CHEMISTRY

BOOKS - AIIMS PREVIOUS YEAR PAPERS

AIIMS 2004

Chemistry

1. Which of the following is only acidic in nature?

A. $Be(OH)_2$

B. $Mg(OH)_2$

C. $B(OH)_3$

D. $Al(OH)_3$

Answer: C

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2. Which one of the following forms with an excess of CN^- (Cyanide) a complex having coordination number two

A. Cu^{+}

B. Ag^{+}

C. Ni^{2+}

D. Fe^{2+}

Answer: B

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3. Which of the following is not considered as an organometallic compound?

A. Cis-platin

B. Ferrocence

C. Zeise's salt

D. Grignard reagent.

Answer: A

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4. Dimethyl glyoxime gives a red precipitate with Ni^{2+}, which is used for its detection. To

get this precipitate readily the best pH range is

A. < 1

B. $2 - 3$

C. $3 - 4$

D. $9 - 11$

Answer: D

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5. The element which forms oxides in all oxidation states $+1$ to $+5$ is.

A. N

B. P

C. As

D. Sb.

Answer: A

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6. For decolourisation of $1\text{mol of} KMnO_4$, the moles of H_2O_2 required is

A. $\frac{1}{2}$

B. $\frac{3}{2}$

C. $\frac{5}{2}$

D. $\frac{7}{2}$

Answer: C

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7. The statement true for N_3^- is

A. It has a non-linear structure

B. It is called pseudohalogen

C. The formal oxidation state of nitrogen in this anion is -1

D. It is isoelectronic with $NO2$

Answer: C

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8. Which of the following does not have optical isomer?

A. $[Co(NH_3\_(3)Cl_3]$

B. $\left[Co(en)_3Cl_3\right]$

C. $\left[Co(en)_2Cl_2Cl\right]$

D. $\left[Co(en)(NH_3)_2Cl_2\right)]Cl$

Answer: A

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9. For the electron affinity of halogens (with $-ve$ sign), which of the following is correct?

A. BrgtF

B. FgtCl

C. BrgtCi

D. Fgt1

Answer: D

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10. Shape of O_2F_2 is similar to that of

A. C_2F_2

B. H_2O_2

C. H_2F_2

D. C_2H_2

Answer: B

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11. The liquified metal expanding on solidification is :

A. Ga

B. Al

C. Zn

D. Cu

Answer: A

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12. The compound insoluble in water is

A. Mercurous nitrate

B. Mercuric nitrate

C. Mercurous chloride

D. Mercurous perchlorate.

Answer: C

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13. Which of the following imparts colour to the burner flame?

A. $B(Ome)_3$

B. $Na(Ome)$

C. $Al(OPe)_3$

D. $Sn(OH)_2$

Answer: A

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14. The ONO bond angle is maximum in

A. NO_3^-

B. NO_2^-

C. NO_2

D. NO_2^+

Answer: D

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15. Among the following the dissociation constant is highest for

A. C_6H_5OH

B. $C_6H_5CH_2OH$

C. $CH_3C \equiv CH$

D. $CH_3NH_3^+Cl^-$

Answer: D

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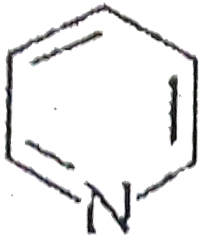
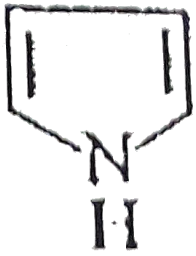
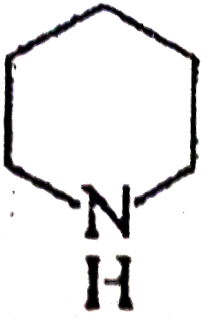
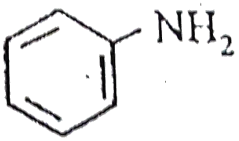
16. The strongest base among the following .

A. 

B. 

C. 

D. 

Answer: C

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17. The compound having only primary hydrogen atoms is

A. Isobutene

B. 2,3-dimethylbutene

C. Cyclohexane

D. Propyne.

Answer: A::D

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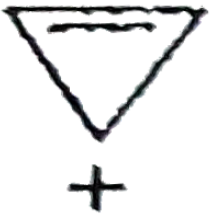
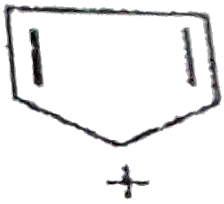
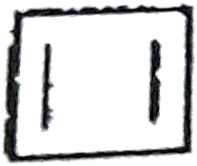
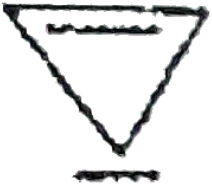
18. Among the following, the aromatic compound is

A. 

B. 

C. 

D. 

Answer: A

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19. The dipole moment is the highest for

A. trans-2-butene

B. 1,3-Dimethylbenzene

C. Acetophenone

D. Ethanol

Answer: C

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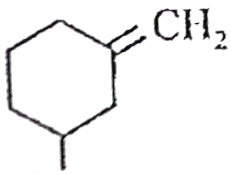
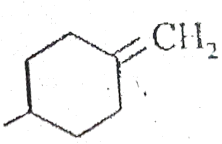
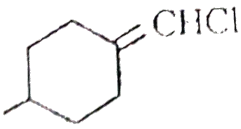
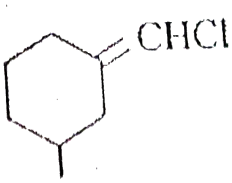
20. The geometrical isomerism is shown by:

A. 

B. 

C. 

D. 

Answer: D

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21. The reagent used for the separation of Acetadehyde from acetophenone is

A. $NaHSO_3$

B. $CH_3COCH_2CH_2Br$

C. CH_3CH_2Br

D. $CH_3CH_2CH_2Br$

Answer: A

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22. Among the following,the most reactive towards alcoholic KOH is

A. $CH_2 = CHBr$

B. CH_3COCH_2Br

C. CH_3CH_2Br

D. $CH_3CH_2CH_2Br$

Answer: D

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23. Among the following, one which reacts most readily with ethanol is

A. p-nitrobenzyl bromide

B. p-chlorobenzyl bromide

C. p-methoxybenzyl bromide.

D. p-methylbenzyl bromide.

Answer: C

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24. The nucleic acid base having two possible binding sites is:

A. thymine

B. cytosine

C. guanine

D. adenine.

Answer: C

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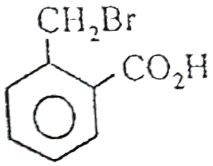
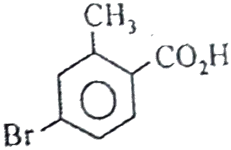
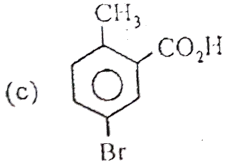
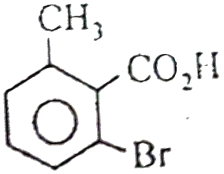
25. α-Toluic acid in reaction with $Br_2 + Fe$ gives

A. 

B. 

C. 

D. 

Answer: C

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26. Aromatic nitriles(ArCN) are not prepared by reaction:

A. Ar X+KCN

B. $ArN_2^+ + CuCN$

C. $ArCONH_2 + P_2O_5$

D. $ArCONH_2 + SOCl_2$

Answer: A

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27. Melting points are normally highest for

A. Tertiary amides

B. Secondary amides

C. Primary Amides

D. Amines.

Answer: C

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28. The most suitable reagent for the conversion of RCH_2OH to $RCHO$ is

A. $KMnO_4$

B. $K_2Cr_2O_7$

C. CrO_3

D. PCC(Pyridinium chloro chromate.)

Answer: D

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29. Which of the following is arranged in the increasing order of enthalpy of vaporization?

A. NH_3, PH_3, AsH_3

B. AsH_3, PH_3NH_3

C. NH_3, AsH_3, PH_3

D. PH_3, AsH_3, NH_3

Answer: D

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30. For principle quantum number n=4,the total number of orbitals having l=3 is

A. 3

B. 7

C. 5

D. 9

Answer: B

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31. The average osmotic pressure of humna blood is 7.8 bar at $37^{\circ}C$.What is the concentration of an aqueous NaCl solution that could be used in the blood stream?

A. 0.16 mol/L

B. 0.32 mol/L

C. 0.60 mol/L

D. 0.45 mol/L

Answer: B

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32. How much energy is released when 6 mole of octane is burnt in air ? Given ΔH_f° for $CO_2(g), H_2O(g)$ and $C_8H_{18}(l)$ respectively are $-490, \ -240$ and $+160KJ/mol$

A. $-6.2KJ$

B. $-37.4KJ$

C. $-35.5KJ$

D. $-20.0KJ.$

Answer: B

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33. For the equilibrium

$H_2O(1) \Leftrightarrow H_2O(g)$

at 1 atm $298K$

A. Standard free energy change is equal to zero $(\Delta G < 0)$

B. standard Free energy change is equal to zero $(\Delta G^\circ = 0)$

C. Standard free energy change is less zero (ΔG°)

D. Standard free energy change is greater than zero $(\Delta G^\circ > 0)$

Answer: B

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34. The crystal system of a compound with unit cell dimensions a=0.387,b=0.387 and

c=0.504 nm and $\alpha = \beta = 90^\circ$ and $\gamma = 120^\circ$ is

A. Cubic

B. hexagonal

C. orthorhombic

D. rhombohedral

Answer: B

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35. What is the pH of $0.01M$ glycine solution?

For glycine, $K_{a_1} = 4.5 \times 10^{-3}$ and $K_{a_2} = 1.7 \times 10^{-10}$ at $298K$

A. 3.0

B. 10.0

C. 6.1

D. 7.2

Answer: C

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36. Of the following, which change will shift the reaction towards the product ?

$I_2(g) \Leftrightarrow 2I(g), \Delta H_r^\circ(298K) = +150J$

A. Increase in concentration of 1

B. Decrease in concentration of 1_2

C. Increase in temperature

D. Increase in total pressure.

Answer: C

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37. Which of the following statements is true for the electerochemical Daniel cell?

A. Electrons flow from copper electrode to zinc electrode.

B. Current flows from zinc electrode to copper electrode.

C. Cations move toward copper electrode

D. Cations move toward zinc electrode.

Answer: C

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38. Which of the following is a biodegradable polymer ?

A. Cellulose

B. Polythene

C. Polyvinyl chloride

D. nylon-6

Answer: A

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39. The rate constant k, for the reaction $N_2O_5(g) \rightarrow 2NO_2(g) + \frac{1}{2}O_2(g)$ is $2.3 \times 10^{-2} s^{-1}$. Which equation given below describes the change of $[N_2O_5]$ with time ? $[N_2O_5]_0$ and $[N_2O_5]_t$ correspond to concentration of N_2O_5 initially and at time, t ?

A. $[N_2O_5]t = [N_2O_5]_0 + kt$

B. $[N_2O_5]_0 = [N_2O_5]_t^{e^{kt}}$

C. $\log[N_2O_5]_t = \log[N_2O_5]_0 + kt$

D. $\ln \frac{[N_2O_5]_0}{[N_2O_5]_t}$=kt.

Answer: D

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40. Ozone in stratosphere is depleted by

A. CF_2Cl_2

B. C_7F_{16}

C. C_6

D. C_6F_6

Answer: A

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41. Assertion:$HClO_4$ is a stronger acid than $HClO_3$

:Oxidation state of Cl in $HClO_4$ is +8 and in $HClO_3 + 5$

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: B

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42. The free gaseous Cr atom has six unpaired electrons.

Half-filled s-orbital has greater stability.

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: C

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43. Assertion: $\left[Ni(en)_3\right]Cl_2$ has lower stability than $\left[Ni(NH_3)_6\right]Cl_2$

Reason: In $\left[Ni(en)_3\right]CI_2$ the geometry of Ni is trigonal bipyramidal .

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: D

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44. Assertion:Sb(III) is not precipitated as sulphide when in its alkaline solution H_2S is passed.

Reason:The concetration of S^2 ion in alkaline medium is inadequate for precipitation

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: C

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45. Assertion:Nuclear binding energy per nucleon is in the order -${}^{9}_{4}Be > {}^{7}_{3}Li > {}^{4}_{2}He$.

Reason:Binding energy per nucleon increases linearly with difference in number of neutrons and protons.

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

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

assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: D

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46. Assertion (A): magnesium is not present in enamel of human teeth.

Reason (R): Magnesium is an essential

elements for biological functions of human beings.

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: B

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47. Assertion. Carboxypetidase is an exopeptidase.

Reason. It cleaves the N-terminal bond.

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: C

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48. Assertion : Sucrose is a non – reducing sugar.

Reason : It has glycosidic linkage.

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: A

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49. Assertion:Isobutanal does not give iodoform test.

Reason:It does not have α-hyfrogen.

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

assertion.

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: C

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50. Assertion:Styrene on reaction with HBr gives 2-bromo-2-phenylethane.

Benzyl radical is more stable than alkyl radical.

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer:

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51. Assertion:The pK_a of acetic acid is lower than that of phenol.

Reason:Phenoxide ion is more resonance stablised.

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: C

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52. Assertion:2-Bromobutane on reaction with sodium ethoxide in ethanol gives 1-butene as a major product

Reason:1-butene is more stable than 2-butene.

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

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

assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: D

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53. Assertion:The major products formed by heating $C_6H_5CH_2OCH_3$ with HI are $C_6H_5CH_2l$ and CH_3OH

Reason:Benzyl cation is more stable than methyl cation.

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: A

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54. Assertion: Molar entropy of vaporization of water is different from ethanol.

Reason: Water is more polar than ethanol.

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: B

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55. Assertion: A quious gold colloidal solution is red in colour.

Reason: The colour arises due to scattering of light by colloidal gold particles.

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: A

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56. Assertion (A) : Cu gets readily corroded in acidic aqueous solution.

Reason (R) : Free energy of the process is positive.

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: D

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57. Assertion:Addition of silver ions to a mixture of aqueos sodium chloride and sodium bromide solution will first precipitate AgBr than AgCl.

K_{sp} of $AgCl > K_{sp}$ of AgBr.

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: C

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58. Assertion: Alcohols are dehydrated to hydrocarbons in the presence of acidic zeolites.

Reason: Zeolites are pourous catalysts.

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: B

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59. Assertion : All F - S - F angle in SF_4 are greater than 90° but less than 180°.

Reason :The lone pair -bond pair repulsion is weaker than bond pair -bond pair repulsion

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

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

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: C

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60. Assertion: Effusion rate of oxygen is smaller than nitrogen.

Reason: Molecular size of nitrogen is smaller than oxygen.

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

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

assertion

C. If assertion is true but reason is false

D. If both assertion and reason are false.

Answer: C

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