a) 13 °C **b) 95.5 °C** c) 32 °C d) 128 °C

62) $NaNO_3$ and KNO_3 has crystalline from
a) cubic b) hexagonal **c) rhombohedral** d) trigonal

63) Iodine boils at
a) -188°C **b) +184 °C** c) 100 °C d) +150°C

64) Which of the following is a pseudo solid
a) CaF_2 **b) Glass** c) NaCl d) All

65) Acetone and chloroform are soluble in each other due to
a) **intermolecular hydrogen bonding** b) ion-dipole interaction c) instantaneous dipole d) all of these

66) Ice float on the surface of water as its density is
a) less b) grater c) smaller d) none of these

67) Transition temperature for rhombic and monoclinic sulphur is
a) 13.2°C **(b) 95.5°C** (c) 23°C (d) 32.38°C

68) The geometry of CO^{-2} and NO^{-1}
a) **Triangular planar** (b)Tetrahedral
(c)Octahedral (d) orthorhombic

69) One of the following pair of compounds is not isomorphic in nature and that is
(a) MgO and NaF (b) KNO_3 and $CaCO_3$
(c) NaCl and KNO_3 (d) MgO and NaCl

70) Six parameters of the unit cell are called
a) unit cell dimension (b) crystallographic elements
(c) hexagonal dimensions **(d) both a and b**

71) **Sugar crystals are examples of**
a) **hydrogen bonding** (b) polar molecules
(c) ion dipole forces (d) London dispersion forces

72) **Which pair of compound are isomorphic in nature**
(a) NaCl and KNO_3 (b) KNO_3 and MgO
(c) MgO and NaF (d) NaF and $CaCO_3$

73) **The molecules of CO_2 in dry ice forms the**
(a) Ionic crystals (b) Covalent crystals
(c) **Molecular crystals** (d) None of them

74) **When 10% urea is present in NaCl then which crystal is obtained?**
(a) Cubic (b) Rod like (c) **Needle like** (d) Egg like

75) **Allotropy is the property of**
(a) **Element** b) Compound
(c) Mixture (d) Both element and compound

76) **Cholesteryl benzoate turns into milky liquid at**
(a) 144*C **(b) 145*C** (c) 179*C (d) 149*C

77) **The boiling point of water at Mount Everest would be**
(a) **69*C** (b) 98*C (c) 100*C (d) 101*C

78) **Vapor pressure of a substance does not depend upon**
(a) Intermolecular forces (b) **Surface area**
(c) temperature (d) Physical state of matter

79) **Cubic crystal of NaCl become needle like by the addition of**
a) 20% urea **b) 10% urea** c) 50% urea d) None of these

80) **DNA is a double helix having diameter**
a) 9-10^{0}A b) 20-40^{0}A **c) 18-20 ^{0}A** d) None of these

81) **London dispersion force is present in**
a) Polar molecules b) non-polar molecules
c) Between polar and non-polar molecules
d) **all type of molecules**

82) **In a crystal lattice, the number of nearest neighbors to each atom is called……**
a) Lattice sites b) **Coordination number**
c) Lattice points d) Unit cells

83) **A pseudo-solid is regarded as… liquid.**
a) Isotropic b) Anisotropic c) **Super cooled** d) Crystalline

84) **There are… parameters in unit cell dimensions of a crystal.**
a) Three b) Four c) Five **d) Six**

85) **MgO comes under following category of crystalline solids:**
a) **Ionic solids** b) Covalent solids
c) Molecular solids d) Metallic solids

86) **is developed in acetone & chloroform when they mix together.**
a) Dipole-dipole forces b) **H-Bonding**
c) London forces d) Dipole-induced dipole forces

87) **HF is weak acid due to presence of……**
a) **H-Bonding** b) Dipole-dipole forces
c) Ion-dipole forces d) London forces

88) **Evaporation is… process.**
a) Exothermic b) Non-spontaneous
c) **Spontaneous** d) Heat releasing

89) **Strong H-Bonding is present in……**
a) Hydrogen sulphide b) **Hydrogen fluoride**
c) Ammonia d) Hydrogen chloride

90) **Which are weaker forces ?**
a) Dipole-dipole b) Ion-dipole
c) Dipole-induced dipole **d) London forces**

91) **Which of the following is not a property of crystalline solid**
(a) Geometric shape (b) cleavage plane
(c) anisotropy **(d) isomerism**

92) **The system in which all the three axes are unequal and are at right angle to each other is called**
(a) Hexagonal **(b) monoclinic** (c) tetragonal (d) triclinic

93) **The system in which two out of three axes are of equal length and angles are all 90^0**
(a) Cubic system (b) hexagonal system
(c) trigonal system **(d) tetragonal system**

94) **Sugar crystals are examples of**
(a) Hydrogen bonding (b) polar molecules
(c) ion dipole forces (d) London dispersion forces

95) **Fructose has group**
(a) **OH** (b) C_2O_2 (c) COOH (d) CO

96) **In Helical structure of protein, the number of amino acids per unit turn are**
(a) 25 **(b) 27** (c) 30 (d) 47

97) **Cleansing action is an application of**
(a)Hydrogen bonding (b) Helium bonding
(c) Both A & B (d) None of them

98) **Tumorous part of body is _then surrounding tissues**
(a)Warmer (b) Cold (c) Harder (d) None of these

99) **Liquid crystal was discovered by**
(a)Lorentz **(b) Frederick Reinitzer** (c) Bragg (d) None of these

100) **The first liquid crystal was**
(a)Benzoic Acid (b) Sodium benzoate
(c) Cholesterol **(d) Cholesteral benzoate**

101) **When water freezes it occupies % more space :**
(a) 1% (b) 9% (c) 90% (d) 19%

102) **Which of the given has Hydrogen bonding:**
a) CH_4 **(b) CCl_4** (c) NH_3 (d) NaCl

103) **Dipole-dipole forces are approximately presented as effective as a covalent bond.**
a) 12 % b) 2% **c) 1%** d) 100%

104) **Liquid crystals have properties.**
a) Liquid like b) solid like c) gas like d) **both liquid and solid like**

105) **Which compound can show hydrogen bonding?**
a) Water b) ammonia c) HF **d) all**

106) **Boiling points of halogens down the group.**
a) Decreases b) **increases** c) first decreases then increases d) remains constant

107) **Which of the following has higher boiling point?**
a) Methane b) ethane c) hexane **d) octane**

108) **Types of liquid crystals are**
a) Two **b) three** c) four d) five

109) **The polarizability of halogen molecules is in the order of**
(a) $Cl_2>Br_2>I_2>F_2$ (b) **$I_2>Br_2>Cl_2>F_2$** (c) $Br_2>Cl_2>I_2>F_2$ (d) $F_2>Cl_2>Br_2>I_2$

110) **Which one of the following is the weakest acid among the halogen acids?**
(a) HBr (b) HCl (c) **HF** (d) HI

111) **Which one of the following hydrides has the highest boiling point?**
(a) NH_3 (b) HF (c) **H_2O** (d) H_2Se

112) **The volume of ice increases than liquid water by**
(a) 7% **(b) 9%** (c) 20% (d) 15%

113) **Which are short-lived forces of attraction?**
(a) Dipole-dipole forces (b) Dipole-induced dipole forces
(c) Ion-dipole forces (D) **London dispersion forces**

114) **The smallest part of crystal lattice that have all the characteristic of crystal is called**
a) **Unit cell** b) Crystal system c) Crystalline form d) All of these

115) **London dispersion forces are the only forces present among the**
a) Molecules of water in liquid state
b) Atoms of helium in gaseous state at high temperature
c) **Molecules of solid iodine** d) Molecules of hydrogen chloride gas

116) **Acetone and chloroform are soluble in each other due to**
a) **Intermolecular hydrogen bonding**
b) Ion-dipole interaction c) Instantaneous dipole
b) d) All of the above

117) **NH_3 shows a maximum boiling point among the hydrides of VA group elements due to**
a) Very small size of nitrogen
b) Lone pair of electrons present on nitrogen
c) **Enhanced electronegative character of nitrogen**
d) Pyramidal structure of NH_3

118) **When water freezes 0°C, its density decreases due to**
a) Cubic structure of ice
(b) **Empty space present in the structure of ice**
c) Change of bond lengths d) Change of bond angles

119) **LiF is a crystalline substance and has**
a) **Ionic crystals** b) Metallic crystals
c) Covalent crystals d) Molecular crystals

120) **Ionic solids are characterized by**
a) Low melting points b) Good conductivity in solids state
c) High vapors pressures d**) Solubility in polar solvents**

121)**Amorphous solids**
a) Have sharp melting points
b) Undergo clean cleavage when cut with knife
c) Have perfect arrangement of atoms
d) **Can possesses small regions of orderly arrangement of atoms**

122) **Diamond is a bad conductor because**
a) It has tight structure b) It has a high density
c) It is transparent to light
d) **There are no free electrons present in the crystal of diamond to conduct electricity**

123) **The distillation of liquid under reduced pressure is called**
a) Destructive distillation b) **Vacuum distillation**
c) Fractional distillation d) Simple distillation

124) **Which of the following is not anisotropic property**
a) Refractive index b) **Melting point**
c) Cleavage d) Electrical conductivity

125) **The transition temperature of KNO_3 is**
a) 13.2°C b) 95.5°C c) 128.5°C d) 32.02°C

126) **The boiling point of the halogens**
a) **Increases down the group** b) Decreases down the group
c) Remains constant d) Difficult to predict

127) **Which one of the following have lowest vapors pressure at 25°C**
a) **Water** b) Ethyl alcohol c) Acetone d) Diethyl ether

128) **In order to mention the boiling point of water at 110°C, the external pressure should be**
a) Between 760 torr and 1200 torr
b) Between 200 torr and 760 torr
c) 765 torr d)Any value of pressure

129) **Coordination number of Na^+ ion in NaCl is**
a) one b) Two c) Four **d) Six**

130) **The crystal of diamond is**
a) ionic **b) Covalent** c) Molecular d) Metallic

131) **Boiling point of water at Murree Hills is.**
a) 100°C b) **98°C** c) 69°C d) 25°C

132) **Which types of forces are present in chloroform molecules?**
a) Debye forces b) London dispersion forces
c) **Dipole-dipole forces** d) Hydrogen bonding

133) **Debye forces are also called**
a) Dipole-dipole forces b) **Dipole induced dipole forces**
c) ionic Dipole forces d) All

134) **Which of the following has low polarizability?**
a) **fluorine** b) chlorine c) bromine d) iodine

135) **Which of the following molecules has hydrogen bonding in them?**
a) HCl b) $CHCl_3$ c) **NH_3** d) He

136) **Which of the following hydrogen halide has low acidic strength**
a) **HF** b) HCl c) HBr d) HI

137) **What is the shape of water molecules?**
a) Trigonal planer b) **tetrahedral** c) Square planer d) Octahedral

138) **Which of the following hydride has high boiling point?**
a) CH_4 b) NH_3 c) **H_2O** d) HF

139) **Which property is related to crystals?**
a) surface tension b) viscosity c) fluidity d) **optical properties**

140) **Dipole forces are dominant in**
a) Ammonia b) octane c) argon **d) acetone**

141) **London forces are dominant in**
a) Ammonia b) octane c) argon **d) both b and c**

142) **Which one is liquid hydrocarbon?**
a) Methane b) propane c) butane **d) hexane**

143) **Which one has greater rate of evaporation?**
a) water b) honey **c) petrol** d) grease

144) **Vapor pressure will be greatest for**
a) water b) honey **c) ether** d) HF

145) **When external pressure is 23.7 torr , the boiling point of water is**
a) 100°C b) 98°C c) 69 °C **d) 25°C**

146) **For a tumor the color of liquid crystal is due to hot area**
a) red b) green **c) blue** d) black

147) **Which one of following has an angle of 120°?**
a) cubic b) tetragonal **c) hexagonal** d) none of these

148) **The example of hexagonal system is**
a) sulphur b) NaCl **c) graphite** d) diamond

149) **The structure of ionic crystal depends upon?**
a) Structure of ions b) size of ions c) radius ratio of ions **d) all of these**

150) **Which of the following has the layered macrostructure?**
a) **Graphite** b) boron nitride c) both a and bd) none of these

151) **In cubic close packing ,the forth layer will be similar to**
a) **7^{th}** b) 11^{th} c) 12^{th} d) 6^{th}