# CHEMISTRY

# BOOKS - AIIMS PREVIOUS YEAR PAPERS

# AIIMS 2000

**Chemistry**

**1.** 26 ml of $CO_2$ are passed over hot coke . The maximum volume of CO formed is :

A. 32 ml

B. 52 ml

C. 15 ml

D. 10 ml

**Answer: B**

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**2.** Unsuitability of nucleus is due to :

A. Low proton - electron ratio

B. High proton - electron ratio

C. High proton - neutron ratio

D. High neutron - proton ratio

**Answer: D**

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**3.** Bohr's atomic theory gave the idea of :

A. Nucleus

B. Shape of sub-levels

C. Quantum numbers

D. Stationary states .

**Answer: D**

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**4.** Which has maximum radioactive activity :

A. Uranium

B. Plutonium

C. Radium

D. Thorium

**Answer: C**

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**5.** Overlapping of 2 hybrid orbitals can lead to the formation of :

A. $\pi$-bond

B. $\sigma$-bond

C. ionic bond

D. None

**Answer: B**

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6. $NF_3$ is

A. Having more dipole moment that $NH_3$

B. Having low value of dipole moment than $NH_3$

C. Electrovalent compound

D. Non-polar compound .

**Answer: B**

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**7.** The compound having highest boiling point :

A. $CH_4$

B. $CH_3OH$

C. $CH_3Br$

D. $CH_3Cl$

**Answer: B**

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**8.** An element A ( at. wt . = 75) and B( at. wt . =25) combine to form a compound. The compund contain 75% A by weight. The formula of the compound will be

A. AB

B. $AB_3$

C. $A_3B$

D. $A_2B$

**Answer: A**

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**9.** The number of milli equivalent in 100 ml of 0.5 N HCl solution is

A. 200

B. 100

C. 50

D. 25

**Answer: C**

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**10.** Number of electron involved in the reduction of $Cr_2O_7^{2-}$ ion in acidic solution of $Cr^{3+}$ is

A. 4

B. 6

C. 3

D. 4

**Answer: B**

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**11.** Stronger the oxidising agent , greater is the :

A. Oxidation potential

B. Reduction potential

C. Ionic behaviour

D. None

**Answer: B**

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**12.** In a reaction, $4$ mole of electrons are transferred to $1$ mole of $HNO_3$, the possible product obtained due to reduction is:

A. 1 mole $NH_3$

B. 1 mole of $NO_2$

C. (1/2) mole $N_2O$

D. (1/2) mole $N_2$

**Answer: C**

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**13.** The volume at NTP occupied by 11 g of $CO_2$ is :

A. 11.2 litre

B. 2.8 litre

C. 5.6 litre

D. 2.24 litre

**Answer: C**

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**14.** Which is not correct for catalyst . It :-

A. Reduces activation energy of reaction

B. Specific in nature

C. Enhances the rate of reaction in both directions

D. Changes enthalpy of reaction

**Answer: D**

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**15.** An albumin sol containing sodium chloride as an impurity can best be freed of this impurity by :

A. Electrophoresis

B. Dialysis

C. Precipitation

D. Filtration

**Answer: B**

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**16.** Which reaction gives more products as a result of increase in pressure :

A. $2Hi \Leftrightarrow H_2 + I_2$

B. $2SO_2 + O_2 \Leftrightarrow 2SO_3$

C. $H_2O + CO \Leftrightarrow H_2 + CO_2$

D. $H_2 + Br_2 \Leftrightarrow 2HBr$

**Answer: B**

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**17.** HCl base not behave as acid in

A. $C_6H_6$

B. $NH_3$

C. $H_2O$

D. None

**Answer: A**

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**18.** The mixed salt among the following is :

A. $CaCOCl_2$

B. $NaKSO_4$

C. $Mg(OH)Cl$

D. All

**Answer: D**

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**19.** If s and S are respectiveluy solubility and solubility product of a sparingly soluble binary electrolyte , then :

A. $s = S^{1/2}$

B. $s = 1/2S$

C. s=S

D. $s = S^2$

**Answer: A**

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**20.** An aqueous soluton contain a substance which yields $4 \times 10^{-3}$ mol $\text{litre}^{-1}$ ion of $H_3O^+$ . If log 2 is 0.3010 the pH of the solution is :

A. 2.398

B. 1.5

C. 3

D. 3.4

**Answer: A**

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**21.**

$SOCl_2 + CH_3COOH \rightarrow CH_3COCl + HCl + SO_2$

. The reaction is endothermic . A 10 degree centrigrade temperature rise will cause the reaction ratio to :

A. Decrease

B. Become exactly half +

C. Remain unchanged

D. Become nearly double

**Answer: D**

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**22.** An example of closed system is :

A. Hot liquid in closed beaker in equilibrium with its vapour

B. Hot liquid in an open beaker

C. Hot liquid in a sealed insulated beaker

D. None

**Answer: A**

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**23.** For the reaction

$H_2 + I_2 \Leftrightarrow 2NHI, \Delta H = 12.40kcal.$ The heat of formation $(\Delta H)$ of $HI$ is

A. 12.4 kcal

B. 6.20 kcal

C. $-6.20$ kcal

D. $-12.4$ kcal

**Answer: B**

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**24.** If 50 ml of $A_2B_3$ reacts completely with 200 ml of $C_2$ in closed vessel according to the equation ,

$2A_2B_3(g) + 5C_2(g) \rightarrow 3C_3B_2(g) + CA_4(g)$ .

The composition of the mixture of gases is :

A. 10 ml $C_2$ , 25 ml $C_3B_2$, 100 ml $CA_4$

B. 25 ml $C_2$, 75 ml $C_3$, $B_2$, 25 ml $CA_4$

C. 75 ml $C_2$, 75 ml $C_3B_2$, 25 ml $CA_4$

D. 100 ml $C_2$, 50 ml $C_3B_2$, 50 ml $CA_4$

**Answer: C**

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**25.** If the atomic number of an element is 33, it will be placed in the periodic table in the

A. 7th group

B. 5th group

C. 4th group

D. 1st group

**Answer: B**

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**26.** The volume of 10 vol $H_2O_2$ required to liberate 500 $cm^3$ of $O_2$ at STP

A. 125 ml

B. 100 ml

C. 25 ml

D. 50 ml

**Answer: D**

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**27.** The oxide of which metal is most stable to heat :

A. Ag

B. Hg

C. K

D. All of these

**Answer: C**

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**28.** A hydride of nitrogen which is acidic in nature is :

A. $N_3H$

B. $N_2H_2$

C. $N_2H_4$

D. $NH_3$

**Answer: A**

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**29.** Which melts in boiling water :

A. Bell metal

B. Monel metal

C. Wood' metal

D. Gum metal

**Answer: C**

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**30.** Nitric acid may be kept in a bottle of :

A. Sn

B. Al

C. Pb

D. Ag

**Answer: B**

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**31.** When zinc reacts with very dilute nitric acid it produces

A. $H_2$

B. $NO_2$

C. $NH_4NO_3$

D. $NO$

**Answer: C**

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**32.** Which loses weight on exposure to the atmosphere :

A. Anhyd. $AlCl_3$

B. NaOH

C. Conc. $H_2SO_4$

D. Saturated aqeous solution of $CO_2$

**Answer: D**

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**33.** The reactionof chlorine with CO in the presence of sunlight gives :

A. $H_2Cl_2O_2$

B. $HOCl$

C. $CO_2Cl_2$

D. $COCl_2$

**Answer: D**

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**34.** The gas used for inflating the tyres of aeroplanes is

A. Ar

B. He

C. $H_2$

D. $N_2$

**Answer: B**

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**35.** d-Block elements are arranged in ..... of periodic table :

A. Six series

B. Four series

C. Three series

D. Two series .

**Answer: B**

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**36.** Which no mixing gives deep brown colour :

A. $NO + O_2$

B. $N_2O + O_2$

C. $N_2O_3 + O_2$

D. None

**Answer: A**

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**37.** $CH \equiv CH \xrightarrow{O_3 / NaOH} X \xrightarrow{Zn / CH_3COOH} Y$ . Y is

A. $CH_3OH$

B. $CH_3COOH$

C. $CH_3CH_2OH$

D. $CH_2OH - CH_2OH$

**Answer: D**

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**38.** Which is expected to react most readily with bromine

A. $CH_3 - CH = CH_2$

B. $CH \equiv CH$

C. $CH_2 = CH_2$

D. $CH_3CH_2CH_3$

**Answer: C**

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**39.** The structural formula of the compound which yields ethylene upon reaction with zinc-

A. $CHBr - CHBr$

B. $CHBr_2 - CHBr_2$

C. $CH_2Br - CH_2Br$

D. None

**Answer: C**

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**40.** Glycerol on treatment with potassium hydrogen sulphate yields

A. Acraldehyde

B. Acrylic acid

C. Propane

D. Ethanol

**Answer: A**

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**41.** Assertion : Water is specially effective in screening the electrostatic interactions between the dissolved ions.

Reason : The force of ionic interactions depends upon the dielectric constant ($\varepsilon$) of the solvent .

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: A**

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**42.** Assertion : The nearly tetrahedral arrangement of the orbitals about the oxygen atoms allows each water molecule to form hydrogen bonds with as many as four neighbouring water molecules.

Reason : In ice each water molecules forms four hydrogen bonds as each molecules is fixed in the space.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: A**

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**43.** Assertion : Methanoic acid reduces mercuric chloride to mercurous chloride on heating while ethanoic acid does not .

Reason : Methanoic acid is a stroger acid ethoxide ion.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: B**

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**44.** Assertion : Phenol undergoes Kolbe's reaction whereas ethanol does not .

Reason : Phenoxide ion is more basic than ethoxide ion .

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: C**

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**45.** Assertion : The pressure of a gas is inversely proportional to its volume at constant temperature and n.

Reason : The gas volume is directly proportional to n at constant temperature and pressure .

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: B**


**46.** Assertion : The oxidation numbers are artificial, they are useful as a book keeping device of elements in reactions

Reason : The oxidation numbers do not usually represent real charge on atoms, they are simply conventions that indicate what the maximum

charge could possibly be on an atom in a molecule.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: A**

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**47.** Assertion: As mole is the basic chemical unit, the concentration of the dissolved solute is usually specified in terms of number of moles of solute.

Reason: The total number of molecules of

reactants involved ina balanced chemical equation is known as molecularity of the reaction.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: B**


**48.** The atoms of different elements having same mass number but different atomic number are known as isobars.

The sum of protons and neutrons, in the isobars is always different.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: C**

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**49.** Assertion : Lead is a metal with a high density . It readily dissolves in moderately concentrated nitric acid giving colourless fumes which turn red in contact with air .

Reason : Nitric oxide (NO) is a colourless oxide of nitrogen while $NO_2$ is coloured oxide of nitrogen .

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: A**

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**50.** Assertion : p-nitroaniline is stronger base than p-toluidine .

The electron withdrawing $NO_2$ group in the p-nitroaniline makes it a stronger base .

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: D**

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**51.** Assertion : When 20 ml of ethanol is mixed with 20ml of water , the volume of resulting solution will be less than 40 ml.

Reason : The hydrogen bond between water and alcohol molecules is weaker than hydrogen bond between the like molecules.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct

explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: C**

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**52.** Assertion : Stanous chloride $(SnCl_2)$ is a non-linear molecule.

Reason : In $(SnCl_2)$ molecule Sn atom is present in sp hybridised state .

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: C**


**53.** Assertion : During the fermentation of grape juice , a reddish brown coloured crust is formed.

Reason : Impure potassium hydrogen tartrate is of reddish brown colour and it is known as argol.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: A**


**54.** Assertion : An orbital cannot have more than two electrons, moreover, if an orbital has two electrons they must have opposite spins.

Reason : No two electrons in an atom can have same set of all the four quantum numbers.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: A**

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**55.** Assertion (A) : A spectral line will be seen for $2p_x$-$2p_y$ transition

Reason (R ) : Energy is raleased in the form of wave of light when the electron drops from $2p_x$ , to $2p_y$ orbital.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: D**

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**56.** Assertion : Alkenes and cycloakanes series of hydrocarbons have same general formul.

Reason : Either insertion of a double bond or

formation of a ring reduces the number of hydrogen atoms of corresponding alkane by 2.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: A**

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**57.** Statement-I : Solubility on n-alcohols in water decreases with increase in molecular weight

Because

Statement-II: The relative proportion of the hydrocarbon part in alcohols increases with

increasing molecular weight which permits enhanced hydrogen bond with water.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: C**


**58.** Assertion : The carbonic acid is stronger acid than phenol .

Reason : The hybrid of bicarbonate ion has two equivalent contributing structures, while hybrid of phenoxide ion does not contain such equivalent contributing structures.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: A**

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**59.** Assertion : When a concentrated solution is diluted by adding more water , the number of moles of solute in the solution remains unchanged .

Reason : Number of a solute is equal to the product of molarity and volume of solution in litres.

A. If both the assertion and reason are true statement and reason is correct explanation of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: A**

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**60.** Assertion : ${}_{14}Si^{30}$, ${}_{15}P^{31}$ and ${}_{16}S^{32}$ are a group of isotones.

Reason : Isotones are atoms of different elements having different mass numbers and atomic numbers but same number of neutrons in their nuclei.

A. If both the assertion and reason are true statement and reason is correct explanation

of the assertion .

B. If both the assertion and reason are true statement but reason is not a correct explanation of the assertion .

C. If the assertion is true but the reason is a false statement.

D. If both assertion and reason are false statements.

**Answer: A**

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