Studentpad

MHT-CET-XI CHEMISTRY 2022-23

Time : 150 Min	Chem : Full Portion Paper	Marks : 50

01) Animal charcoal is used in decolourising colour of liquids due to it is a good
A) adsorbent
B) adsorbate
C) oxidising agent
D) reducing agent

02) Alkali metals form hydrated compounds. Find the correct sequence of the hydration enthalpies of alkali metals.
A) $Cs^+ > Rb^+ > K^+ > Na^+ > Li^+$
B) $Rb^+ > Li^+ > Na^+ > K^+ > Cs^+$
C) $Li^+ > Na^+ > K^+ > Rb^+ > Cs^+$
D) $K^+ > Na^+ > Li^+ > Rb^+ > Cs^+$

03) Choose incorrect statement about the reaction with hydrogen.
A) Only Li and Na form complex hydrides
B) Melting points of alkali metal hydrides are high
C) Stability of hydrides of alkali metals decreases form CsH to LiH
D) Reactivity of alkali metals towards dihydrogen decreases down the group

04) The dissociation constant of a weak acid HA is 1×10^{-5}. Find pH of that solution if its concentration is 0.1 M.
A) 3
B) 2
C) 5
D) 1

05) In which of the following, oxidation state of +1 is more stable than +3?
A) Al
B) Ga
C) B
D) TI

06) Monovalent sodium and potassium ions, divalent magnesium and calcium ions are found in _____ compound.
A) enzymes
B) biological fluids
C) fats
D) lipids

07) What is the most common chemical method to preserve fishes?
A) Irradiation
B) Dehydration
C) Salting
D) By adding sugar

08) 1 gm radioactive sodium on decay becomes 0.25 gm in 16 hours. How much time 48 gm of same radioactive sodium will need to become 3.0 gm?
A) 48 hours
B) 32 hours
C) 16 hours
D) 20 hours

09) In _____ and _____ pairs of molecules/ion, both the species are not likely to exist.
A) H_2^{2+}, He_2
B) H_2^-, He_2^{2+}
C) H_2^+, He_2^{2-}
D) H_2^-, He_2^{2-}

10) Find the correct option according to calculating relative error as a measure of Precision.
A) (Absolute error/ True value)$\times$100
B) (Absolute error/True value)
C) (measurement being taken/Absolute error)$\times$100
D) (Absolute error/measurement being taken)

11) What will be the energy of an electron in the first orbit if the energy of an electron in the 3rd orbit of an atom is -E?
A) $\frac{-E}{3}$
B) -3E
C) -9E
D) $\frac{-E}{9}$

12) $(CH_3)_4\overset{+}{N}$ is neither an electrophile , nor a nucleophile as it
A) can act as Lewis acid and base
B) neither has electron pair available for donation nor can accomodate electron since all shells of nitrogen are fully occupied
C) does not have electron pair for donation as well as cannot attract electron pair
D) none of these

13) When passing through a magnetic field, the greatest deflection is experienced by
A) γ rays
B) β rays
C) α rays
D) all equal

14) Find the correct order of boiling points of 2, 2-dimethylpropane, 2-methylbutane and n-pentane.

A) n-pentane >2, 2-dimethylpropane > 2-methylbutane
B) n-pentane > 2-methylbutane > 2, 2-dimethylpropane
C) 2, 2-dimethylpropane > 2-methylbutane >n-pentane
D) 2-methylbutane > n-pentane > 2, 2-dimethylpropane.

15) The order of increasing values of second ionization potential of $_6C$, $_7N$, $_8O$ and $_9F$ should be _____.
A) C<F<N<O
B) C>F<N<O
C) C<N<F<O
D) C>N>F>O

16) _____ represents Gay-Lussac's law.
A) $P_1V_1=P_2V_2$
B) $V_1T_2=V_2T_1$
C) $P_1T_2=P_2T_1$
D) $P_1T_1=P_2T_2$

17) When two atomic orbitals combine, they form
A) four molecular orbital.
B) three molecular orbital.
C) two molecular orbital.
D) one molecular orbital.

18) Which reaction /method does not give an alkane?
A) Dehydrohalogenation of an alkyl halide
B) Reduction of alkyl bromide
C) Wurtz reaction
D) Decarboxylation of sodium salt of fatty acid.

19) The half life period of a particular isotope is 10 years. Its decay constant is
A) $0.693\,year^{-1}$
B) $6.93\,year^{-1}$
C) $69.3\,year^{-1}$
D) $0.0693\,year^{-1}$

20) _____ and _____ are the respective oxidation number of sulphur atoms in H_2SO_5 and $H_2S_2O_8$. (Peroxymonosulfuric acid, peroxodisulphuric acid)
A) +3 and +3
B) +4 and +6
C) +8 and +7
D) +6 and +6

21) Determine the volume of air required to burn 2 dm^3 of ethane if the air contains 20% of oxygen by volume and all volumes are measured at the same conditions of temperature and pressure.
A) 27 dm^3
B) 35 dm^3
C) 7 dm^3
D) 3.5 dm^3

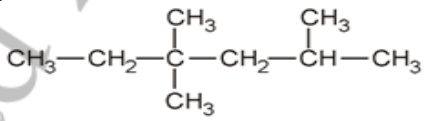
22) The physical and chemical properties of elements are periodic functions of their _____, as per the modern periodic law.
A) atomic volume
B) atomic size
C) electronic configuration
D) atomic weight

23) Calculate the molecular weight if 4 grams of an ideal gas occupies 5.6035 litres of volume at 546 K and 2 atm pressure.
A) 4
B) 64
C) 16
D) 32

24) Which one of the following is known as broad spectrum antibiotics?
A) Chloramphenicol
B) Streptomycin
C) Ampicillin
D) Penicillin G

25) The method to be applied to separate oxygen rich components and nitrogen rich components is
A) crystallization
B) none melting
C) magnetic separation
D) distillation

26) The number of $1^0, 2^0, 3^0$ and 4^0 carbon atoms present in the structure is



A)

1°	2°	3°	4°
4	3	2	1

B)

1°	2°	3°	4°
5	2	1	1

C)

1°	2°	3°	4°
2	5	1	1

D)

1°	2°	3°	4°
1	1	2	5

27) An atomic radius of Ga is smaller than Al due to
A) poor shielding effect of a s electrons of Ga atoms
B) greater shielding of s electrons of Ga atom
C) greater shielding effect of d-electron of Ga atoms
D) poor shielding effect of d-electrons of Ga atoms

28) In which case the bond length is minimum between carbon and nitrogen?
A) CH_3CN
B) CH_3CONH_2
C) $C_6H_5CH=NOH$
D) CH_3NH_2

29) The highest acidic solution has a pH of _____.
A) 4
B) 14
C) 1
D) 7

30) What is IUPAC name of ethylmethyl propyl methane?
A) 3-Methylhexane
B) 3-Ethylhexane
C) 2-Methyl butane
D) 2-Ethylpropane

31) In the balanced chemical reaction, $IO_3^- + aI^- + bH^+ \rightarrow cH_2O + dI_2$ Find a, b, c and d.
A) 5,6,3,3
B) 5,6,5,5,
C) 3,5,3,6
D) 5,3,6,3

32) A gas at high temperature is cooled. The highest temperature at which liquefaction of gas first occurs is termed as
A) Boyle temperature
B) critical temperature
C) freezing temperature
D) boiling temperature

33) Boric acid is polymeric because of
A) its acidic nature
B) its monobasic nature
C) its tribasic nature
D) hydrogen bonding

34) A certain volume of 0.001 N NaOH solution is diluted with 900 ml of water. Find the original volume of solution if the decrease in pH of the solution is 1 unit.
A) 10 ml
B) 1000 ml
C) 1 ml
D) 100 ml

35) The value of n in the following half equation is ____. $Cr(OH)_4^- + OH^- \rightarrow CrO_4^{2-} + H_2O + ne^-$
A) 3
B) 2
C) 6
D) 5

36) In the colloidal state, the particle size ranges from _____ nm.
A) 0.1 to 2
B) 200-500
C) 100-1000
D) 10 to 100

37) Which is the number of valence electrons in 4.2 g of nitride ions (N^{3-}) if N_A is Avogadro's number?
A) 2.4 N_A
B) 1.6 N_A
C) 3.2 N_A
D) 4.2 N_A

38) Find the descending order of stability of the carbonium ions $\underset{(I)}{C_6H_5\overset{+}{C}H_2}$, $\underset{(II)}{p-(CH_3O)C_6H_4\overset{+}{C}H_2}$, $\underset{(III)}{p-(NO_2)C_6H_4\overset{+}{C}H_2}$ and $\underset{(IV)}{p-(CH_3)C_6H_4\overset{+}{C}H_2}$.
A) II >IV >III >I
B) IV >II >I >III
C) II > IV >I > III
D) IV > II >III >I

39) State the type of bonding in the compounds AC and BC where the electronegativity of elements A, B and C are 1.0, 2.5 and 3.0 units respectively.
A) Ionic, nonpolar covalent
B) Ionic, polar covalent
C) Polar covalent, pure covalent
D) Ionic, pure covalent

40) _____ does not react with water even under red hot condition.
A) K
B) Be
C) Ca
D) Na

41) What is the order of the reactivity of hydrogen atoms attached to carbon atom in an alkane?
A) tertiary>secondary >primary
B) primary >secondary >tertiary
C) tertiary >primary >secondary
D) secondary >primary >tertiary

42) The high density of water compared to ice is due to
A) induced dipole-induced dipole interactions.
B) dipole-induced dipole interactions.
C) dipole-dipole interactions.
D) hydrogen bonding interactions.

43) What are the carbon atoms in graphite?
A) dsp^2-hybridized
B) sp^3-hybridized
C) sp^2 hybridized
D) sp hybridized

44) Which of the following process is involved in the dyeing the fibres?
A) Adsorption
B) Absorption
C) Sorption
D) All of the above

45) Find the range of temperature for the crystallization process in ^0C.
A) 0-25
B) 2000-3000
C) 25-100
D) 1000-1500

46) Atom bomb is based on
A) disintegration
B) nuclear fission
C) induced radioactivity
D) nuclear fusion

47) Different structures generated due to reaction about C-C axis of an organic molecule, are example

of _____ phenomena.
A) geometrical isomerism
B) conformational isomerism
C) structural isomerism
D) optical isomerism

48) What happen in oxidation?
A) No loss or gain of electron
B) There is loss of electrons
C) Reaction with metal
D) There is gain of electrons

49) Calculate the energy of photon of reddish light which having wavelength 660 nm where $h=6.6\times 10^{-34}$ Js?
A) 1×10^{19} J
B) 3.0×10^{-19} J
C) 1×10^{-19} J
D) 3.01×10^{-18} J

50) The % of P_2O_5 in diammonium hydrogen phosphate $(NH_4)_2HPO_4$ is _____.
A) 53.78
B) 46.96
C) 23.48
D) 71.00