



## **CHEMISTRY**

## **BOOKS - AIIMS PREVIOUS YEAR PAPERS**

## **AIIMS 2007**



1. in the following sequence of reactions what is D



A. Primary amine

B. An amide

C. Phenyl isocyanate

D. A chain length hydrocarbon

Answer: C

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2. The coordination number in hcp is

A. 6

B. 12

C. 18

D. 24

#### Answer: B



3. Cyanogen gas is obtained in the reaction

A. 
$$CuSO_{4\,(\,aq\,)}\,+\,KCN
ightarrow$$

 $\mathsf{B.} K_4 \big[ Fe(CN)_6 \big] \xrightarrow{\text{heat}}$ 

 $\mathsf{C.}\,CH_3CN + H_2O \stackrel{\Delta}{\longrightarrow}$ 

 $\mathsf{D.} CH_3CONH_2 + P_2O_5 \stackrel{\Delta}{\longrightarrow}$ 



**4.** The pH of the solution obtained on neutralisation of 40 mL 0.1 M NaOH with 40 ml 0.1  $MCH_3COOH$  is

A. 7

B. 8

C. 6

D. 3



5. Inert gases are mixed in iodine vapours. Then

there are \_\_\_\_\_ between them.

A. H-bonding

B. van der Waals forces

C. Electrostatic forces

D. Metallic bonds

#### Answer: B



6. Bond length order is

A. 
$$O_2 < O_3 < O_2^{2-}$$

B. 
$$O_2 < O_2^{2-} < O_3$$

C. 
$$O_2^{2\,-} < O_3 < O_2$$

D. 
$$O_2 = O_2^{2\,-} > O_3$$

#### Answer: A

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7. Largest difference in radii is found in case of the

pair

A. Li, Na

B. Na, K

C. K, Rb

D. Rb, Cs

**Answer: B** 



8. 1 mol each of the following compounds is dissolved in 1 L of solution. Which will have the largest  $\Delta T_h$  value ?

A. HF

B. HCl

C. HBr

D. Hl

Answer: D

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**9.**  $CH_3OC_2H_5$  and  $(CH_3)_3COCH_3$  are treated with hydroiodic acid. The fragments after reaction obtained are

Α.

 $CH_{3}I + HOC_{2}H_{5}, (CH_{3})_{3}C - I + HOCH_{3}$ B.  $CH_{3}OH + C_{2}H_{5}I, (CH_{3})_{3}Cl + HOCH_{3}$ C.  $CH_{3}OH + C_{2}H_{5}, (CH_{3})_{3}C - OH + CH_{3}I$ D.

 $CH_3I + HOC_2H_5, CH_3I + (CH_3)_3 - C - OH$ 



**10.** Carbon and CO gas are used to reduce which of the following pairs of metal oxides for extraction of metals ?

A. FeO, SnO

B. SnO, ZnO

 $C. BaO, Na_2O_2$ 

D.  $FeO_4ZnO$ 



**11.** Which of the following will give  $N_2$  gas no treatment with nitrous acid  $(NaNO_2 + HCI)$ ?

A.  $C_2H_5NH_2$ 

 $\mathsf{B.}\,CH_3NH_2$ 

 $\mathsf{C.} (CH_3)_2 CH - NH_2$ 

D. All will give  $N_2$ 

Answer: D



12. X-rays are emitted during

A.  $\alpha$ , n reaction

B. K-capture

C.  $n, \alpha$  reaction

D.  $\beta$ -emission

Answer: C

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13. In P versus V graph, the gorizontal line is found

in which \_\_\_\_\_ exists.

A. Gas

B. Liquid

C. Equilibrium between gas and liquid

D. Super critical temperature.

Answer: C



**14.** During estimation of nickel , we prepare nickel dimethylglyoxime, a scarlet red solid. This compound is \_\_\_\_\_.

A. ionic

B. covalent

C. metallic

D. non-ionic complex.

#### Answer: D

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**15.** Critical temperatures for A, B, C and D gases are  $25^{\circ}C$ ,  $10^{\circ}C$ ,  $-80^{\circ}C$  and  $15^{\circ}C$  respectively. Which gas will be liquefied more easily ?

A. A

**B.** B

C. C

D. D

Answer: A

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**16.** Which of the following metal ions will form complexes with the same magnetic moment and geometry irrespective of the nature of ligands ?

A.  $Ni^{2+}$ 

B.  $Fe^{2+}$ 

C.  $Cu^{2+}$ 

D.  $Co^{2+}$ 

#### Answer: C



**17.** During titration of acetic acid with aq. NaOH solution, the neutralisation graph has a vertical line. This line indicates



A. alkaline nature of equivalence

B. acidic nature of equivalence

C. neutral nature of equivalence

D. depends on experimental proceeding.

Answer: A

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**18.** Which of the following radioistopes is used as anticancerous ?

A. Na-24

B. C-14

C. U-235

#### D. Co-60

#### Answer: D

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**19.**  $XeF_6$  on complete hydrolysis gives

A.  $XeOF_4$ 

 $\mathsf{B.} XeO_2F_2$ 

 $\mathsf{C}. XeO_3$ 

#### D. $XeO_2$

#### Answer: C



#### Answer: B



### **21.** $\Delta H_{\mathrm{fusion}}$ of a substance is 'x' and $\Delta H_{\mathrm{vap}}$ is 'y',

then  $\Delta H_{
m sublimation}$  will be

A. x + y

B. x - y

C. x/y

D. y/x

#### Answer: A



22. Decay constant of a radioactive substance is  $69.3 \, {\rm sec}^{-1}$ , find  $t_{1/16}$  of the same substance.

A.  $4 imes 10^{-2}~{
m sec}$ 

- B.  $2 imes 10^{-2}$  sec
- C.  $1 imes 10^{-2}$  sec

D. none of these

Answer: A



23. The repeating structural unit of silicone is

## A. $SiO_2$ B. $SiO_1 - O^-$ B. $Si - O^-$ C. $O - Si - O^-$ R D. -Si - O - R

#### Answer: B

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**24.** Propene on hydroboration and oxidation produces

A.  $CH_3CH_2CH_2OH$ 

#### B. $CH_3CHOHCH_3$

#### $\mathsf{C.}\,CH_3CHOHCH_2OH$

D.  $CH_3CH_2CHO$ 

**Answer: A** 

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$$\bigcirc -CH_2CH = CH_2$$

on

25.

mercuration and demercuration produces



The product obtained is/are

D. none of these

Answer: A

С. (с) О-СН<sub>2</sub>СНОНСИ<sub>2</sub>ОН

B. (b) O CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>CH<sub>2</sub>OH

A. (a) O CII,CHOHCH,

A. o-product

B. m-product

C. o- and p-products

D. o-, m- and p-products.

Answer: C

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27. The element which is the most abundant in the

earth crust is

B.S

C. Al

D. H

Answer: A

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**28.** Wavelength of red light is absorbed by the complex

A. 
$$\left[Cu(CN)_4
ight]^{2-}$$
  
B.  $\left[Cu(NH_3)_4
ight]^{2=0}$ 

 $C. CuSO_4$ 

D.  $Cu(CN)_2$ 

#### Answer: B





changes from

A. blue to green

B. blue to pink

C. pink to green

D. pink to blue

Answer: B



**30.** Benzoic acid is treated with lithium aluminium hydribve. The compound obtained is

A. benzaldehyde

B. benzyl alcohol

C. toluene

#### D. benzene

#### Answer: B

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**31.** Chain transfer reagent is:

A.  $CCl_4$ 

B.  $CH_4$ 

 $\mathsf{C}.O_2$ 

 $\mathsf{D}.\,H_2$ 



**32.** Among the following components of cement which is present in highest amount ?

A.  $Ca_2SiO_4$ 

 $\mathsf{B.}\, Ca_3SiO_5$ 

 $\mathsf{C.}\,Al_2O_3$ 

D.  $Ca_3Al_2O_6$ 

#### Answer: D



#### 33. A catalyst

A. changes the equilibrium constant

B. lowers the activation energy

C. increases the forward and backward reactions

at different speeds

D. follows same mechanism for the reaction

Answer: B

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**34.** Which of the following does not contain a coordinate bond?

A.  $H_3O^+$ 

- $\mathsf{B.}\,BF_4^{\,-}$
- $\operatorname{C.}HF_2^{\,-}$
- D.  $NH_4^{\,+}$

Answer: C



**35.** Which of the following species participate in sulphonation of benzene ring ?

A.  $H_2SO_4$ 

B.  $SO_3$ 

 $\mathsf{C}.HSO_3^-$ 

 $\mathrm{D.}\,SO_2^{\,-}$ 

Answer: B

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36. Which of the following statement is true ?

A. Trimethyl amines form a soluble compound

with Hinsberg reagent and KOH.

B. Dimethylamines react with KOH and phenol to

form an azo dye.

C. Methyl amine reacts with nitrous acid and

liberates  $N_2$  form an azo dye.

D. none of these

Answer: C

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37.  $\Delta S_{
m surr}$  for an exothermic reaction is

A. always positive

B. always negative

C. zero

D. may be positive or negative

Answer: D



**38.** The vapour pressure of pure benzene at a certain temperature is 0.850 bar. A non-volatile,

non-electrolyte solid weighting 0.5g when added to 39.0g of benzene (molar mass  $78gmol^{-1}$ ). The vapour pressure of the solution then is 0.845 bar. What is the molar mass of the solid substance?

A. 58

B. 180

C. 170

D. 145

Answer: C

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#### 39. Which of the following is optically inactive ?





#### Answer: C



**40.** Which statement is true for ferrocene ?

A. All Fe-C are of equal length

B. C are  $sp^3$  hybridized

C. It was the first discovered organometallic

compound

D. All of these

Answer: D



**41.** Assertion : Copper sulphate solution is not stored in zinc vessel.

Reason : Zinc forms complex with  $CuSO_4$ .

A. If both assertion and reason are true and reason is the correct explanation of assertionB. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.



**42.** Assertion : Benzene diazonium salt on boiling with water forms phenol.

Reason : C - N bond is polar.

A. If both assertion and reason are true and

reason is the correct explanation of assertion

B. If both assertion and reason are true but

reason is not the correct explanation of

assertion

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

Answer: B



**43.** Assertion : trans-butene on reaction with bromine forms recemic mixture.

Reason : trans-compound in trans addition forms

two types of stereoisomers.

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

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

Answer: B

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**44.** Assertion : Ozone is an allotrope of oxygen. Reason : Oxygen is bluish colour liquid and in

singlet state it is more paramagnetic.

A. If both assertion and reason are true and reason is the correct explanation of assertionB. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.



**45.** Assertion (A) :  $SnI_4$  is an orange solid . Reason (R) : The colour arises due to charge transfer .

A. If both assertion and reason are true and reason is the correct explanation of assertionB. If both assertion and reason are true but reason is not the correct explanation of

assertion

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

Answer: A



**46.** Assertion: Acetamide has more polar > C = 0group than ethyl acetoacetate. Reason :  $\ddot{N}H_2$  is more electron donating than

 $OC_2H_5$ 

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

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

**Answer: A** 

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**47.** Assertion : Magnetic moment of Dy is the highest among langthanoids.

Reason : Orbital motion contributes magnetic moment.

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

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

#### Answer: A



**48.** Assertion : C - O bond in metal carbonyl is long. Reason : There is delocalisation of electrons from filled d orbitals into the empty orbitals on the CO ligands.

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

reason is not the correct explanation of

assertion

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

Answer: A



49. Assertion : Chloral reacts with phenyl chloride

to form DDT.

Reason : It is an electrophilic substitution reaction.

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

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

Answer: C

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**50.** Assertion : Mixture of  $CH_3COOH$  and  $CH_3COONH_4$  is an example of acidic buffer. Reason : Acidic buffer contains equimolar mixture of weak acid and its salt with weak base.

A. If both assertion and reason are true and reason is the correct explanation of assertionB. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.



**51.** Assertion : Alkyl iodide can be prepared by treating alkyl chloride/bromide with Nal in acetone . Reason : NaCI/NaBr are soluble in acetone while Nal is not .

A. If both assertion and reason are true and reason is the correct explanation of assertionB. If both assertion and reason are true but reason is not the correct explanation of

assertion

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

Answer: C

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**52.** Assertion: F is more electronegative than Cl.

Reason: F has high electron affinity than Cl.

A. If both assertion and reason are true and

reason is the correct explanation of assertion

B. If both assertion and reason are true but

reason is not the correct explanation of assertion

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

Answer: C

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53. Assertion : Asetylene on reacting with sodamide

gives sodium acetylide and ammonia.

Reason : ap hybridised carbon atoms of acetylene are considerably electronegative .

- A. If both assertion and reason are true and reason is the correct explanation of assertion
  B. If both assertion and reason are true but reason is not the correct explanation of assertion
- C. If assertion is true but reasonb is false
- D. If both assertion and reason are false.

#### Answer: A



54. Assertion(A) : When sodium chloride dissolves in water, then  $Na^+$  and  $Cl^-$  ions leaving the crystal lattice acquire far greater freedon.

Reason(R) : In thermodynamic terms, the formation of solution occurs with a favourable change in energy i.e.,  $\Delta H$  has a high positive value and  $T\Delta S$ has a low negative value.

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

reason is not the correct explanation of

assertion

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

Answer: C

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**55.** Assertion : Alpha $(\alpha)$  – amino acids exist as internal salt in solution as they have amino and carboxylic acid groups in near vicinity.

Reason :  $H^+$  ion given by carboyxylic group

(-COOH) is captured by amino group  $(-NH_2)$  having lone pair of electrons. A. If both assertion and reason are true and reason is the correct explanation of assertion B. If both assertion and reason are true but reason is not the correct explanation of assertion

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

Answer: A



56. Assertion : The kinetics of the reaction -

 $mA + nB + pC 
ightarrow m\,{}^{\prime}X + n\,{}^{\prime}Y + p\,{}^{\prime}Z$  obeys the

rate expression as -

$$rac{dx}{dt} = k[A]^m[B]^n$$

Reason : The rate of reaction does not depend upon the concentration of C.

A. If both assertion and reason are true and

reason is the correct explanation of assertion

B. If both assertion and reason are true but

reason is not the correct explanation of

assertion

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

Answer: A



**57.** Assertion : Nitrogen is less reactive than molecular oxygen.

Reason: Bond length of  $N_2$  is shorter than that of oxygen.

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

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

Answer: B

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**58.** Assertion : The lactic acid shows the geometrical isomerism.

Reason : Lactic acid has carbon-carbon double bond

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

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

#### Answer: D



**59.** Assertion (A) : The equilibrium constant is fixed and characteristic for any given chemical reaction at a specified temperature.

Reason (R) : The composition of the final equilibrium mixture at a particular temperature depends upon the starting amount of reactants.

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

B. If both assertion and reason are true but

reason is not the correct explanation of assertion

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

Answer: C

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**60.** (A) The position of an element in periodic table after emission of one  $\alpha$  and two  $\beta$ -partilce remians unchanged.

(R ) Emission of one  $\alpha$  and two  $\beta$  particles gives isotope of the parent element which acquires same position in the periodic table.

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

C. If assertion is true but reasonb is false

D. If both assertion and reason are false.

#### Answer: A

