

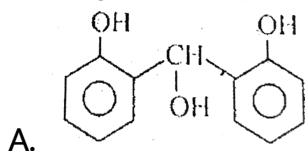
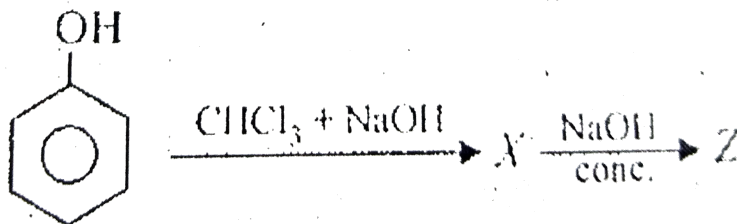
CHEMISTRY

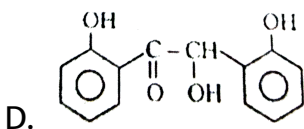
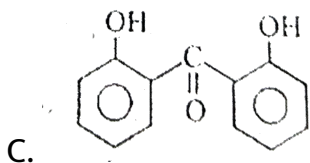
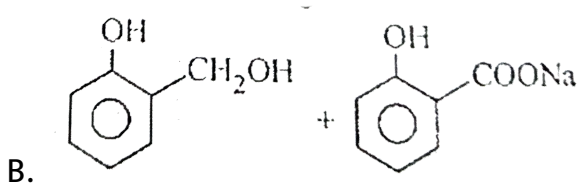
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Chemistry

1. Identify Z in the reaction.

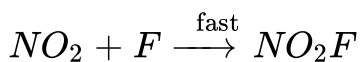
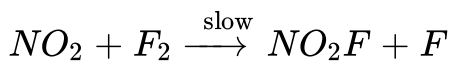




Answer: B

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2. For the reaction $2NO_2 + F_2 \rightarrow 2NO_2F$, following mechanism has been provided:



Thus rate expression of the above reaction can be written as:

A. $r = K[NO_2]_2[F_2]$

B. $r = K[NO_3][F_3]$

C. $r = K[NO_2]$

D. $r = K[F_3]$

Answer: B



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3. The correct relationship between the pH of isomolar solutions of sodium oxide (pH_1), sodium sulphide (pH_2), sodium selenide (pH_3) and sodium telluride (pH_4) is

A. $pH_4 > pH_2 = pH_3 = pH_4$

B. $pH_3 \leq pH_2 \leq pH_3 \leq PH_3$

C. $pH_4 \geq pH_2 \leq pH_2$

$$D. pH_1 > pH_2 > pH_3 > pH_4$$

Answer: D

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4. Toluene is nitrated and the resulting product is reduced with tin and hydrochloric acid. The product so obtained is diazotised and then heated with cuprous bromide. The reaction mixture so formed contains

- A. mixture of o- and m-bromotoluene
- B. mixture of o- and p-bromoaniline
- C. mixture of o- and p-dibromobenzene
- D. mixture of o- and p-bromo anilines

Answer: B



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5. The dissociation equilibrium of a gas AB_2 can be represented as, $2AB_2(g) \rightleftharpoons 2AB(g) + B_2(g)$. The degree of dissociation is 'x' and is small compared to 1. The expression relating the degree of dissociation (x) with equilibrium constant k_p and total pressure P is

A. $(2K_t/p)^{1/2}$

B. K_p/p

C. $2k_p/p$

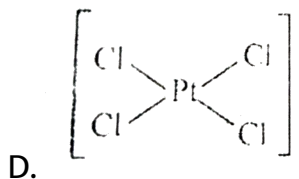
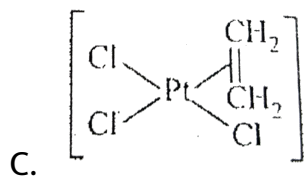
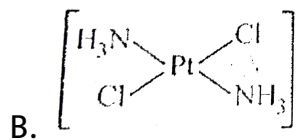
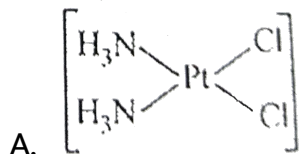
D. $(2k_t/p)$

Answer: D



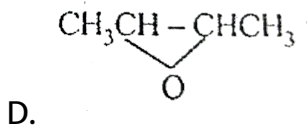
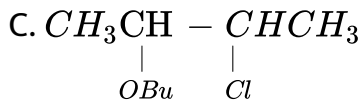
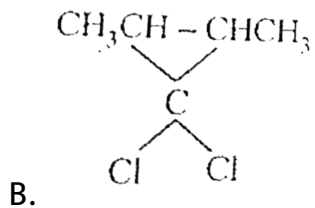
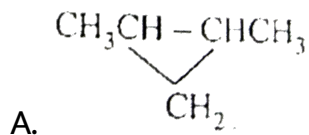
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6. Which of the following is considered to be an anticancer species?



Answer: A

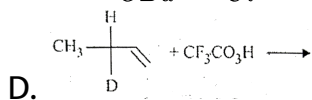
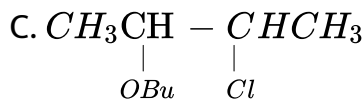
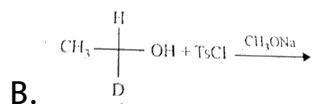
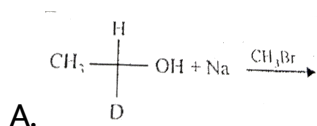
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Answer: B

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8. In which of the following preparations of ether. The configuration about chiral centre is not retained ?



Answer: B



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9. Toluene on treatment with CrO_3 and $(\text{CH}_3\text{CO})_2\text{O}$ followed by hydrolysis with dil. HCl gives

- A. benzaldehyde
- B. benzoic acid
- C. phenol
- D. phenylacetaldehyde.

Answer: A

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10. The time required to coat a metal surface of 80cm^2 with $5 \times 10^{-3}\text{cm}$ thick layer of silver (density 1.05gcm^{-3}) with the passage of 3A current through a silver nitrate solution is:

- A. 115 sec
- B. 124 sec
- C. 135 sec

D. 145 sec

Answer: B

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11. Correct equation of Freundlich isotherm is

A. $\log\left(\frac{m}{x}\right) = \log k + \frac{1}{m}\log c$

B. $\log\left(\frac{x}{m}\right) = \log k + \frac{1}{n}\log c$

C. $\log\left(\frac{x}{m}\right) = \log k + \frac{1}{k}\log c$

D. $\log\left(\frac{x}{m}\right) = \log k + \frac{1}{k}\log c$

Answer: A

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12. Which of the following compounds is not chiral?

A. 1-Chloropentane

B. 2-Chloropentane

C. 1-Chloro-2-methyl pentane

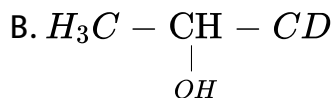
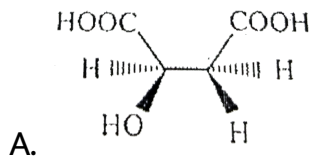
D. 3-Chloro-2-methyl pentane.

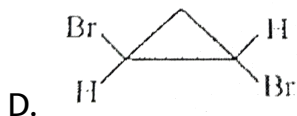
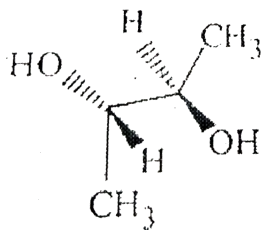
Answer: A

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13. Which of the following molecules will not show optical activity

?





Answer: C

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14. Green chemistry means such reactions which

A. are related to the depletion of ozone layer

B. study the reactions in plants

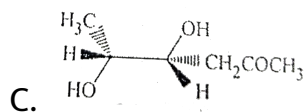
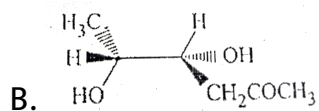
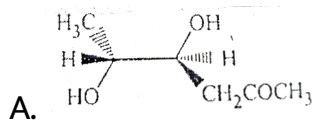
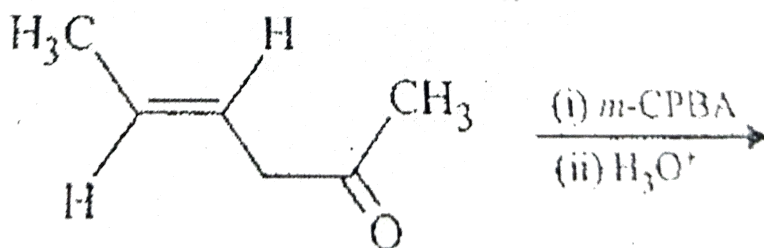
C. produces colours during reactions

D. reduce the use and production of hazardous chemicals.

Answer: D

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15. Identify the final product .



D. none of these

Answer: B



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16. The flame colours of metal ions are due to

- A. Frenkel defect
- B. Schottky defect
- C. metal deficiency defect
- D. metal excess defect .

Answer: D



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17. The reaction of an organic compound with ammonia followed by nitration of the product gives a powerful explosive called RDX.

The organic compound is

A. phenol

B. toluene

C. glycerine

D. formaldehyde.

Answer: B



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18. Cumene process is the most important commercial method for the manufacture of phenol. Cumene is

A. iso-propyl benzene

B. ethyl benzene

C. vinyl benzene

D. propyl benzene .

Answer: A



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19. Prolonged exposure of fat or oil in moist air and light causes bad smell (rancidity). It is due to

A. formation of $C_6 - C_{12}$ fatty acids

B. formation of ketone and aldehyde

C. both of these causes

D. formation of glycerol.

Answer: C

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20. Acid hydrolysis of sucrose is a

- A. pseudo first order reaction
- B. zero order reaction
- C. second order reaction.
- D. unimolecular reaction.

Answer: A

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21. Which of these compound is synthesised by chloral?

A. DDT

B. BHC

C. chloroform

D. Michlers ketone.

Answer: A



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22. When phenol reacts with phthalic anhydride in presence of H_2SO_4 and heated and hot reaction mixture is poured in $NaOH$ solution. The product formed is

A. alizarin

B. methyl orange

C. fluorescein

D. phenolphthalein .

Answer: D

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23. The function of $AlCl_3$ in Friedel-Craft's reaction is to

A. absorb hydrogen chloride

B. absorb water

C. produces nucleophile

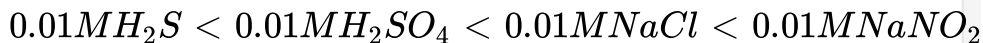
D. produce electrophile

Answer: D

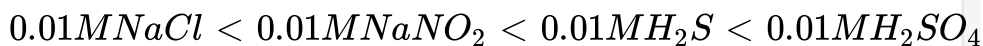
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24. The correct order of increasing $[H_3O^+]$ in the following aqueous solution is :

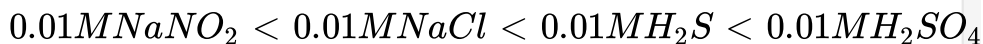
A.



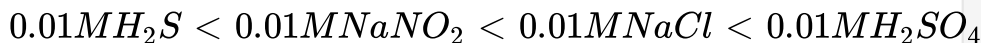
B.



C.



D.



Answer: C



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25. Percentage of Se (at. mass 3 78.4) in peroxidase anhydrase enzyme is 0.5% by weight, then minimum molecular mass of peroxidase anhydrase enzyme is

A. 1.576×10^4

B. 1.576×10^3

C. 15.76

D. 2.136×10^4

Answer: A



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26. The number of S-S bonds, in sulphur trioxide trimer (S_3O_9) is :

A. three

B. two

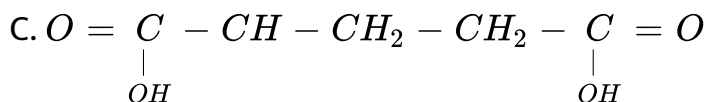
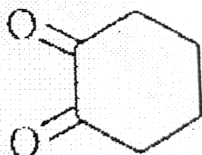
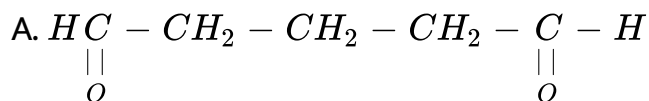
C. one

D. zero

Answer: D

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27. Oxidation product 1,2-cyclopentanediol with HIO_4 gives

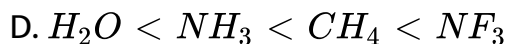
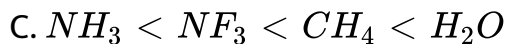
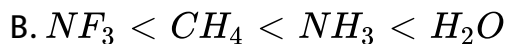
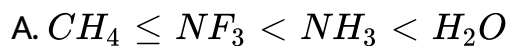


D. none of these

Answer: A

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28. The correct order of dipole moment is :



Answer: A

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29. The root mean square speed of the molecules of diatomic gas is u . When the temperature is doubled, the molecules dissociate into two atoms. The new rms speed of the atoms is

A. $\sqrt{2u}$

B. u

C. $2u$

D. $4u$

Answer: C



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30. For the following concentration cell, to be spontaneous $Pt(H_2)P_1$ atm. $|HCl|Pt(H_2)P_2$ atm which of the following is correct ?

A. $P_1 = P_2$

B. $P_1 < P_2$

C. $P_1 > P_2$

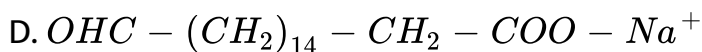
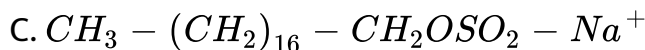
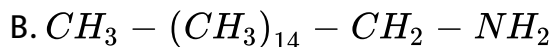
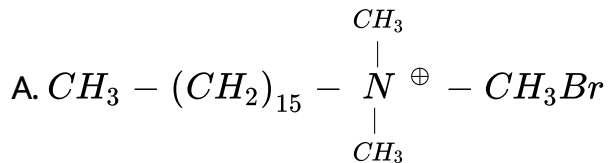
D. can't be predicted.

Answer: C



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31. Which one of the following is not a surfactant?

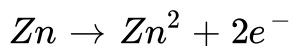


Answer: B

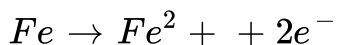


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32. The standard oxidation potential E° for the half cell reaction are



$$E^\circ = +0.76V$$



$$E^\circ = +0.41V$$

EMF of the cell reaction is $Zn + Fe^{2+} \rightarrow Zn^{2+} + Fe$

A. $-0.35V$

B. $+0.35V$

C. $0.17V$

D. $1.17V$

Answer: B

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33. To observe the effect of concentration on the conductivity ele

A. in A conductivity increases , in B conductivity decreases

B. in A conductivity decreases, while in B conductivity increases ,

C. in both A and B conductivity increase

D. in both A and B conductivity decrease.

Answer: D

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34. A unit of cell of sodium chloride has four formula units. The edge length of the unit cell is 0.564nm . What is the density of sodium chloride?

- A. $1.2\text{g} / \text{cm}^2$
- B. $2.165 / \text{cm}^3$
- C. $3.64\text{g} / \text{cm}^2$
- D. $4.56\text{g} / \text{cm}^3$

Answer: B



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35. The reaction



A. Claisen- Schmidt reaction

B. Kolbe- Schmidt reaction

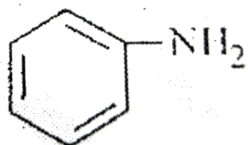
C. Schmidt raction

D. Kolbe's reacton.

Answer: C

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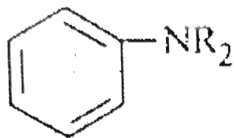
36. Which of the following amines, can give N-nitrosoamine on treatment with HNO_2 ?



A.



C. 



D.

Answer: C

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37. The purification of alumina is called

A. Baeyer's process

B. Bosch Process

C. Caster process

D. Hoop's Process.

Answer: A

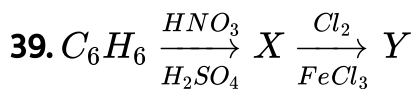
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38. Which acid has P -P linkage?

- A. Hypophosphoric acid
- B. Pyrophosphoric acid
- C. Metaphosphoric acid
- D. Orthophosphoric acid .

Answer: A

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Sequence Y can be

- A. 3-nitrochlorobenzene

B. 1-nitrochlorobenzene

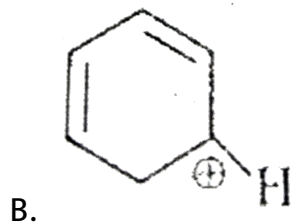
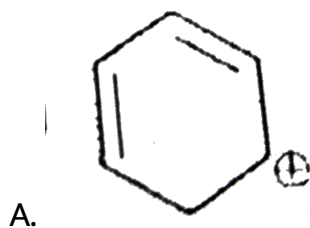
C. 4-nitrochlorobenzene

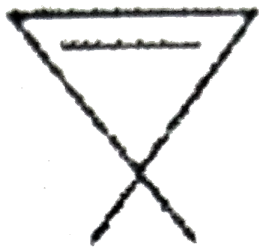
D. none of these

Answer: A

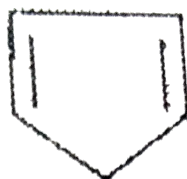
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40. Which of the following is aromatic ?





C.



D.

Answer: C

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41. Assertion: $(CH_3)_3CCOC(CH_3)_3$ and acetone can be distinguished by the reaction with $NaHSO_3$.

Reason : HSO_3^- is the nucleophile in bisulphite addition.

- 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 reason is false
- D. If both assertion and reason are false.

Answer: B

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- 42.** (A) Tertiary carbocations are generally formed more easily than primary carbocations.
- (R) Hyperconjugation as well as inductive effect due to additional alkyl groups stabilize tertiary carbocations.

- 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 reason is false
- D. If both assertion and reason are false.

Answer: A

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43. Assertion: If H_2 and Cl enclosed separately in the same vessel exert pressure of 100 and 200mm respectively, their mixture in the same vessel at the same temperature will exert a pressure of 300mm

Reason: Dalton's law of partial pressures states that total pressure is the sum of partial pressures.

- 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 reason is false
- D. If both assertion and reason are false.

Answer: A



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44. Dalton's law of partial pressures states that total pressure is the sum of partial pressures.

Reason : The chlorine liberated by the action of partial pressures.

- 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 reason is false
- D. If both assertion and reason are false.

Answer: A



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45. Assertion : According to Le-Chatelier's principle addition of heat to an equilibrium solid = liquid results in decrease in the amount of solid.

Reason : Reaction is endothermic, so on heating forward reaction is favoured.

- 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 reason is false
- D. If both assertion and reason are false.

Answer: A



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46. Assertion: Cyclohexane exhibits keto-enol tautomerism.

Reason: In cyclohexanone, one form contains the keto group

($C = O$) while other contains enolic group ($-C = C - OH$).

- 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 reason is false
- D. If both assertion and reason are false.

Answer: A

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47. Phenol is more reactive than benzene towards electrophilic substitution reaction.

In case of Phenol, the intermediate carbocation is more resonance stabilised.

- 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 reason is false
- D. If both assertion and reason are false.

Answer: C

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48. Assertion (A): Many endothermic reactions that are not spontaneous at room temperature become spontaneous at high

temperature.

Reason (R) : Entropy of the system increases with increase in temperature.

- 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 reason is false
- D. If both assertion and reason are false.

Answer: B



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49. Assertion: Benzaldehyde is more reactive than ethanal towards nucleophilic attack.

Reason : The overall effect of $-I$ and $+R$ effect of phenyl group decrease the electron density on the carbon atom of $>C=O$ group in benzaldehyde.

- 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 reason is false
- D. If both assertion and reason are false.

Answer: A



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50. Assertion: Bleaching powder reacts with dilute acids to evolve chlorine

Reason: The chlorine liberated by the action of dilute acids on bleaching powder is called available chlorine .

- 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 reason is false
- D. If both assertion and reason are false.

Answer: B



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51. Assertion : Teflon has high thermal stability and quantum number. chemical inertness.

Reason : Teflon is a thermoplastic.

- 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 reason is false
- D. If both assertion and reason are false.

Answer: B



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52. Assertion : In high spin situation, configuration of d^5 ions will be $t_{2g}^3 e_g^2$

Reason : In high spin situation pairing energy is less than crystal field energy.

- 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 reason is false
- D. If both assertion and reason are false.

Answer: C



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53. 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 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 reason is false
- D. If both assertion and reason are false.

Answer: D



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54. Assertion : When a connection solution is diluted by acidic aqueous solution remains unchanged .

Reason: Product of moles of aolute and volume is equal to the molarity.

- A. if both assertion and reason are true and reason is thr 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 reason is false
- D. If both assertion and reson are false.

Answer: D



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55. Assertion : Anilinium chloride is more acidic towards electrophilic substitution than ammonium chloride. reaction.

Reason : Anilinium chloride is resonance stabilised

- 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 reason is false
- D. If both assertion and reason are false.

Answer: C



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56. Assertion : Pyrrole is an aromatic heterocyclic compound

Reason : It has cyclic delocalised 6π 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 reason is false
- D. If both assertion and reason are false.

Answer: A

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57. Assertion : 2-Butanol on heating with H_2SO_4 gives 1-butanol
on heating with H_2SO_4 gives 1-butanol follows Saytzeff's rule.

- 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 reason is false
- D. If both assertion and reason are false.

Answer: A



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58. Assertion: $SeCl_4$, does not have a tetrahedral structure.

Reason: Se in $SeCl_4$ has two lone pairs.

- 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 reason is false
- D. If both assertion and reason are false.

Answer: C

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59. Assertion : Liquid NH_3 is used for refrigeration

Reason: Liquid NH_3 quickly vaporises.

- 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 reason is false

D. If both assertion and reason are false.

Answer: A

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60. (A) Ether behaves as bases in the presence of mineral acids.

(R) Due to the presence of lone pair of electrons on 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 reason is false

D. If both assertion and reason are false.

Answer: A



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