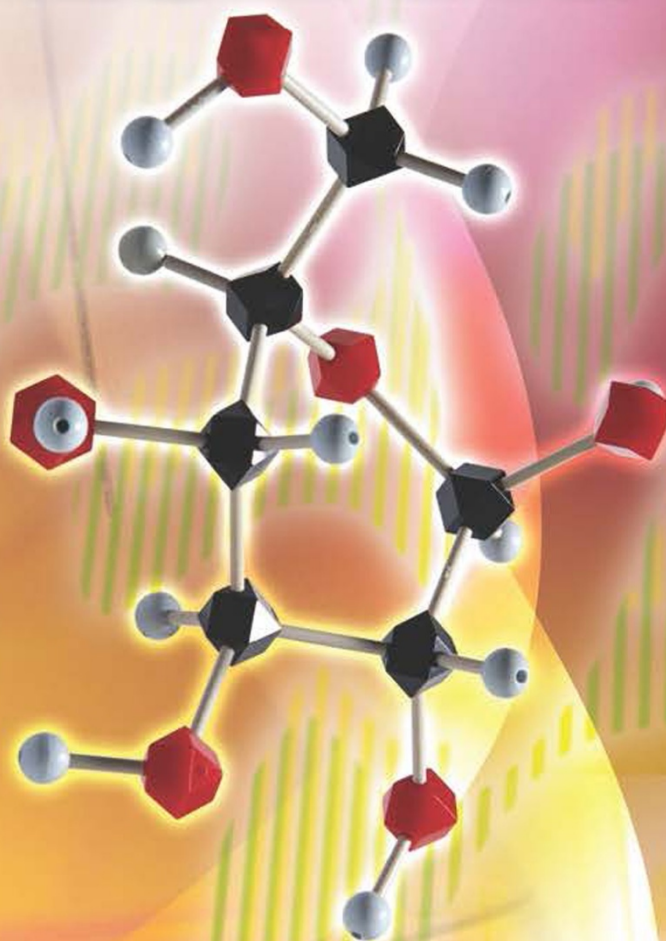# IMU-CET

CHEMISTRY

Marine Republic

Ques1. The value of universal gas constant R depends upon the
(A) Temperature of the gas
(B) Volume of the gas
(C) Moles of the gas
(D) None of these

Answer : (D)

Ques2. The Boyle's temperature for the ideal gases is given by
(A) a/R
(B) a/bR
(C) 2a/bR
(D) None of these

Answer : (B)

Ques3. A gas behaves like and ideal gas at
(A) High pressure and Low temperature
(B) High pressure and high temperature
(C) Low pressure and increasing volume
(D) Decreasing velocity by lowering temperature

Answer : (A)

Ques4. A gas is kept at 1 atm pressure. To compress it to $1/4^{th}$ of its initial volume, the pressure to be applied is…….
(A) 1 atm
(B) 2 atm
(C) 4 atm
(D) ¼ atm

Answer : (C)

Ques5. The density of a gas at 300K and 1 atm is d, pressure remaining constant at which of the following temperatures will its density become 0.75d ?
(A) 20^0 C
(B) 30^0 C
(C) 400K
(D) 300K

Answer : (C)

Ques6. At extremely low pressure the Vander waals equation for one mole of a gas may be written as.....
   (A) PV=RT + pb
   (B) PV = RT −a/v
   (C) PV = RT
   (D) (p+a/v) (v-b) = RT

Answer : (B)

Ques7. An ideal gas cannot be liquefied because
   (A) The intermolecular force of attraction between gaseous molecules are negligible
   (B) Its critical temperature is very high
   (C) The Vanderwaals constants a and b are very high
   (D) All of the above

Answer : (A)

Ques8. The RMS velocity of an ideal gas at constant pressure varies with density relates as
   (A) d
   (B) √d
   (C) d^2
   (D) 1/√d

Answer : (D)

Ques9. Helium gas is compressed to half of the volume at 303K. It should be heated to which temperature for its volume to increase to double of its original volume?
   (A) 303K
   (B) 606K
   (C) 1212K
   (D) 30^0 C

Answer : (C)

Ques10. When a gas is heated from 298K to 323K at constant pressure of 1 atm its volume .....
   (A) Increases from V to 1.8 V
   (B) Increases from V to 1.08 V
   (C) Increases from V to 1.5 V
   (D) Increases from V to 2V

Answer : (B)

Ques11. The compressibility factor of an ideal gas is
   (A) Zero
   (B) 1
   (C) 2
   (D) 4

Answer : (B)

Ques12. Two gases A and B having the same temperature T, same pressure P and same volume V are mixed. If the mixture is at the same temperature and occupied a volume V, the pressure of the mixture is……
   (A) 2P
   (B) P
   (C) P/2
   (D) 4P
Answer : (A)

Ques13. Gas equation PV=nRT is obeyed by
   (A) Only isothermal process
   (B) Only adiabatic process
   (C) Both a & b
   (D) None of these

Answer : (D)

Ques14. According to the kinetic theory of gases…
   (A) The pressure exerted by a gas is proportional to mean square velocity of the molecules
   (B) The pressure exerted by a gas is proportional to root mean square velocity of the molecules
   (C) The root mean square velocity is inversely proportional to the temperature
   (D) The mean transitional K.E. of molecule is directly proportional to the absolute temperature

Answer : (A)

Ques15. If a 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

Answer : (A)

Ques16. At constant volume for a fixed number of a moles of a gas, the pressure of the gas increases with the rise in temperature due to
(A) Increase in average molecules speed
(B) Increased rate of collision amongst
(C) Increase in molecular attraction
(D) Increase in mean free path

Answer : (D)

Ques17. When a real gas behaves as an ideal gas?
(A) Inter molecular attraction among molecules are negligible then
(B) At very low pressure and high temperature
(C) When molecular size is very very small and negligible to the volume of container then
(D) All of the above

Answer : (C)

Ques18. In which state of matter intermolecular force does not exist?
(A) Solid
(B) Liquid
(C) Gas
(D) None

Answer : (D)

Ques19. Which factor is the deciding factor of physical state of matter?
(A) Intermolecular forces
(B) Molecular interaction
(C) Effect of thermal energy on the motion of particles
(D) Given all

Answer : (B)

Ques20. Which physical state is acquired by water in between temperature above than 273K

and below 373K?
(A) Plasma
(B) Liquid
(C) Solid
(D) Gas

Answer : (C)

Ques21. Which physical state of water is more compressible applying pressure at constant
temperature
(A) Ice
(B) Water
(C) Vapour
(D) Plasma

Answer : (A)

Ques22. What is meant by Bose Einstein condensate?
(A) It is the specific state of matter
(B) Showing relation $E=MC^2$ for the matter
(C) It is an electronic device developed by Bose and Einstein
(D) It is an energy of radiation

Answer : (B)

Ques23. The temperature at which real gases obeys the ideal gas laws over a wide range of
pressure is called?
(A) Critical temperature
(B) Proyles temperature
(C) Inversion temperature
(D) Reduced temperature

Answer : (C)

Ques24. Two separate bulbs contain gas A and B. The density of A is twice as that of gas B. The
molecular mass of gas A is half as that of B. If two gases are at same temp, the ratio of the
pressure of A to that of B is……..
(A) 2
(B) ½
(C) 4
(D) ¼

Answer : (C)

Ques25. Triple point of water is
    (A) 273L
    (B) 373K
    (C) 203K
    (D) 193K

Answer : (A)

Ques26. The temp of system decreases in an
    (A) Adiabatic compression
    (B) Isothermal compression
    (C) Isothermal expansion
    (D) Adiabatic expansion

Answer : (D)

Ques27. If a refrigerator's door is opened, then we get…
    (A) Room heated
    (B) Room cooled
    (C) More amount of heat is passed out
    (D) No effect on room'

Answer : (A)

Ques28. The cooling in refrigerator is due to
    (A) Reaction of the refrigerator gas
    (B) Expansion of ice
    (C) The expansion of gas in the refrigerator
    (D) The work of the compressor

Answer : (C)

Ques29. The process in which no heat enters or leaves the system is termed as
    (A) Isochoric
    (B) Isobaric
    (C) Isothermal
    (D) Adiabatic

Answer : (D)

Ques30. In thermodynamics a process is called reversible when
   (A) Surroundings and system change into each other
   (B) There is no boundary between system and surroundings
   (C) The surroundings are always in equilibrium with the system
   (D) The system changes into the surroundings spontaneously

Answer : (C)

Ques31. Enthalpy is an ……………..property
   (A) Extensive
   (B) Exclusive
   (C) Intensive
   (D) Inclusive

Answer : (A)

Ques32. The spontaneous flow of heat is always
   (A) Unidirectional from higher temperature to lower temperature
   (B) From high to low pressure
   (C) Unidirectional from lower temperature to higher temperature
   (D) From low to high pressure

Answer : (A)

Ques33. Which of the following is zero during adiabatic expansion of the gas
   (A) ΔT
   (B) ΔS
   (C) ΔE
   (D) All of the above

Answer : (B)

Ques34. The second law of thermodynamics says that in cyclic process
   (A) Work cannot be converted into heat
   (B) Heat cannot be converted into work
   (C) Work cannot be completely converted into heat
   (D) Heat cannot be converted completely into work

Answer : (D)

Ques35. When a gas undergoes adiabatic expansion , it gets cooled due to
   (A) Loss of Kinetic Energy
   (B) Fall in temperature
   (C) Decrease in velocity
   (D) Energy used in doing work

Answer : (B)

Ques36. A Beckman thermometer is used to measure…….
   (A) High temp
   (B) Low temp
   (C) Normal temp
   (D) All temperatures

Answer : (B)

Ques37. For which of the following processes will energy be absorbed…..
   (A) Separating an electron from an electron
   (B) Separating a proton from a proton
   (C) Separating a neutron from an neutron
   (D) Separating an electron from neutral atom

Answer : (D)

Ques38. Which of the following pollutant cannot be degraded by natural process?
   (A) DDT
   (B) Nuclear waste
   (C) Heavy Metals
   (D) All of the above

Answer : (D)

Ques39. What is the pH of acid rain?
   (A) More than 5.6
   (B) In between 5.6 and 6.6
   (C) Less than 5.6
   (D) In between 6 to 6.66

Answer : (C)

Ques40. Which of the following metal will pollute water?
   (A) Cd
   (B) Na
   (C) K
   (D) None of the above

Answer : (A)

Ques41. Which one is not a green house gas?
   (A) H_2O
   (B) O_2
   (C) CO_2
   (D) O_3

Answer : (B)

Ques42. Which of the following is responsible for photochemical smog?
   (A) SO_X
   (B) NO_X
   (C) CO_X
   (D) None of the above

Answer : (B)

Ques43. Which of the following oxide of nitrogen is not a common air pollutant?
   (A) NO_2
   (B) N_2O
   (C) NO
   (D) N_2O_5

Answer : (D)

Ques44. Depletion of Ozone layer causes?
   (A) Blood cancer
   (B) Bone cancer
   (C) Lung cancer
   (D) Skin cancer

Answer : (D)

Ques45. Oxides of sulphur and nitrogen are important pollutants of….
   (A) Water
   (B) Air
   (C) Soil
   (D) Both b and c

Answer : (B)

Ques46. Tajmahal is threatened by pollutant from?
   (A) Nitric oxide
   (B) Carbon oxide
   (C) Sulphur oxide
   (D) Chlorine

Answer : (C)

Ques47. DDT is………..
   (A) An antibiotic
   (B) Bio degradable pollutant
   (C) Non bio degradable pollutant
   (D) Nitrogen containing insecticide

Answer : (C)

Ques48. COD stands for……………….
   (A) Chemical oxygen demand
   (B) Controlled oxygen demand
   (C) Clouds causing ozone depletion
   (D) Chlorinated oxygen demand

Answer : (A)

Ques49. The main components of acid rain in the atmosphere are :
   (A) Oxide of sulphur and nitrogen
   (B) Oxides of carbon and nitrogen
   (C) Oxides of phosphorous and nitrogen
   (D) Oxide of carbon

Answer : (A)

Ques50. In coming years skin related disorders will be more common due to
    (A) Water pollution
    (B) Organic waste material
    (C) Pollutants of atmosphere
    (D) Depletion of ozone layer

Answer : (D)

Ques51. The major cause of air pollution in big cities is…….
    (A) Burning of coal
    (B) Domestic exhaust
    (C) Burning of cooking gas
    (D) Vehicular exhaust

Answer : (D)

Ques52. Depletion of ozone layer in stratosphere may cause……
    (A) Lung damage
    (B) Global warming
    (C) Global cooling
    (D) Skin cancer

Answer : (D)

Ques53. Greenhouse effect was first described by……
    (A) Yues Chauvin
    (B) Einstein
    (C) Fourier
    (D) Newton

Answer : (C)

Ques54. Acid rain is due to the increase in the concentration of which of the following in the atmosphere?
    (A) $O_3 + NO_2$
    (B) CO_2 AND CO
    (C) SO_3 AND CO

(D) SO_2 AND NO_2

Answer : (D)

Ques55. Ozone in the atmosphere is depleted by
    (A) CF_2Cl_2
    (B) C_6F_{16}
    (C) $C_6H_6Cl_6$
    (D) C_6F_6

Answer : (A)

Ques56. Heating of ore in presence of oxygen below its melting point is known as
    (A) Roasting
    (B) Calcinations
    (C) Smelting
    (D) Option B and C

Answer : (A)

Ques57. Blister copper is
    (A) Pure copper
    (B) Ore of copper
    (C) Alloy of copper
    (D) Impure copper

Answer : (D)

Ques58. Which substance is oxidizing agent?
    (A) A substance donates hydrogen or accepts oxygen
    (B) A substance donates oxygen or accepts hydrogen
    (C) A substance experience oxidation
    (D) A substance donates electron

Answer : (B)

Ques59. Which substance is called reducing agent?
    (A) A substance donates hydrogen or accepts oxygen
    (B) A substance donates oxygen or accepts hydrogen
    (C) A substance experience reduction

(D) A substance gains electron

Answer : (A)

Ques60. Oxidation reactions means
    (A) A process of removing electron
    (B) A process of adding hydrogen
    (C) A process of removal of oxygen
    (D) A process of adding electrons

Answer : (A)

Ques61. Which of the following is the characteristic of reducing agent
    (A) It experiences oxidation
    (B) It experiences reduction
    (C) It gains electron
    (D) It gives oxygen

Answer : (A)

Ques62. Which of the following is the characteristic of oxidising agent
    (A) It experiences oxidation
    (B) It experiences reduction
    (C) It gains oxygen
    (D) It donates electrons

Answer : (B)

Ques63. Which of the following statement is true?
    (A) There is always reduction occurs of oxidizing agent
    (B) There is always oxidation occurs of reducing agent
    (C) Oxidation and reduction are supplementary processes
    (D) All three statements are wrong

Answer : (D)

Ques64. Which of the following statement is wrong?
    (A) There is always reduction occurs of oxidizing agent
    (B) There is always oxidation occurs of reducing agent
    (C) Oxidation and reduction are supplementary processes

(D) All three statements are wrong

Answer : (D)

Ques65. Which of the following elements does not possess positive oxidation number in any of its compound?
(A) O
(B) F
(C) Cl
(D) I

Answer : (B)

Ques66. What is the oxidation number of iodine in ICl_3 and CsI_3 respectively
(A) +3 , -1
(B) +1, -1
(C) +1/3 , -1
(D) +3 , -1/3

Answer : (D)

Ques67. What would be the value of x and y in $AlF_xO_y^{6-}$?
(A) 1,4
(B) 3,2
(C) 2,2
(D) 4,3

Answer : (A)

Ques68. How many moles of elements are added when 2.5 mole $Cr_2O_7^{2-}$ reduced in Cr^{+3} ?
(A) 12.5
(B) 15
(C) 7.5
(D) 10

Answer : (B)

Ques69. What mole of MnO_4^- reduced in Mn^{2+} by the addition of 7.5 mole electrons in MnO_4^- ?
(A) 2.5
(B) 5

(C) 1.5

(D) 7.5

Answer : (C)

Ques70. The oxidation number of sulphur in $Al_2(SO_4)_3$ is……

(A) +8

(B) +7

(C) +5

(D) +6

Answer : (D)

Ques71. Electrolytic cells having molten NaCl, $CaCl_2$ and $AlCl_3$ solutions are connected in series and same electricity is passed then, which of the following ratio of moles of metal obtained at cathode is correct?

(A) 1:2:3

(B) 3:2:1

(C) 6:2:3

(D) 6:3:2

Answer : (D)

Ques72. Which of the following cell is different?

(A) Daniel cell

(B) Lead storage cell

(C) Laclanche cell

(D) Electrolytic cell

Answer : (D)

Ques73. On which of the following cell potential of the cell does not depend?

(A) Temperature

(B) Concentration for the solution of salt bridge

(C) Concentration of the solution related with cell reaction

(D) Nature of electrodes

Answer : (B)

Ques74. Select the correct option with reference to electrochemical cell? (True = T, False = F)

I.   In external circuit e- flow from cathode to anode
II.   In solution electricity conducted through ions
III. In external circuit electric current flow from anode to cathode
IV.   Anions move from anode to cathode through salt bridge

(A) TFTF
(B) FTFF
(C) FFFT
(D) FTTF

Answer : (D)

Ques75. To convert molarity into which of the following unit of concentration, does not require density of the solution?
(A) Molality
(B) Normality
(C) Mole fraction
(D) % w/w

Answer : (B)

Ques76. To convert molality into which of the following unit of concentration require density of the solution?
(A) % w/w
(B) % by volume
(C) Mole fraction
(D) Given all

Answer : (B)

Ques77. Which of the following unit of concentration does not depend on temperature?
(A) Formality
(B) Molarity
(C) Molality
(D) Normality

Answer : (C)

Ques78. Which of the following unit of concentration depends on temperature
(A) Molality

(B) Normality

(C) Mole fraction

(D) Given all

Answer : (B)

Ques79. 15% w/v solution of sugar is prepared by dissolving 1200 gm sugar in water, then, what would be the volume of the solution?

(A) 8000 ml

(B) 4 ltr

(C) 800 ml

(D) 5000 ml

Answer : (A)

Ques80. 0.004 gm O_2 is dissolved in an aqueous solution of 50 liters, then , what would be the ppm of solution by weight-volume?

(A) 0.04

(B) 0.008

(C) 0.004

(D) 0.08

Answer : (D)

Ques81. What will be the molarity of solution prepared by taking a mixture of 1400 ml 0.3 M, 700 ml 0.4 M and 500 ml 1.2 M aqueous solutions?

(A) 0.5 M

(B) 0.8 M

(C) 0.6 M

(D) 0.7 M

Answer : (A)

Ques82. What quantity of KOH is required to prepare 10% w/w KOH solution having weight 1000 g?

(A) 50 g

(B) 25 g

(C) 100 g

(D) 150 g

Answer : (C)

Ques83. What amount of water is added to an aqueous solution of 5000 ml having concentration 1.5 M to prepare 0.5 M solution?
   (A) 15 liter
   (B) 5 liter
   (C) 10 liter
   (D) 20 liter

Answer : (C)

Ques84. On which factors the solubility of gaseous solute in liquid depends?
   (A) Temperature
   (B) Pressure of the gas
   (C) Nature of gaseous solute and solvent
   (D) Given all

Answer : (D)

Ques85. In which of the following conditions CO_2 gas is filled in cold drinks and in soda water?
   (A) At high temp and high pressure
   (B) At low temp and high pressure
   (C) At low temp and low pressure
   (D) At high temp and low pressure

Answer : (C)

Ques86. In which condition, Henry's law is applicable?
   (A) Ideal behavior of gaseous solute at high pressure and low temp
   (B) Gaseous solute neither associate nor dissociate in solution
   (C) Gaseous solute reacts with solvent
   (D) Applicable in given all conditions

Answer : (B)

Ques87. Which of the following is not a substitutional solid solution?
   (A) wc
   (B) brass
   (C) steel
   (D) monel metal

Answer : (A)

Ques88. Which of the following is a substitutional solid solution?
    (A) wc
    (B) bronze
    (C) steel
    (D) monel metal

Answer : (A)

Ques89. Which type of solution moist air is?
    (A) Gas
    (B) Liquid
    (C) Solid
    (D) Colloida

Answer : (A)

Ques90. At constant temperature , solubility of which of the following substances decreases
    with increase in temperature?
    (A) Aqueous solution of sugar
    (B) Aqueous solution of salt
    (C) Aqueous solution of CO_2
    (D) Aqueous solution of KNO_3

Answer : (C)

Ques91. Which of the following is ionic?
    (A) HCL
    (B) $CHCL_3$
    (C) IF_5
    (D) KI

Answer : (D)

Ques92. When molecule is form by chemical bonding between atoms then
    (A) Nucleus of combining atoms participate
    (B) Valence electrons and inner cell electrons participate
    (C) Only valence electrons of combining atoms participate
    (D) Only inner cell electrons of combining atoms participate

Answer : (C)

Ques93. Which factor is not responsible for the formation of ionic bond?
  (A) Crystal lattice energy
  (B) Density
  (C) Ionization enthalpy
  (D) Electron gain enthalpy

Answer : (C)

Ques94. According to valence bond theory which magnetic property oxygen possess?
  (A) Paramagnetic
  (B) Ferromagnetic
  (C) Diamagnetic
  (D) Anti ferromagnetic

Answer : (B)

Ques95. Which of the following sentence is incorrect for covalent bond?
  (A) Strength of covalent bond depends upon overlapping of atomic orbitals
  (B) Co valent bond is not directional
  (C) There is sharing of electrons between atoms bonded by covalent bonds
  (D) Covalent bond is formed between atoms having less difference in their electro negativity

Answer : (B)

Ques96. Which of the following compound possess co-valent bond?
  (A) $MgCl_2$
  (B) NaH
  (C) BF_3
  (D) CsCl

Answer : (C)

Ques97. Which of the following molecule possess polar and non polar covalent bond
  (A) NH_4Cl
  (B) CCl_4
  (C) H_2O_2
  (D) HCN

Answer : (C)

Ques98. Which of the following compound does not possess coordinate covalent bond?
  (A) CO
  (B) SO_2
  (C) HNO_2
  (D) HNO_3

Answer : (C)

Ques99. Which of the following characteristic is not for covalent compound?
  (A) They do not posses particular geometrical structure
  (B) They may be polar or non polar
  (C) Their boiling and melting point is low
  (D) Generally they are insoluble in water

Answer : (A)

Ques100. Which of the following possess ionic and covalent bond?
  (A) CO_2
  (B) H_2SO_4
  (C) NH_4Cl
  (D) NaI

Answer : (C)

Ques101. Which of the following molecule has lowest bond space angle?
  (A) NH_3
  (B) SO_2
  (C) H_2O
  (D) H_2S

Answer : (D)

Ques102. Maximum how many number of hydrogen bond can be formed by H_2O molecule?
  (A) 2
  (B) 4
  (C) 3
  (D) 1

Answer : (B)

Ques103. In which of the following strong H bond is present?
   (A) F – H...........F
   (B) O – H ....N
   (C) O – H ....O
   (D) O – H ....F

Answer : (A)

Ques104. In which molecule bond distortion is more according to VSEPR theory?
   (A) SO_2
   (B) NH_3
   (C) O_3
   (D) H_2O

Answer : (D)

Ques105. Which of the following statement is incorrect for metallic bond?
   (A) There is attraction between delocalized electrons and atomic karnel
   (B) Directional property is shown by metal
   (C) Delocalized electron can change their position easily in crystal
   (D) Explanation of metallic bond can be given by "electron sea model"

Answer : (B)

Ques106. Number of H- bond formed by unpaired electrons of liquid NH3, H2O and HF
   respectively are
   (A) 3,4,2
   (B) 4,4,2
   (C) 3,2,1
   (D) 1,2,1

Answer : (D)

Ques107. Which of the following characteristic does not possess by metal?
   (A) Luminous
   (B) Ductility
   (C) Increase in conductance by increase in temp.
   (D) Malleability

Answer : (C)

Ques108. On which factor conductance of metals responsible?
    (A) Ions
    (B) Delocalized
    (C) Atomic kernel
    (D) Number of atoms

Answer : (B)

Ques109. On which factor van der walls attraction force does not depend?
    (A) Number of molecules
    (B) Contact surface area of molecules
    (C) Shape of molecules
    (D) Number of electrons in molecules

Answer : (A)

Ques110. Mention number of bonding electron pairs and non bonding electron pairs in NO_3^- ion
    (A) 3,1
    (B) 2,2
    (C) 4,0
    (D) 1,3

Answer : (C)

Ques111. How many numbers of bonding and non bonding electron pairs in CO_2 ?
    (A) 4,4
    (B) 2,4
    (C) 4,2
    (D) 2,2

Answer : (A)

Ques112. Which theory is useful to determine geometrical structure of molecules?
    (A) Molecular orbital theory
    (B) VSEPR theory
    (C) Resonance theory
    (D) Quantum mechanics

Answer : (B)

Ques113. Which of the following has maximum bond angle ?
    (A) NH_3
    (B) CH_4
    (C) CO_2
    (D) H_2O

Answer : (C)

Ques114. Bond strength increases with
    (A) Bond length increasing
    (B) Anti bonding electrons being higher in number
    (C) Bond order increasing
    (D) Bond angle increasing

Answer : (C)

Ques115. The bond order of O_2^- is
    (A) 1.0
    (B) 1.5
    (C) 2.5
    (D) 0.5

Answer : (D)

Ques116. Which of the following is not paramagnetic?
    (A) NO
    (B) S^{2-}
    (C) O_2^-
    (D) N_2^-

Answer : (B)

Ques117. A zero order reaction is one whose rate is independent of….
    (A) Reaction vessel volume
    (B) Concentration of reactants
    (C) Temperature
    (D) Pressure of light

Answer : (B)

Ques118. The reactions of higher order are rare because
  (A) Many bad collisions involve very high activation energy
  (B) Many bad collisions have a low probability
  (C) Many bad collisions are not energetically favored
  (D) Many bad collisions can take place only in the gaseous phase

Answer : (B)

Ques119. In one reaction concentration of A is increased by 16 times, the rate increases only two times. The order of the reaction would be………
  (A) 2
  (B) 4
  (C) ½
  (D) ¼

Answer : (D)

Ques120. In the reaction A →B, when the concentration of A is changed from 0.1M to 1M, the rate of the reaction increases by a factor of 100. The order of the reaction with respect to A is….
  (A) 10
  (B) 1
  (C) 2
  (D) 3

Answer : (C)

Ques121. If initial concentration is doubled, the time for the half reaction is also doubled. The order of reaction is…….
  (A) First
  (B) Second
  (C) Third
  (D) Zero

Answer : (D)

Ques122. In the first order reaction the concentration of the reactants is reduced to 25% in one hour. The half life period of the reaction is…….
  (A) 120 min

(B) 4 hr
(C) 30 min
(D) 15 min

Answer : (C)

Ques123. For the first order reaction with half life is 150 seconds. The time taken for the concentration of the reactant to fall from m/10 to m/100 will be approximately
(A) 600 s
(B) 900 s
(C) 500 s
(D) 1500 s

Answer : (C)

Ques124. The half life period of a first order reaction is 15 minutes. The amount of substance left after one hour will be………
(A) ½
(B) ¼
(C) 1/8
(D) 1/16

Answer : (D)

Ques125. The minimum amount of energy required for the reacting molecules to undergo reaction is called:
(A) Potential energy
(B) Internal energy
(C) Activation energy
(D) Threshold energy

Answer : (D)

Ques126. Energy of activation of an exothermic reaction is
(A) Zero
(B) Negative
(C) Positive
(D) Cannot be predicted

Answer : (C)

Ques127. The chemical reactions in which reactants require high amount of activation energy are generally…
(A) Slow
(B) Fast
(C) Instantaneous
(D) Spontaneous

Answer : (A)

Ques128. The rate of reaction increases with increase of temperature because…..
(A) An increase in the number of activated molecules
(B) An increase in the number of collisions
(C) Lowering of threshold energy
(D) Activation energy is lowered

Answer : (A)

Ques129. The activation energy of reaction is equal to
(A) Threshold energy + energy of products
(B) Threshold energy - energy of reactants
(C) Threshold energy + energy of reactants
(D) Threshold energy - energy of products

Answer : (B)

Ques130. Which of the following does not affect the rate of the reaction?
(A) Size of the vessel
(B) Physical state of reactants
(C) Amount of reactants
(D) ΔH of the reaction

Answer : (D)

Ques131. The increase in reaction rate as a result of temperature rise from 10K to 100K is….
(A) 512
(B) 614
(C) 400
(D) 112

Answer : (A)

Ques132. What will be the order of the reaction if doubling the concentration of a reactant increases the rate by a factor of 4 and trebling the concentration of the reactant by a factor of 9?

(A) 1

(B) 2

(C) 3

(D) 0

Answer : (B)

Ques133. If the half time of a particular reaction is found to be constant and independent of the initial concentration of the reactants then reaction is of order……

(A) 1

(B) 2

(C) 3

(D) 0

Answer : (A)

Ques134. A van der Waals gas may behave ideally when

(A) The volume is very low

(B) The temperature is very high

(C) The pressure is very low

(D) The temperature, pressure and volume all are very high

Answer : (C)

Ques135. The density of certain gas A is 1.5 times that of B and molecular mass of A is M. The molecular mass of B would be

(a) 3 M   (b) 1.5 M

(c) M/1.5   (d)M/ 3

Answer : (C)

Ques136. Four gases P, Q, R and S have almost same values of 'b but their 'a' values (a, b are van der Waals constants) are in the order Q < R < S < P. At a particular temperature among the four gases the most easily liquefiable one is

(A) P   (B) Q

(C) R   (D) S

Answer : (A)

Ques137. At a certain temperature the time required for the complete diffusion of 200 mL of H2 gas is 30 minutes. The time required for the complete diffusion of 50 mL of O2 gas at the same temperature will be

(A) 60 minutes   (B) 30 minutes

(C) 45 minutes   (D) 15 minutes

Answer : (B)

Ques138. Among the followings, the one which is not a "greenhouse gas", is

(A) N_2O (B) CO_2

(C) CH_4 (D) O_2

Answer : (D)

Ques139. Mixing of two different ideal gases under istohermal reversible condition will lead to

(A) increase of Gibbs free energy of the system

(B) no change of entropy of the system

(C) increase of entropy of the system

(D) increase of enthalpy of the system

Answer : (C)

Ques140. Pressure-volume (PV) work done by an ideal gaseous system at constant volume is (where E is internal energy of the system)

(A) $-\Delta P/P$ (B) Zero

(C) $-V\Delta P$ (D) $-\Delta E$

Answer : (B)

Ques141. Chlorine gas reacts with red hot calcium oxide to give

(A) Bleaching powder and di hlorine monoxide

(B) Bleaching powder and water

(C) Calcium chloride and chlorine dioxide

(D) Calcium chloride and oxygen

Answer : (D)

Ques142. The different colors of litmus in acidic, neutral and basic solutions are, respectively

(A) Red, orange and blue   (B) Blue, violet and red

(C) Red, colorless and blue   (D) Red, violet and blue

Answer : (D)

Ques143. Baeyer's reagent is

(A) Alkaline potassium permanganate

(B) Acidified potassium permanganate

(C) Neutral potassium permanganate

(D) Alkaline potassium manganate

Answer : (A)

Ques144. Nitric acid can be obtained from ammonia via the formations of the intermediate compounds

(A) Nitric oxides and nitrogen dioxides

(B) Nitrogen and nitric oxides

(C) Nitric oxide and dinitrogen pentoxide

(D) Nitrogen and nitrous oxide

Answer : (A)

Ques145. On heating, chloric acid decompose to

(A) $HClO_4$, Cl_2 , O_2 and $H_2 O$ (B) $HClO_2$, Cl_2 , O_2 and $H_2 O$

(C) HClO, Cl_2O and H_2O_2 (D) HCl, HClO, Cl_2O and H_2O

Answer : (A)

Ques146. At 25°C, pH of a 10^{-8} M aqueous KOH solution will be

(A) 6.0   (B) 7.02

(C) 8.02   (D) 9.02

Answer : (B)

Ques147. The pH of 10^{-4} M KOH solution will be

(A) 4   (B) 11

(C) 10.5   (D) 10

Answer : (D)

Ques148. 'Sulphan' is

(A) a mixture of SO3 and H2 SO5

(B) 100% conc. H2 SO4

(C) a mixture of gypsum and conc. H2 SO4

(D) 100% oleum (a mixture of 100% SO3 in 100% H2 SO4)

Answer : (D)

Ques149. The condition for a reaction to occur spontaneously is

(A) ΔH must be negative   (B) ΔS must be negative

(C) $(\Delta H - T\Delta S)$ must be negative   (D) $(\Delta H + T\Delta S)$ must be negative

Answer : (C)

Ques150. 1 × 10–3 mole of HCl is added to a buffer solution made up of 0.01 M acetic and 0.01 M sodium acetate. The final pH of the buffer will be (given, pKa of acetic acid is 4.75 at 25°C)

(A) 4.60   (B) 4.66

(C) 4.75   (D) 4.8

Answer : (B)

Ques151. The energy required to break one mole of hydrogen-hydrogen bonds in H2 is 436 kJ. What is the longest wavelength of light required to break a single hydrogen-hydrogen bond ?

(A) 68.5 nm   (B) 137 nm

(C) 274 nm   (D) 548 nm

Answer : (C)

Ques152. The system that contains the maximum number of atoms is

(A) 4.25 g of NH_3

(B) 8 g of O_2

(C) 2 g of H_2

(D) 4 g of He

Answer : (C)

Ques153. A gaseous mixture contains oxygen and nitrogen in the ratio of 1 : 4 by mass. The ratio of their respective number of molecules is

(a) 2 : 4   (b) 1 : 8

(c) 5 : 16   (d) 7 : 32

Answer : (D)

Ques154. Which of the following compounds in liquid state does not have hydrogen bonding?

(a) C_6H_6 (b) NH_3

(c) H_2O (d) HF

Answer : (A)

Ques155. 6.0 g urea is dissolved in 90 g of water. The relative lowering of vapour pressure is

(a) 0.05   (b) 0.04

(c) 0.03   (d) 0.02

Answer : (D)

Ques156. The pH value of N/10 NaOH solution is

(a) 10   (b) 12

(c) 13   (d) 11

Answer : (C)

Ques157. The volume strength of 1.5 N H_2O_2 solution is

(a) 8.8   (b) 8.4

(c) 5.2   (d) 4.8

Answer : (B)

Ques158. The most volatile is

(a) H_2S (b) H_2Te

(c) H_2Se (d) H_2O

Answer : (B)

Ques159. The compound that does not contain peroxide is

(a) PbO_2 (b) H_2O_2

(c) SrO_2 (d) BaO_2

Answer : (C)

Ques160. The oxidation number of sulphur in $H_2S_2O_8$ is

(a) +14   (b) +7

(c) +6   (d) +2

Answer : (C)

Ques161. Dry bleach is done by

(a) Cl_2 (b) O_3

(c) SO_2 (d) H_2O_2

Answer : (B)

Ques162. Electrophiles are

(a) Lewis bases   (b) Lewis acids

(c) Bronsted bases   (d) Bronsted acids

Answer : (B)

Ques163. The number of bonds in C_2H_2 molecules is

(a) 4, 2   (b) 4, 1

(c) 3, 2   (d) 3, 1

Answer : (C)

Ques164. The number of σ and π bonds between two carbon atoms in calcium carbide are

(A) one σ, one π (B) one σ, two π

(C) two σ, one π (D) one σ, 1½ π

Answer : (B)

Ques165. An element E loses one α and two β particles in three successive stages. The resulting element will be

(A) An isobar of E

(B) An isotone of E

(C) An isotope of E

(D) E itself

Answer : (C)

Ques166. An element X belongs to fourth period and fifteenth group of the periodic table. Which of the following statements is true ?

(A) It has a completely filled s-orbital and a partially filled d-orbital.

(B) It has completely filled s-and p-orbitals and a partially filled d-orbital.

(C) It has completely filled s-and p-orbitals and a half filled d-orbital.

(D) It has a half filled p-orbital, and completely filled s- and d-orbitals.

Answer : (D)

Ques167. Among the following, which should have the highest r.m.s. speed at the same temperature?

(A) SO2

(B) CO2

(C) O2

(D) H2

Answer : (B)

Ques168. The atomic number of cerium (Ce) is 58. The correct electronic configuration of Ce^{3+} ion is

(A) $[Xe]4f^1$

(B) $[Kr]4f^1$

(C) $[Xe]4f^{13}$

(D) $[Kr]4d^1$

Answer : (A)

Ques169. The number of lone pair of electrons on the central atoms of H_2O, $SnCl_2$, PCl_3 and XeF_2 respectively, are

(A) 2,1,1,3   (B) 2,2,1,3

 (C) 3,1,1,2   (D) 2,1,2,3

Answer : (A)

Ques170. In aqueous alkaline solution, two electron reduction of HO_2^- gives

(A) HO^- (B) H_2O

(C) O_2 (D) O_2^-

Answer : (A)

Ques171. Amongst Be, B, Mg and Al the second ionization potential is maximum for

(A) B   (B) Be

(C) Mg   (D) Al

Answer : (A)

Ques172. During the emission of a positron from a nucleus, the mass number of the daughter element remains the same but the atomic number

(A) is decreased by 1 unit

(B) is decreased by 2 units

(C) is increased by 1 unit

(D) remains unchanged

Answer : (A)

Ques173. β emission is always accompanied by

(A) formation of antineutrino and α particle

(B) emission of α particle and γ-ray

(C) formation of antineutrino and γ-ray

(D) formation of antineutrino and positron

Answer : (C)

Ques174. The bond angle in NF_3 (102.3°) is smaller than NH_3 (107.2°). This is because of

(A) large size of F compared to H

(B) large size of N compared to F

(C) opposite polarity of N in the two molecules

(D) small size of H compared to N

Answer : (C)

Ques175. Which one of the following characteristics belongs to an electrophile?

A. It is any species having electron deficiency which reacts at an electron rich C-centre

B. It is any species having electron enrichment, that reacts at an electron deficient C-centre

C. It is cationic in nature

D. It is anionic in nature

Answer : A

Ques176. $_{11}Na^{24}$ is radioactive and it decays to

A. $_9F^{20}$ and α-particles

B. $_{13}Al^{24}$ and positron

C. $_{11}Na^{23}$ and neutron

D. $_{12}Mg^{24}$ and β-particles

Answer : D

Ques177. CO is practically non-polar since

A. the σ-electron drift from C to O is almost nullified by the π-electron drift from O to C

B. the σ-electron drift from O to C is almost nullified by the π-electron drift from C to O

C. the bond moment is low

D. there is a triple bond between C and O

Answer : A

Ques178. The number of acidic protons in H3 PO3 are

A. 0   B. 1

C. 2   D. 3

Answer : C

Ques179. Which of the followings is correct?

A. Evaporation of water causes an increase in disorder of the system

B. Melting of ice causes a decrease in randomness of the system

C. Condensation of steam causes an increase in disorder of the system

D. There is practically no change in the randomness of the system when water is evaporated

Answer : A

Ques180. The nucleus of an atom consists of

   A. electrons and neutrons

   B. electrons and protons

   C. protons and neutrons

   D. All of the above

   ANSWER : C. protons and neutrons

Ques181. The number of moles of solute present in 1 kg of a solvent is called its

   A. molality

   B. molarity

   C. normality

D. formality

ANSWER : A. molality

Ques182. **The most electronegative element among the following is**

A. sodium

B. bromine

C. fluorine

D. oxygen

ANSWER : C. fluorine

Ques183. **Which one of the following materials is suitable for water purification?**

A. Silicones

B. Zeolites

C. Asbestos

D. Quartz

ANSWER : B. Zeolites

Ques184. **Which one of the following is a major constituent of Biogas ?**

A. Carbon dioxide

B. methane

C. hydrogen

D. nitrogen dioxide

ANSWER : B. methane

Ques185. Which one of the following is present in the emission from "unleaded petrol"?

A. carbon monoxide

B. carbon dioxide

C. ethylene

D. hydrocarbons

ANSWER : D. hydrocarbons

Ques186. The metallurgical process in which a metal is obtained in a fused state is called

A. smelting

B. roasting

C. calcinations

D. froth floatation

ANSWER : A. smelting

Ques187. The molecules of which gas have highest speed?

A. H_2 at -73°C

B. CH_4 at 300 K

C. N_2 at 1,027^{o}C

D. O_2 at 0°C

ANSWER : A. H_2 at -73°C

Ques188. The law which states that the amount of gas dissolved in a liquid is proportional to

its partial pressure is

A. Dalton's law

B. Gay Lussac's law

C. Henry's law

D. Raoult's law

ANSWER : C. Henry's law

Ques189. **The cathode of a lead storage battery is made up of**

A. Zinc

B. Lead oxide

C. Manganese dioxide

D. Lead

ANSWER : D. Lead

Ques190. **Vinegar is trade name of**

A. Acetic acid

B. Chloroform

C. Ethyl alcohol

D. Carbon tetrachloride

ANSWER : A. Acetic acid

Ques191. **Which of the following elements behave chemically both as metal and non metal?**

A. Boron

B. Argon

C. Carbon

D. Xenon

ANSWER : A. Boron

Ques192. **Which one of the following correctly defines the state of glass?**

A. Crystalline solid

B. Super cooled liquid

C. Condensed gas

D. Liquid crystal

ANSWER : B. Super cooled liquid

Ques193. **The gas present in the stratosphere which filters out some of the sun's ultraviolet**

light and provides an effective shield against radiation damage to living things is

A. helium

B. ozone

C. oxygen

D. methane

ANSWER : B. ozone

Ques194. **The most commonly used bleaching agent is**

A. alcohol

B. carbon dioxide

C. chlorine

D. sodium chlorine

ANSWER : C. chlorine

Ques195. The nucleus of a hydrogen atom consists of

A. 1 proton only

B. 1 proton + 2 neutron

C. 1 neutron only

D. 1 electron only

ANSWER : A. 1 proton only

Ques196. The heat required to raise the temperature of body by 1 K is called

A. specific heat

B. thermal capacity

C. water equivalent

D. None of the above

ANSWER : B. thermal capacity

Ques197. The nuclear particles which are assumed to hold the nucleons together are

A. electrons

B. positrons

C. neutrons

D. mesons

ANSWER : D. mesons

Ques198. Which substance is used to retard the setting action of cement?

A. CaO

B. AlO

C. CaSO.2HO

D. NaO + KO

ANSWER : C. CaSO.2HO

Ques199. What is a mixture of potassium nitrate , powdered charcoal and sulphur called?

A. Glass

B. Cement

C. Paint

D. Gun Powder

ANSWER : D. Gun Powder

Ques200. Which one of the following is the softest?

A. Iron

B. Aluminium

C. Calcium

D. Lithium

ANSWER : A. Iron

Ques201. The iron layered with zinc is called

A. Pig iron

B. Cost iron

C. Galvanised iron

D. Steel

ANSWER : C. Galvanised iron

Ques202. When quick lime is added to water

A. Heat is liberated

B. Heat is absorbed

C. Temperature decreases

D. No heat change takes place

ANSWER : A. Heat is liberated

Ques203. Which one of the following substances is made up of only one type of atoms?

A. water

B. hydrogen

C. milk

D. air

ANSWER : B. hydrogen

Ques204. Which one of the following is used as a mordant in dyeing and tanning indusrty?

A. Magnesium oxide

B. magnesium carbonate

C. magnesium chloride

D. magnesium sulphate

ANSWER : D. magnesium sulphate

Ques205. Which one of the following glasses is used in bullet proof screens?

A. Soda glass

B. Pyrex glasss

C. Jena glass

D. Reinforced glass

ANSWER : D. Reinforced glass

Ques206. For Which one of the following is the density maximum ?

A. Chloroform

B. Water

C. Benzene

D. Ice

ANSWER : B. Water

Ques207. The octane number of zero is assigned to

A. 2-methyl octane

B. n-heptane

C. iso-octane

D. 3-methyl octane

ANSWER : B. n-heptane

Ques208. The metal that is used as a catalyst in the hydrogenation of oils is

A. Ni

B. Pb

C. Cu

D. Pt

ANSWER : A. Ni

Ques209. The most abundant rare gas in the atmosphere is

A. He

B. Ne

C. Ar

D. Xe

ANSWER : C. Ar

Ques210. What are the number of moles of CO2 which contains 16 g of oxygen?

A. 0.5 mole

B. 0.2 mole

C. 0.4 mole

D. 0.25 mole

ANSWER : A. 0.5 mole

Ques211. Bronze is an alloy of

A. Tin and zinc

B. Iron and zinc

C. Copper and zinc

D. Copper and tin

ANSWER : D. Copper and tin

Ques212. Which of the following is a super cooled liquid?

A. Teflon

B. Glass

C. Mercury

D. Ice cream

ANSWER : B. Glass

Ques213. Curd is sour due to presence of

A. Acidic acid

B. Tartaric acid

C. Lactic acid

D. Oxalic acid

ANSWER : C. Lactic acid

Ques214. Acid rain contains high levels of

A. oxalic acid

B. acetic acid

C. sulphuric and nitric acids

D. carbolic acid

ANSWER : D. carbolic acid

Ques215. Glass is made of the mixture of

A. Quartz and mica

B. Sand and salt

C. Sand and silicates

D. None of these

ANSWER : C. Sand and silicates

Ques216. Which one of the following is used as a filter in rubber tyres?

A. Graphite

B. Coal

C. Coke

D. Carbon black

ANSWER : D. Carbon black

Ques217. Which alloy contains nickel?

A. Brass

B. Bronze

C. Invar

D. Solder

ANSWER : C. Invar

Ques218. Which one of the following elements is not present in stainless steel?

A. Iron

B. Tungsten

C. Chromium

D. Nickel

ANSWER : B. Tungsten

Ques219. The luster of a metal is due to

A. its high density

B. its high polishing

C. its chemical inertness

D. presence of free electrons

ANSWER : D. presence of free electrons

Ques220. **The number of water molecules present in a drop of water (volume 0.0018 ml) at**

room temperature is

A. 1.568×10^3

B. 6.023×10^{19}

C. 4.84×10^{17}

D. 6.023×10^{23}

ANSWER : B. 6.023×10^{19}

Ques221. **The most malleable metal is**

A. platinum

B. silver

C. iron

D. gold

ANSWER : D. gold

Ques222. **The mass of one Avogadro number of helium atom is**

A. 1.00 gram

B. 4.00 gram

C. 8.00 gram

D. 4 x 6.02 x 1023 gram

ANSWER : B. 4.00 gram

Ques223. **The material which can be deformed permanently by heat and pressure is called a**

A. thermoplastic

B. thermoset

C. chemical compound

D. polymer

ANSWER : B. thermoset

Ques224. **The mass number of a nucleus is**

A. always less than its atomic number

B. the sum of the number of protons and neutrons present in the nucleus

C. always more than the atomic weight

D. a fraction

ANSWER : B. the sum of the number of protons and neutrons present in the nucleus

Ques225. **Mixture of which one of the following pairs of gases is the causes of occurance of**

most of the explosion in mines?

A. Hydrogen and oxygen

B. oxygen and acetylene

C. Methane and air

D. Carbon dioxide and methane

ANSWER : C. Methane and air

Ques226. The hydronium ion is

A. H^+

B. HO^-

C. H_2^+

D. H_3O^+

ANSWER : D. H_3O^+

Ques227. The most electropositive elements among the following is

A. Na

B. Ca

C. K

D. Cs

ANSWER : D. Cs

Ques228. The method that cannot be used for removing permanent hardness of water is

A. adding sodium carbonate

B. distillation

C. adding caustic soda

D. boiling

ANSWER : D. boiling

Ques229. The following are the half lives of four active isotopes. Which one of the following is

the most dangerous to handle?

A. 3 billion years

B. 100 years

C. 0.01 minute

D. 13 days

ANSWER : C. 0.01 minute

Ques230. The molecule which has the highest percentage of ionic character among the

following is

A. HI

B. HF

C. HCl

D. HBr

ANSWER : B. HF

Ques231. The high reactivity of fluorine is due to

A. its high electro negativity

B. small size of fluorine atom

C. availability of d-orbitals

D. strong F – F bond

ANSWER : A. its high electro negativity

Ques232. The iron ore magnetite consists of

A. Fe_2O_3

B. Fe_3OH_4

C. $FeCO_3$

D. $3Fe_2O_3$ .. $3H_2O$

ANSWER : A. Fe_2O_3

Ques233. The ionisation energy of hydrogen atom in the ground state is x KJ. The energy

required for an electron to jump from 2nd orbit to 3rd orbit is

A. 5x/36

B. 5x

C. 7.2 x

D. x/6

ANSWER : A. 5x/36

Ques234. The major constituent of air is

A. nitrogen

B. carbon dioxide

C. oxygen

D. hydrogen

ANSWER : A. nitrogen

Ques235. The mineral containing both magnesium and calcium is

A. magnesite

B. calcite

C. carnallite

D. dolomite

ANSWER : D. dolomite

Ques236. Which metal is commonly used for making an electromagnet?

A. Copper

B. Cobalt

C. Iron

D. Nickel

ANSWER : C. Iron

Ques237. The gas that is responsible for global warming is

A. Carbon dioxide

B. Oxygen

C. Methane

D. Sulphur dioxide

ANSWER : A. Carbon dioxide

Ques238. What is the main constituent of coal gas?

A. Oxygen

B. Water

C. Nitrogen

D. Methane

ANSWER : D. Methane

Ques239. Which one of the following non metals is not a poor conductor of electricity

A. Sulphur

B. Selenium

C. Bromine

D. Phosphorus

ANSWER : B. Selenium

Ques240. **Which metal remains in the liquid form under normal conditions?**

A. zinc

B. radium

C. uranium

D. mercury

ANSWER : D. mercury

Ques241. **Commercially, sodium bicarbonate is known as**

A. Washing soda

B. Baking soda

C. Bleaching powder

D. Soda ash

ANSWER : B. Baking soda

Ques242. **The maximum number of isomers for an alkene with molecular formula C_4H_8 is**

A. 5   B. 4   C. 2   D. 3

ANSWER : B. 4

Ques243. **The hardest form of carbon is**

A. coke

B. graphite

C. diamond

D. charcoal

ANSWER : C. diamond

Ques244. **The most important ore of aluminium is**

A. bauxite

B. magnetite

C. haematite

D. monazite

ANSWER : A. bauxite

Ques245. **The number of electrons presents in H+ is**

A. zero

B. one

C. two

D. three

ANSWER : A. zero

Ques246. **Which among the following happens in an oxidation reaction ?**

A. Electrons are gained

B. Electrons are lost

C. Protons are gained

D. Protons are lost

ANSWER : B. Electrons are lost

Ques247. The aqueous solution of which among the following acids is called Vinegar?

A. Oxalic acid

B. Citric acid

C. Acetic acid

D. Hydrochloric acid

ANSWER : C. Acetic acid

Ques248. A solution has H ion concentration 0.0005 M. Its pOH is

(a) 8.279

(b) 12.285

(c) 10.699

(d) 13.335

Answer. (c)

Ques249. Which of the following electrolyte has least molar conductivity?

(a) BeCl2

(b) BC13

(c) LiC1

(d) NaCl

Answer. (b)

Ques250. Gold number is associated with

(a) Electrophoresis

(b) Purple of cassius

(c) Protective colloid

(d) Amount of pure gold

Answer. (c)

Ques251. **Which of the following has the highest calorific value?**

(a) Coal gas

(b) Water gas

(c) Producer gas

(d) Carbon dioxide gas

Answer. (a)

Ques252. **Among the following the weakest base is:**

(a) H^-

(b) CH^-

(c) CH_3O

(d) cl^-

Answer. (d)

Ques253. **If 2.0 g of a radioactive isotope has half-life of 20 h, the half-life of 0.25 g of the**

same substance is

(a) 20h

(b) 80h

(c) 5h

(d) l0h

Answer. (a)

Ques254. On heating quick lime with coke in an electric furnace we get:

(a) Ca and CO_2

(b) $CaCO_3$

(c) CaO

(d) CaC_2

Answer. (d)

Ques255. The half life period of a radioactive material is 15 minutes. What percent of radioactivity of that material will remain after 45 minutes?

(a) 17.5% (b) 15%

(c) 12.5% (d) 10%

Answer. (C)

Ques256. A certain buffer contains equal concentration of X^- and HX. H_e K_b for X^- is 10^{-9}. The pH of the buffer solution is

(a) 4 (b) 5

(c) 7 (d) 9

Answer. (B)

Ques257. The freezing point of 1% solution of lead nitrate in water will be

(a) 2°C (b) 1°C

(c) 0°C (d) below 0°C

Answer. (D)

Hint : Aqueous solution of any substance (nonvolatile) freezes below 0°C because the vapour pressure of the solution becomes lower than that of pure solvent.

Ques258. In methane the bond angle is

(a) 180°   (b) 90°

(c) 109°   (d) 120°

Answer. (C)

Ques259. The half-life for decay of 14C by β-emission is 5730 years. The fraction of ^{14}C decays, in a sample that is 22,920 years old, would be

(A) 1/8   (B) 1/16   (C) 7/8   (D) 15/16

 Answer : (D)

Ques260. Which among the following gives nitrogen on heating?

(a) $NaNO_2$ (b) $AgNO_2$

(c) $Ba\,(NO_2)_2$ (d) NH_4NO_2

Answer : (D)

Ques261. One mole of N_2H_4 loses 10 mole of electrons to form a new compound Y. Assuming that all nitrogen appears in the new compound, what is the oxidation number of nitrogen in Y
(*There is no change in the oxidation state of hydrogen*)?

(a) -3   (b) +3

(c) +5   (d) +1

Answer : (B)

Ques262. At room temperature HCl is a gas while HF is a low boiling liquid. This is because

(a) H F bond is covalent   (b) H F bond is ionic.

(c) H F has metallic bond.   (d) H F has hydrogen bond.

Answer : (D)

Ques263. The ratio between the r.m.s velocity of H_2 at 50 K and that of O2 at 800 K is

(a) 4   (b) 2

(c) 1   (d) 1/4

Answer : (C)

Ques264. The bond energy of an O - H bond is 109 kcal mol $^{-1}$. When a mole of water is formed from H and O atoms, then

(a) 218 kcal is released.   (b) 109 kcal is released.

(c) 218 kcal is absorbed.   (d) 109 kcal is absorbed.

Answer : (A)

Ques265. If the electrons of Hydrogen atoms are excited to 4th excited state, then the total spectral lines falling in Paschen series are equal to:

(a) 2   (b) 10

(c) 3   (d) 4

Answer : (A)

Ques266. The decrease in electrical conductivity of metals with increase in temperature is due to increase in

(a) the velocity of electrons.

(b) the resistance of the metal.

(c) the number of electrons.

(d) the number of metal atoms.

Answer : (B)

Ques267. The rate of a chemical reaction generally increases rapidly even for small temperature increase because of rapid increase in the:

(a) collision frequency.

(b) fraction of molecules with energies in excess of the activation energy.

(c) activation energy.

(d) average kinetic energy of molecules.

Answer : (B)

Ques268. The number of moles of $BaCO_3$ which contains 1.5 moles of O atoms is

(a) 0.5 mole   (b) 1 mole

(c) 3 moles   (d)3/2 moles

Answer : (A)

Ques269. The density of a gaseous oxide at 2 bar is the same as that of oxygen at 5 bar. The molecular mass of the oxide is:

(a) 40   (b) 80

(c) 160   (d) Unpredictable

Answer : (B)

Ques270. The value of universal Gas Constant R depends on the

(A) Temperature of the Gas

(B) Volume of the Gas

(C) Number of moles of the Gas

(D) None of these

Answer : (D)

Ques271. A gas is kept at 1 atm pressure. To compress it to ¼ th of its initial volume the pressure to be applied is :

(A) 1 atm   (B) 2.0 atm

(C) 4.0 atm   (D) ¼ atm

Answer : (C)

Ques272. An ideal gas can not be liquefied because

(A) The intermolecular force of attraction between the gaseous molecules are negligible

(B) Its critical temperature is very high

(C) The vanderwals constant a & b are very high

(D) All of these

Answer : (A)

Ques273. For a chemical reaction at 27°C, the activation energy is 600 R. The ratio of the rate constants at 327°C to that of at 27°C will be

(A) 2   (B) 40   (C) e   (D) e^2

Answer : (C)

Ques274. In O_2 and H_2O_2 , the O–O bond lengths are 1. 21 and 1.48 Å respectively. In ozone, the average O–O bond length is

(A) 1.28 Å   (B) 1.18 Å

(C) 1.44 Å   (D) 1.52 Å

Answer : (A)

Ques275. When aniline is nitrated with nitrating mixture in ice cold condition, the major product obtained is

(A) p-nitroaniline   (B) 2,4-dinitroaniline

(C) o-nitroaniline   (D) m-nitroaniline

Answer : (A)

Ques276. Identify the CORRECT statement

(A) Quantum numbers (n,I,m,s) are obtained arbitrarily

(B) All the Quantum numbers (n,I,m,s) for any pair of electrons in an atom can be idential under special circum stance

(C) all the quantum numbers (n,I,m,s) may not be required to described an electron of an atom completely

(D) All the quantum numbers (n,I,m,s) are required to describe an electron of an atom completely

Answer : (D)

Ques277. Which of the following compounds would not react with Lucas reagent at room temperature?

(A) $H_2C=CHCH2OH$

(B) $C_6H_5CH_2OH$

(C) $CH_3CH_2CH_2OH$

(D) $(CH_3)_3COH$

Answer : (C)

Ques278. Which of the following reactions will not result in the formation of carbon–carbon bonds?

(A) Cannizaro reaction

(B) Wurtz reaction

(C) Reimer-Tiemann reaction

(D) Friedel-Crafts acylation

Answer : (A)

Ques279. Point out the false statement.

(A) Colloidal sols are homogenous

(B) Colloids carry +ve or –ve charges

(C) Colloids show Tyndall effect

(D) The size range of colloidal particles is 10-1000Å

Answer : (A)

Ques280. Which of the following statements regarding Lanthanides is false?

(A) All lanthanides are solid at room temperature.

(B) Their usual oxidation state is +3

(C) They can be separated from one another by ion-exchange method.

(D) Ionic radii of trivalent lanthanides steadily increases with increase in atomic number.

Answer : (D)

Ques281. Nitrogen dioxide is not produced on heating

(A) KNO_3

(B) $Pb(NO_3)_2$

(C) $Cu(NO_3)_2$

(D) $AgNO_3$

Answer : (A)

Ques282. Which statement is not correct for ortho and para hydrogen?

(A) They have different boiling points.

(B) Ortho-form is more stable than para-form.

(C) They differ in their nuclear spin

(D) The ratio of ortho to para hydrogen changes with change in temperature.

Answer : (B)

Ques283. The metal which can be used to obtain metallic Cu from aqueous CuSO4 solution is

(A) Na

(B) Ag

(C) Hg

(D) Fe

Answer : (D)

Ques284. If radium and chlorine combine to form radium chloride, the compound would be

(A) half as radioactive as radium

(B) twice as radioactive

(C) as radioactive as radium

(D) not radioactive

Answer : (C)

Ques285. Ionic solids with Schottky defect may contain in their structure

(A) cation vacancies only

(B) cation vacancies and interstitial cations

(C) equal number of cation and anion vacancies

(D) anion vacancies and interstitial anions

Answer : (C)

Ques286. The dispersed phase and dispersion medium of fog respectively are

(A) solid, liquid　　　　　　　　(B) liquid, liquid

(C) liquid, gas　　　　　　　　(D) gas, liquid

Answer : (C)

Ques287. Roasted copper pyrite on smelting with sand produces

(A) $FeSiO_3$ as fusible slag and Cu_2S mattee'

(B) $CaSiO_3$ as infusible slag and Cu_2O mattee'

(C) $Ca_3(PO_4)_2$ as fusible slag and Cu_2S mattee'

(D) $Fe_3(PO_4)_2$ as infusible slag and Cu_2S mattee'
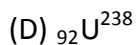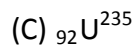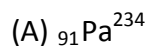
Answer : (A)

Ques288. Metal ion responsible for the Minamata disease is

(A) Co^{2+}　　　　　　　　(B) Hg^{2+}

(C) Cu^{2+}　　　　　　　　(D) Zn^{2+}

Answer : (B)

Ques289. $_{98}Cf^{246}$ was formed along with a neutron when an unknown radioactive substance was

bombarded with $_6C^{12}$. The unknown substance was

(A) $_{91}Pa^{234}$

(B) $_{90}Th^{234}$

(C) $_{92}U^{235}$

(D) $_{92}U^{238}$

Answer : (C)

Ques290. The enthalpy of vaporization of a certain liquid at its boiling point of 35ºC is 24.64 kJ mol^{-1}. The value of change in entropy for the process is

(A) 704 J K^{-1}mol^{-1}

(B) 80 J K^{-1}mol^{-1}

(C) 24.64 J K^{-1}mol^{-1}

(D) 7.04 J K^{-1}mol^{-1}

Answer : (B)

Ques291. Commercial sample of H_2O_2 is labeled as 10V. Its % strength is nearly

(A) 3

(B) 6

(C) 9

(D) 12

Answer : (A)

Ques292. An atomic nucleus having low n/p ratio tries to find stability by

(A) the emission of an α particle

(B) the emission of a positron

(C) capturing an orbital electron (K-electron capture)

(D) emission of a β particle

Answer : (B)

Ques293. The quantity of electricity needed to separately electrolyze 1M solution of $ZnSO_4$, $AlCl_3$ and $AgNO_3$ completely is in the ratio of

(A) 2 : 3 : 1

(B) 2 : 1 : 1

(C) 2 : 1 : 3   (D) 2 : 2 : 1

Answer : (A)

Ques294. The emission spectrum of hydrogen discovered first and the region of the
electromagnetic spectrum in which it belongs, respectively are

(A) Lyman, ultraviolet   (B) Lyman, visible

(C) Balmer, ultraviolet   (D) Balmer, visible

Answer : (D)

Ques295. As per de Broglie's formula a macroscopic particle of mass 100 gm and moving at a
velocity of 100 cm s^{-1} will have a wavelength of

(A) 6.6×10^{-29} cm   (B) 6.6×10^{-30} cm

(C) 6.6×10^{-31} cm   (D) 6.6×10^{-32} cm

Answer : (C)

Ques296. The number of amino acids and number of peptide bonds in a linear tetrapeptide
(made of different amino acids) are respectively

(A) 4 and 4   (B) 5 and 5

(C) 5 and 4   (D) 4 and 3

Answer : (D)

Ques297. The 4th higher homologue of ethane is

(A) Butane   (B) Pentane

(C) Hexane   (D) Heptane

Answer : (C)

Ques298. The hydrides of the first elements in groups 15 - 17, namely NH_3 , H_2O and HF
respectively show abnormally high values for melting and boiling points. This is due to

(A) small size of N, O and F

(B) the ability to form extensive intramolecular H-bonding

(C) the ability to form extensive intramolecular H-bonding

(D) effective van der Walls interaction

Answer : (B)

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(D) effective van der Walls interaction

Answer : (B)

Ques301. To observe an elevation of boiling point of 0 05°C, the amount of solute (Mol. Wt. = 100) to be added to 100 g of water (Kb =0.5) is

 (A) 2 g   (B) 0.5 g

(C) 1 g   (D) 0.75 g

Answer : (C)

Ques302. The structure of XeF_6 is experimentally determined to be distorted octahedron. Its structure according to VSEPR theory is

(A) Octahedron   (B) Trigonal bipyramid

(C) Pentagonal bipyramid   (D) Tetragonal bipyramid

Answer : (C)

Ques303. The volume of ethyl alcohol (density 1.15 g/cc) that has to be added to prepare 100 cc of 0.5 M ethyl alcohol solution in water is

(A) 1.15 cc   (B) 2 cc

(C) 2.15 cc   (D) 2.30 cc

Answer : (B)

Ques304. In a reversible chemical reaction at equilibrium, if the concentration of any one of the reactants is doubled, then the equilibrium constant will

A. also be doubled   B. be halved

C. remains the same   D. becomes one-fourth

Answer : C

Ques305. Identify the correct statement from the following in a chemical reaction.

A. The entropy always increases

B. The change in entropy along with suitable change in enthalpy decides the fate of a reaction

C. The enthalpy always decreases

D. Both the enthalpy and the entropy remain constant

Answer : B

Ques306. Which one of the following is wrong about molecularity of a reaction?

A. It may be whole number or fractional

B. It is calculated from reaction mechanism

C. It is the number of molecules of the reactants taking part in a single step chemical reaction

D. It is always equal to the order of elementary reaction.

Answer : A

Ques307. If the 1st ionization energy of H atom is 13.6 eV, then the 2nd ionization energy of He atom is

A. 27.2 eV   B. 40.8 eV

C. 54.4 eV   D. 108.8 eV

Answer : C

Ques308. The metal used to recover copper from a solution of copper sulphate is

   A. Na

   B. Ag

   C. Hg

   D. Fe

   ANSWER : D. Fe

Ques309. The number of d-electrons in Fe2+ (Z = 26) is not equal to that of

   A. p-electrons in Ne(Z = 10)

   B. s-electrons in Mg(Z = 12)

   C. d-electrons in Fe(Z = 26)

   D. p-electrons in CI(Z = 17)

   ANSWER :

   D. p-electrons in CI(Z = 17)

Ques310. Which one of the following is an element which never exhibits positive oxidation state

   in any of its compounds?

A. Oxygen

B. Chlorine

C. Fluorine

D. Carbon

ANSWER : C. Fluorine

Ques311. The oldest rocks in the earth's crust were once molten, and came from deep inside

the earth. The molten rock, called magma, spewed out in volcanic eruptions during the

earth's early life and solidified into hard rock's called

A. granite

B. basalt

C. igneous rocks

D. sedimentary rocks

ANSWER : C. igneous rocks

Ques312. Nail polish remover contains

A. Acetone

B. Benzeme

C. Petroleum ether

D. Acetic acid

ANSWER : A. Acetone

Ques313. The Latin word formica means ant. The name formic acid is derived from this Latin

word because

A. this acid, in ancient times, was used to eliminate ant-hills

B. this corrosive acid is secreted by ants to drive away their enemies

C. this acid was first obtained by the distillation of ants

D. ants are attracted by the odour of this acid

ANSWER : C. this acid was first obtained by the distillation of ants

Ques314. The ore which is found in abundance in India is

A. monazite

B. fluorspar

C. bauxite

D. magnetite

ANSWER : A. monazite

Ques315. The monomer of polythene is

A. vinyl chloride

B. ethylene

C. thyl alcohol

D. None of the above

ANSWER : B. ethylene

Ques316. The oil used in the froth floatation process is

A. coconut oil

B. olive oil

C. kerosene oil

D. pine oil

ANSWER : D. pine oil

Ques317. The number of waves in n x 10th Bohr's orbit are

A. n2

B. n

C. n-2

D. n3

ANSWER : B. n

Ques318. Which synthetic fibre is known as artificial silk?

A. Cotton

B. Rayon

C. Terylene

D. Nylon

ANSWER : B. Rayon

Ques319. Which one of the following does not contain silver?

A. horn silver

B. german silver

C. ruby silver

D. Lunar caustic

ANSWER : B. german silver

Ques320. Which one among the following is called philosophers wool?

A. zinc bromide

B. zinc nitrate

C. zinc oxide

D. zinc chloride

ANSWER : C. zinc oxide

Ques321. Which one of the following is also called Stranger Gas?

A. Argon

B. Neon

C. Xenon

D. Nitrous oxide

ANSWER : C. Xenon

Ques322. The inexpensive and commonly used variety of glass is called soda glass. It is called so

because

A. was used initially for making bottles of soda(carbonated drink)

B. is made using soda(sodium carbonate)

C. was initially used for storing sodium carbonate

D. is made using soda lime

ANSWER : B. is made using soda(sodium carbonate)

Ques323. The gas used for artificial ripening of green fruit is

A. ethylene

B. ethane

C. carbon dioxide

D. acetylene

ANSWER : A. ethylene

Ques324. For Which one of the following is the density maximum ?

A. Chloroform

B. Water

C. Benzene

D. Ice

ANSWER : B. Water

Ques325. Cyano benzene has

(a) 7 sigma bonds and 4 pi bonds

(b) 7 sigma and 5 pi bonds

(c) 12 sigma and 6 pi bonds

(d) 13 sigma and 5 pi bonds

Answer. (d)

Ques326. The rate of diffusion of methane at a given temperature is twice that of a gas X. The

molecular mass of X is

(a) 4.0

(b) 8.0

(c) 32.0

(d) 64.0

Answer. (a)

Ques327. The complete combustion of CH4 gives:

(a) CO + H2

(b) CO + N2

(c) CO2 + H2O

(d) CO + N2O

Answer. (c)

Ques328. The amount of heat released when 20 mL of 0.5 M NaOH is mixed with 100 mL of 0.1

M HCI is x kJ. The heat of neutralization (in kJ mol^{-1}) is

a) – 100 x

(b) – 50x

(c) +l00x

(d) +50x

Answer. (a)

Ques329. Benzene on Ozonolysis yields

(a) Glyoxal

(b) Acetone

(c) Ethanol

(d) Methanol

Answer. (a)