CHEMISTRY

BOOKS - NTA MOCK TESTS

NEET MOCK TEST 2

Chemistry

1. Which of the following statements are correct -

1. CCP structure has three different type of layers.

2. In CCP structure, first and fourth layers are repeated.

3. In an HCP structure, first and fourth layers are repeated.

4. In FCC packing, the neighboring face centered atoms touch each other.

A. 1 and 2 only

B. 1, 2 and 4 only

C. 1, 2 3 and 4

D. 1, 2 and 3 only

Answer: A

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2. Volume of $0.1MH_2SO_4$ required to neutralize 30 mL of $0.2NNaOH$ is

A. 30 mL

B. 15 mL

C. 40 mL

D. 60 mL

Answer: A

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3. The lanthanide contraction is responsible for the fact that

A. Zr and Hf have same radius

B. Zr and Zn have the same oxidation state

C. Zr and Y have same radius

D. Zr and Nb have similar oxidation state

Answer: A

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4. The alakene C_6H_{10} producing $OHC(CH_2)_4CHO$ on ozonolysis is :

A. Hexene - 1

B. Hexene - 3

C. Cyclohexene

D. 1-Methylcyclohexene

Answer: C

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5. The final step for the extraction of copper from copper pyrite in Bessemer converter involves the reaction

A. $4Cu_2O + FeS \rightarrow 8Cu + FeSO_4$

B. $Cu_2S + 2Cu_2O \rightarrow 6Cu + SO_2$

C. $2Cu_2O + FeS \rightarrow 4Cu + Fe + SO_2$

D. $Cu_2S + 2FeO \rightarrow 2Cu + 2FeCO + SO_2$

Answer: B

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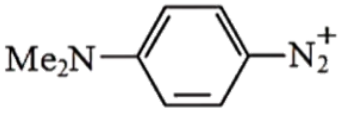
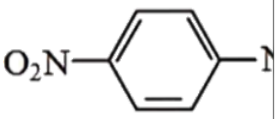
6. Consider the following diazonium ions :



(I)



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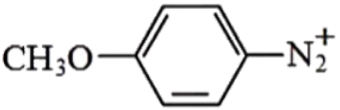

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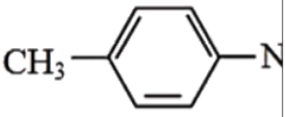

(IV)

The order of reactivity towards diazo-coupling with phenol in the presence of dil. NaOH is -

A. $1 < IV < II < III$

B. $I < III < IV < II$

C. $III < I < II < IV$

D. $III < I < IV < II$

Answer: B

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7. Which of the following is an extensive property of the system ?

A. Volume

B. Viscosity

C. Temperature

D. Refractive index

Answer: A

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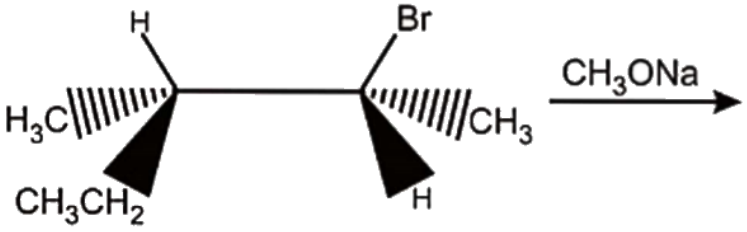
8. Choose the correct statement about the major product formed in E2 reaction?



A. The major product will be optically active

B. The major product will be trans - 3- Methyl -2 - pentene

C. The major product will be cis - 3 - Methyl -2 - pentene

D. The major product will be 3 - Methyl -1 - pentene

Answer: B

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9. Which of the following set has the strongest tendency to form anions?

A. Ga, In, Tl

B. Na, Mg, Al

C. N, O, F

D. V, Cr, Mn

Answer: C

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10. The decomposition of dimethyl ether leads to the formation of $CH_4, H_2,$ and CO and the reaction rate is given by

Rate $= k[CH_3OCH_3]^{3/2}$

The rate of reaction is followed by increase in the pressure in a closed vessel , so the rate can also be expressed in terms of the partial pressure of dimethyl ether, $i.e.$,

Rate $= k[p_{CH_3OCH_3}]^{3/2}$

If the pressure is measured in bar and time in minutes, then what are the units of rate and rate constant ?

A. $\text{bar}^{1/2}\text{min}$

B. $\text{bar}^{3/2}\text{min}^{-1}$

C. $\text{bar}^{-1/2}\text{min}^{-1}$

D. bar min^{-1}

Answer: C

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11. Given $C_{(\text{graphite})} + O_2(g) \rightarrow CO_2(g),$

$\Delta_r H^0 = -393.5 kJ \quad mol^{-1}$

$H_2(g) = +\frac{1}{2} O_2(g) \rightarrow H_2O(1),$

$\Delta_r H^0 = -285.8 \ \text{kJ} \ mol^{-1}$

$CO_2(g) + 2H_2O(1) \rightarrow CH_4(g) + 2O_2(g),$

$\Delta_r H^0 = +890.3 kJ \quad mol^{-1}$

Based on the above thermochemical equations, the value of

$\Delta_r H^0$ at at 298 K for the reaction

$C_{(\text{graphite})} + 2H_2(g) \rightarrow CH_4(g)$ will be:

A. $+144.0 \ \text{kJ mol}^{-1}$

B. $74.8 \ \text{kJ mol}^{-1}$

C. $-144.0 \ \text{kJ mol}^{-1}$

D. $+74.8 \ \text{kJ mol}^{-1}$

Answer: B

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12. Determine the solubility of silver chromate at 298 K given its K_{sp} value is 1.1×10^{-12}?

A. 6.5×10^{-5}

B. 2.4×10^{-2}

C. 3.6×10^{-3}

D. 8.9×10^{-4}

Answer: A

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13. If $n = 6$, the correct sequence for filling of electrons will be.

A. $ns \rightarrow (n-1)d \rightarrow (n-2)f \rightarrow np$

B. $ns \rightarrow np \rightarrow (n-1)d \rightarrow (n-2)f$

C. $ns \rightarrow (n-2)f \rightarrow np \rightarrow (n-1)d$

D. $ns \rightarrow (n-2)f \rightarrow (n-1)d \rightarrow np$

Answer: D

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14. The valence shell electronic structure of an element is ns^2np^5. The element will belong to the group of

A. Alkali metals

B. Inert metals

C. Noble gases

D. Halogens

Answer: D

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15. An azeotropic solution of two liquids has boiling point lower than either of them when it

A. shows negative deviation from Raoult's law

B. shows no deviation from Raoult's law

C. shows no deviation from Raoult's law

D. shows positive deviation from Raoult's law

Answer: C

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16. During electrolysis of water, the volume of oxygen liberated is $2.24dm^3$. The volume of hydrogen liberated, under same conditions will be

A. $2.24dm^3$

B. $1.12dm^3$

C. $4.48dm^3$

D. $0.56dm^3$

Answer: C

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17. The final product formed when methylamine is treated with $NaNO_2$ and HCl followed by hydrolysis is :

A. Nitromethane

B. Methylcyanide

C. Methyl alcohol

D. Diazomethane

Answer: C

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18. The bond angle of H_2Se is best described as

A. Between 109° and 120°

B. Greater than 120°

C. Less than that in H_2S but not less than 90°

D. Less than 90°

Answer: C

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19. The equilibrium constant for a reaction $A + B \Leftrightarrow C + D$ is 1×10^{-2} at 298 K and is 2 at 273 K. The chemical process resulting in the formation of C and D is :

A. Exothermic

B. Endothermic

C. Unpredictable

D. There is no relationship between ΔH and K

Answer: A

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20. The most suitable method of separation of a mixture of ortho and para nitrophenol in the ratio $1:1$ is :

A. Sublimation

B. Chromatography

C. Crystallisation

D. Steam distillation

Answer: D

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21. $4g$ of $NaOH$ are present in $0.1dm^3$ solution have

(a) mole fraction of $NaOH$,

(b) molality of $NaOH$ solution,

(c) molarity of $NaOH$ solution,

(d) normality of $NaOH$ solution.

A. 1 N

B. 2 N

C. 3 N

D. 4 N

Answer: A

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22. 15 moles of H_2 and 5.2 moles of I_2 are mixed and allowed to attain equilibrium at $500^\circ C$. At equilibrium, the number of moles of HI is found to be 10 mole. The equilibrium constant for the formation of HI is

A. 50

B. 15

C. 100

D. 25

Answer: A

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23. Ferrous oxide has cubes structure and each edge of the unit cell is 5.0Å .Assuming of the oxide as $4.0g/cm^3$ then the number of Fe^{2+} and O^2 inos present in each unit cell will be

A. Two Fe^{2+} and four O^{2-}

B. Three Fe^{2+} and three O^{2-}

C. Four Fe^{2+} and two O^{2-}

D. Four Fe^{2+} and four O^{2-}

Answer: D

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24. Which of alkaline earth metal halides given below is essentially covalent in nature?

A. $BeCl_2$

B. $MgCl_2$

C. $SrCl_2$

D. $CaCl_2$

Answer: A

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25. Equal volumes of H_2 and Cl_2 are mixed. How will the volume of the mixtuer change after the reaction?

A. Unchanged

B. Reduced to half

C. Increases two fold

D. None of these

Answer: A

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26. The mole fraction of a solute in its one molal aqueous solution is :

A. 0.018

B. 0.027

C. 0.036

D. 0.048

Answer: A

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27. An ideal solution contains two volatile liquids $A(P^\circ = 100$ torr) and $B(P^\circ = 200$ torr). If mixture contain 1 mole of A and 4 moles of B then total vapour pressure of the distillate is :

A. 150 torr

B. 180 torr

C. 188.88 torr

D. 198.88 torr

Answer: C

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28. Identify the gas which is readily adsorbed by activated charcoal?

A. H_2

B. N_2

C. SO_2

D. O_2

Answer: C

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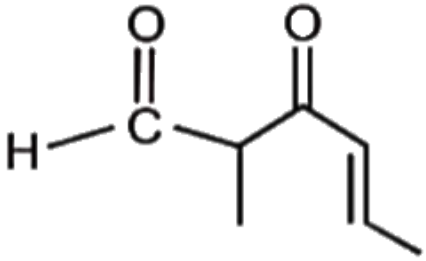
29. The IUPAC name of the compound



is _____.

A. 3 - Keto - 2- methylhex - 4- enal

B. 5-Formylhex - 2 - en - 3- one

C. 5 - Methyl - 4- oxothex - 2 - en - 5- al

D. 3-Keto-2-methylhex-5-enal

Answer: A

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30. each question contain STATEMENT-1(Assertion) and STATEMENT - 2 (reason). examine the statement carefully and work the correct answer according to the instructions given below :

STATEMEN1: For Adsorption $\Delta G, \Delta H, \Delta S$ all have -ve values.

STATEMENT-2: Adsoption is a exothermic process in which randomness decreases due to force of attraction between adsorbent and adsorbate.

A. Statement I is true, Statement II is also true and Statement II is the correct explanation of Statement I.

B. Statement I is true, Statement II is also true and Statement II is not the correct explanation of Statement I.

C. Statement I is true, Statement II is false

D. Statement I is false, Statement II is true.

Answer: A

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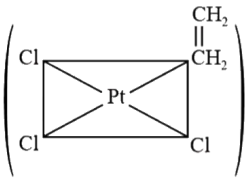
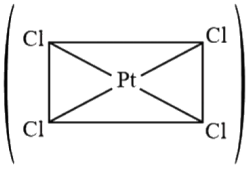
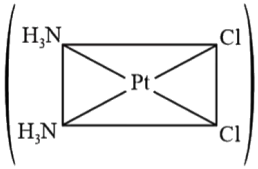
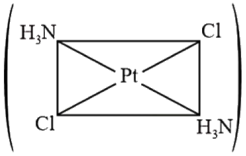
31. Which of the following is considered to be an anticancer species?

A. 

B. 

C. 

D. 

Answer: C

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32. The energy of an electron in first Bohr's orbit of H atom is $-13.6eV$. The energy value of electron in the first excited state of Li^{2+} is :

A. 27.2 eV

B. $-30.6eV$

C. 30.6 eV

D. $-27.2eV$

Answer: B

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33. The ratio among most probable velocity, mean velocity and root mean velocity is given by

A. $\sqrt{2}:\sqrt{3}:\sqrt{\frac{8}{\pi}}$

B. $\sqrt{2}:\sqrt{\frac{8}{\pi}}:\sqrt{3}$

C. $1:\sqrt{2}:\sqrt{3}$

D. $1:2:3$

Answer: B

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34. Which of the following has the lowest boiling point ?

A. p - Nitrophenol

B. m - Nitrophenol

C. o - Nitrophenol

D. Phenol

Answer: D

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35. The process of separation of racemic modifications into d and l enantiomers is called:

A. Resolution

B. Dehydration

C. Revolution

D. Dedydrohalogenation

Answer: A

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36. Bakelite and polythene are considered as an example of :

A. Thermosetting polymers

B. Elastomers and thermoplastic polymers

C. Thermoplastic polymers

D. Thermosetting and thermoplastic polymers

Answer: D

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37. Photochemical smog invovles

A. CH_4

B. CO_2

C. O_3

D. CO

Answer: C

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38. Which of the following statements is incorrect?

A. Different resonating structures contribute to the resonance hybrid in proportion of their energies.

B. Equivalent resonating structures result in higher resonance energy.

C. Resonating structures represent hypothetical molecules having no real existance.

D. Resonating structure are less stable than the resonance hybrid.

Answer: A

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39. In some solutions, the concentration of H_3O^+ remains constant even when small amounts of strong acid or strong base are added to them. These solutions are known as :

A. Ideal solutions

B. Colloidal solutions

C. True solutions

D. Buffer solutions

Answer: D

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40. Among the following, the narrow spectrum antibiotic is

A. Penicillin - G

B. Ampicillin

C. Amoxycillin

D. Chloramphenicol

Answer: A

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41. Which reaction is suitable for the preparation of α-chloroacetic acid?

A. Hell -Volhard - Zelinsky reaction

B. Stephen's reaction

C. Perkin's reaction

D. None of these

Answer: A

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42. A mixture of methane and ethane in the molar ratio of x:y has a mean molar mass of 20. what would be the mean molar mass, if the gases are mixed in the molar ratio of y:x?

A. 20

B. 26

C. 24

D. 15

Answer: B

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43. For a given reaction, energy of activation for forward reaction $\left(E_{af}\right.$ is 80 kJ mol^{-1}. $\Delta H = -40\text{kJ mol}^{-1}$ for the reaction. A catalyst lowers E_{af} to 20 kJ mol^{-1}. The ratio of energy of activation for reverse reaction before and after addition of catalyst is :

A. 1.0

B. 0.5

C. 1.2

D. 2.0

Answer: D

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44. Three faradays of electricity was passed through an aqueous solution of iron (II) bromide. The mass of iron metal (at mass 56) deposited at the cathode is:

A. 65

B. 84

C. 112

D. 168

Answer: B

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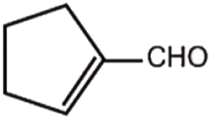
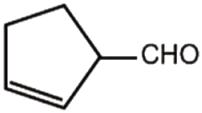
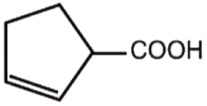
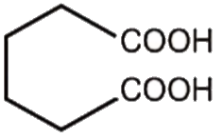
45. Cyclohexene on ozonolysis followed by reaction with zinc dust and water gives compound E. Compound E on further treatment with aqueous KOH yields compound F. Compound F is

A. 

B. 

C. 

D. 

Answer: A

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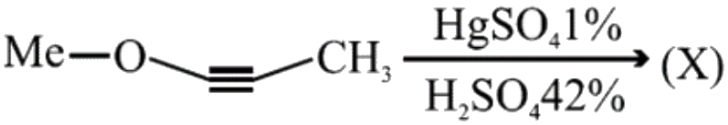
46. Complete the following reaction



A. X is an ester

B. X is a ketone

C. X is a vicinal diol

D. X is a carboxylic acid.

Answer: A

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47. The pH of $0.5M$ aqueous solution of HF $\left(K_a = 2 \times 10^{-4}\right)$ is

A. 2

B. 4

C. 6

D. 10

Answer: A

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48. A negatively charged sol can be formed by peptizing a solution of

A. $AglwithAgNO_3$

B. $AglwithKl$

C. $Fe(OH)_3$ with $FeCl_3$

D. Any of these

Answer: B

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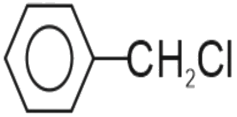
49. Which of the following compound is most rapidly hydrolysed by S_N1 mechanism?

A. $CH_3CH = CHCl$

B. $ClCH_2CH = CH_2$

C. 

D. $(C_6H_5)_3CCl$

Answer: D

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50. The destruction of the biological bature and activity of proteins by heat or chemical agent is called :

A. Dehydration

B. Denaturation

C. Denitrogenation

D. Deammination

Answer: B

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51. Which of the following cations is detected by the flame test?

A. K^+

B. Ba^{2+}

C. Sr^{2+}

D. Mg^{2+}

Answer: D

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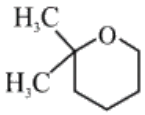
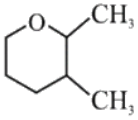
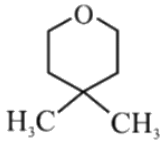
52. In the oxymercuration - demercuration of the following compound

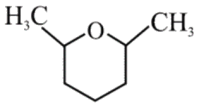
$$H_2C = CH - \overset{CH_3}{\underset{|}{CH}} - CH_2CH_2CH_2Oh \xrightarrow[NaBH_4]{(CH_3COO)_2Hg} \text{Products}$$

The major product is expected to be

A. 

B. 

C. 

D. 

Answer: B

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53. There is no $d-d$ transition in Cu^{+} but Cu_2O is coloured due to

A. The presence of unpaired electron

B. The presence of coloured O^{2-} ion

C. Charge transfer from oxygen to metal

D. Charge transfer from metal to oxygen

Answer: C

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54. The degree of hydrolysis of which of the following salt is independent of the following salt is independent of the concentration of salt solution?

A. CH_3COONa

B. CH_3COONH_4

C. NH_4Cl

D. $NaCl$

Answer: B

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55. $CH_3CH = CHCHO$ is oxidised to $CH_3 - CH = CHCOOH$, using oxidising agent as :

A. Alkaline $KMnO_4$

B. Selenium dioxide

C. Osmium tetraoxide

D. Ammonical $AgNO_3$

Answer: D

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56. Likely bond angles of SF_4 molecule are :

A. $120^\circ, 180^\circ$

B. $45^\circ, 118^\circ$

C. $117^\circ, 92^\circ$

D. $89^\circ .117^\circ$

Answer: D

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57. k_2CO_3 cannot be prepared by solvay process because

A. K_2CO_3 is more soluble

B. K_2CO_3 is less soluble

C. $KHCO_3$ is more soluble than $NaHCO_3$

D. $KHCO_3$ is less soluble than $NaHCO_3$

Answer: C

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58. Metal $M + \text{air} \xrightarrow{\delta} A \xrightarrow{H_2O} B \xrightarrow{HCl}$ White fumes, Metal M can be:

A. Le, Mg or Al

B. Li, Al or K

C. Na, K or Mg

D. Li, Na or K

Answer: A

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59. Equal weight of CH_4 and H_2 are mixed in an empty container at $25^\circ C$. The fraction of the total pressure exerted by H_2 is

A. $1/2$

B. $8/9$

C. $1/9$

D. $16/17$

Answer: B

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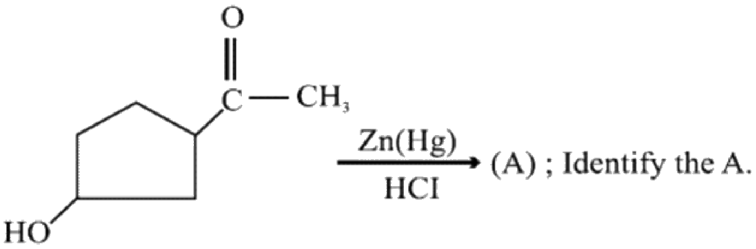
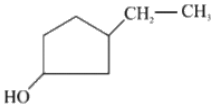
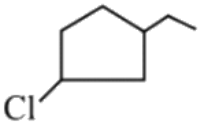
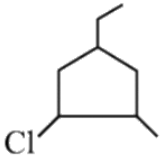
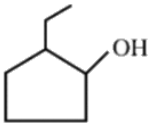
60. 

A. 

B. 

C. 

D. 

Answer: B

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61. The correct statement is

A. Glucose and mannose are C - 3 epimers

B. Glucose and Galactose are $C-4$ epimers

C. Glucose and frucotse are anomers

D. $\alpha-D-$ glucose and $\beta-D-$ glucose are enantiomers

Answer: B

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62. The bond dissociation energies for Cl_2, I_2 and ICl are 242.3, 151.0 and $211.3 kJ/\text{mole}$ respectively. The enthalpy of sublimation of iodine is $62.8 kJ/\text{mole}$. What is the standard enthalpy of formation of $ICI(g)$ nearly equal to

A. $-211.3\ \text{kJ/mol}$

B. -14.6kJ/mol

C. -16.8kJ/mol

D. $33.5\ \text{kJ/mol}$

Answer: C

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63. The bond length the species O_2, O_2^+ and O_2^- are in the order of

A. $O_2^{2-} > O_2^{2-} > O_2 > O_2^+$

B. $O_2^+ > O_2 > O_2^- < O_2^{2-}$

C. $O_2 > O_2^- > O_2^{2-} > O_2^+$

D. $O_2^- > O_2^{2-} > O_2^+ > O_2$

Answer: A

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64. Which reaction gives colloidal solution

A. $Cu + HgCl_2 \rightarrow CuCl_2 + Hg$

B. $2HNO_3 + 3H_2S \rightarrow 3S + 4H_2O + 2NO$

C. $2Mg + CO_2 \rightarrow 2MgO + C$

D. $Cu + CuCl_2 \rightarrow Cu_2Cl_2$

Answer: B

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65. How much will the reduction potential of a hydrogen electrode change when its solution initially at $pH = 0$ is neutralized to $pH = 7$?

A. Increase by 0.059 V

B. Decrease by 0.059 V

C. Increase by 0.41 V

D. Decrease by 0.41 V

Answer: D

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66. Formic acid and formaldehyde can not be distinguished by treating with

A. Benedict's soltuion

B. Tollen's reagent

C. Fehling's solution

D. $NaHCO_3$

Answer: D

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67. $5mol$ of an ideal gas at $27^\circ C$ expands isothermally and reversibly from a volume of $6L$ to $60L$. The work done in kJ is

A. $-14.7\ \mathrm{KJ}$

B. $-28.72\ \mathrm{KJ}$

C. $27.72\ \mathrm{KJ}$

D. $-56.72\ \mathrm{KJ}$

Answer: B

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68. Which of the following will not undergo aldol condensation-

A. Acetaldehyde

B. Propanaldehyde

C. Benzaldehyde

D. Trideuteroacetaldehyde

Answer: C

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69. 90 g non - volatile, non - dissociative solution is added to 1746 g water to form a dilute, ideal solution. The vapour

pressure of water has decreased from 300 mm of Hg to 291 mm of Hg. The molecular weight of solute is.

A. 90

B. 60

C. 30

D. 15

Answer: C

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70. An aqueous solution containing $1M$ each of $Au^{3+}, Cu^{2+}, Ag^{+}, Li^{+}$ is being electrolysed by using inert electrodes. The value of standard potentials are :

$E^{\circ}_{Ag^{+}/Ag} = 0.80V, E^{\circ}_{Cu^{+}/Cu} = 0.34V$ and

$E^{\circ}_{Au^{+3}/Au} = 1.50, E^{\circ}_{Li^{+}/Li} = -3.03V$

will increasing voltage, the sequence of deposition of metals on the cathode will be :

A. Li, Cu, Ag, Au

B. Cu, Ag, Au

C. Au, Ag, Cu

D. Au, Ag, Cu, Li

Answer: C

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71. By which process Pb and Sn are extracted respectively are:

A. Carbon reduction - self reduction

B. Self reduction - carbon reduction

C. Electrolytic reduction - cyanide process

D. Cyanide process - electrolytic reduction

Answer: B

Watch Video Solution

72. Which of the following is not cleaved by HI even at 525K ?

A. $C_6H_5OCH_3$

B. $C_6H_5OC_6H_5$

C. $C_6H_5OC_3H_7$

D.

Answer: B

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73. The Brownian motion is due to :

A. Temperature fluctuation within the liquid phase

B. Attraction and repulsion between charges on the colloidal particles

C. Impact of the molecules of the dispersion medium on the colloidal particles

D. Convectional currents

Answer: C

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74. $Ca_3(PO_4)_2$ is :

A. $Ca_3(PO_4)_3 + C + MgO \xrightarrow{\Delta}$

B. $Ca_3(PO_4)_2 + C + SiO_2 \xrightarrow{\Delta}$

C. $Ca_3(PO_4)_2 + C + ZnO\Delta$

D. $Ca_3(PO_4)_2 + C + FeO\Delta$

Answer: B

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75. The number of possibel enantiomeric paira that can be produced during monochlorination of 2-methyl butane is :

A. 2

B. 3

C. 4

D. 1

Answer: A

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76. At $25^{\circ}C$ the enthalpy change, for the ionization of trichloroacetic acid is $+6.3\,\mathrm{kJ\,mol^{-1}}$ and the entropy change, is $+0.0084\,\mathrm{kJ\,mol^{-1}K^{-1}}$. Then pKa of trichloro acetic acid is

A. 1.74

B. 2.52

C. 0.66

D. 4.72

Answer: C

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77. In a half reaction, nitrate is reduced by $6e^-$ reduction to x as follows

$7H^+ + NO_3^- + 6e^- \rightarrow 2H_2O + x$. The 'x' in the reaction is

A. NO

B. NH_2NH_2

C. NH_3

D. NH_2OH

Answer: D

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78. Number of identical Cr-O bonds in dichromate ion $Cr_2O_7^{2-}$ is :

A. $4Cr - O$ bonds are equivalent

B. $6Cr - O$ bonds are equivalent

C. All $Cr - O$ bonds are equivalent

D. None of $Cr - O$ bonds are equivalent

Answer: B

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79. An alkene (A) ozonolysis gives a mixture of two carbonyl compounds. Mixture on Clemmensen reduction gives just

one alkane (B). (B) is the lowest lakane which in pure form can not be prepared by standard Wurtz method. (A) is

A. $MeCH = CHMe$

B. $MeCH_2CH = CMe_2$

C. $MeCH_2CH_2CH_2CH = CEt_2$

D. $MeCH_2CH_2CH = C(Me)Et$

Answer: B

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80. Which statement is NOT correct ? (According to Valence bond theory)

A. A sigma(σ) bond is weaker than a $\pi -$ bond

B. A sigma bond is stronger than a $\pi -$ bond

C. A double bond is stronger than a single bond

D. A double bond is shorter than a single bond

Answer: A

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81. When H_2O_2 is added to a acidified solution of $K_2Cr_2O_7$:

A. solution turns green due to formation of Cr_2O_3

B. solution turns yellow due to formation of K_2CrO_4

C. a deep blue - violet coloured compound $CrO(O_2)_2$ is formed

D. solution gives the green precipiate of $Cr(OH)_3$

Answer: C

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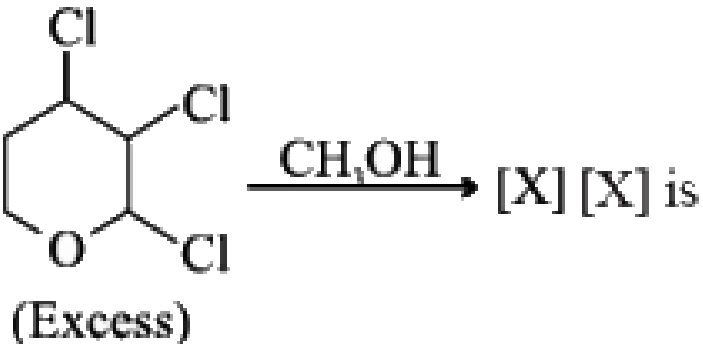
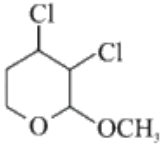
82.



A.



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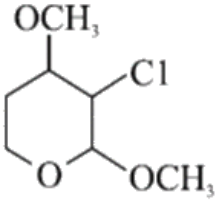

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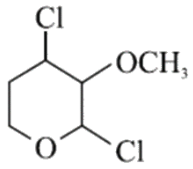
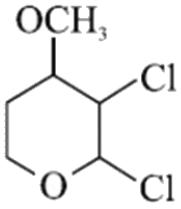


D.



Answer: A

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83. A cation is in the centre touches three anions. Assume that the anions also touch each other. The limiting radius ratio, r^+ / r^- is

A. 0.1547

B. 0-.4141

C. 0.7322

D. 0.2252

Answer: A

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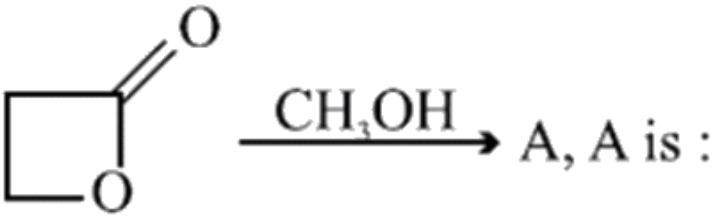
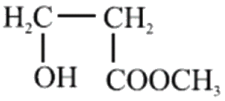
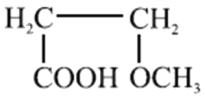
84. Complete the following reaction



A. 

B. 

C. Both are correct

D. None of these

Answer: A

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85. The rate constant of a reaction is $1.5 \times 10^{-4} s^{-1}$ at $27\&(\circ)C$ and $3 \times 10^{-4} s^{-1}$ at $127^{\circ} C$. The Ea is

A. 1.663×10^{3} Cal

B. 3.326×10^{3} cal

C. 8.314×10^3 cal

D. 2.255×10^3 cal

Answer: A

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86. In a redox reaction, H_2O_2 oxidizes $K_4\left[Fe(CN)_6\right]$ into Fe^{3+}, CO_3^{2-} and NO_3^- ions in acidic medium, then how many moles of H_2O_2 will react with 1 mole of $K_4\left[Fe(CN)_6\right]$

A. 5 moles

B. 9 moles

C. 8 moles

D. 30.5 moles

Answer: D

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87. Unknown salt $'A' + K_2Cr_2O_7 + \text{conc. } H_2SO_4 \rightarrow$ Reddish brown fumes. Which is the correct statement regarding the above observation?

A. It confirms the presence of Cl^- ions

B. It confirms the presence of Br^- ions

C. It confirms the presence of both ions

D. It neither confirms the presence of Cl^-, nor Br^- ions unless it is passed through $NaOH$ solution

Answer: D

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88. A certain buffer solution contains equal concentartion of X^{Θ} and HX. The K_b for X^{Θ} is 10^{-10}. The pH of the buffer is

A. 4

B. 7

C. 10

D. 4

Answer: A

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89. Which of the following drugs is a tranquilizer and sedative

A. Sulphadiazine

B. Papaverine

C. Equanil

D. Mescaline

Answer: C

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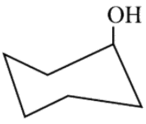
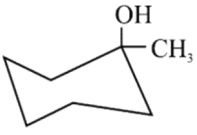
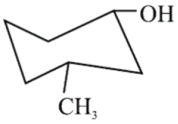
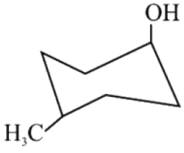
90. Which of the following react with HBr at faster rate ?

A. 

B. 

C. 

D. 

Answer: B

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91. Consider the following E° values:

$E^{\circ}_{Li^{+}|Li} = -3.05V, E^{\circ}_{Cu^{2+}|Cu} = +0.34V$

Under similar conditions, the potential for the reaction $Cu + 2Li^+ \rightarrow Cu^{2+} + 2Li$, is

A. $-3.39V$

B. $+3.39V$

C. $-2.69V$

D. $+2.69V$

Answer: A

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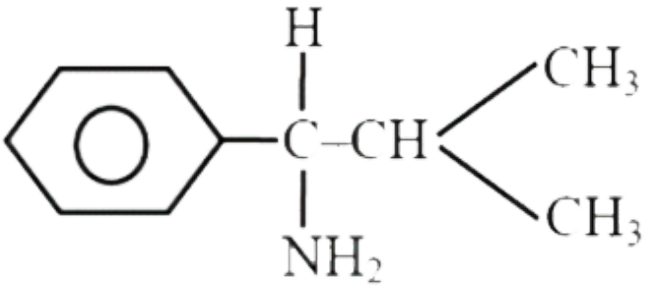
92. The IUPAC name of the compound is :



A. 1 - amino -1-phenyl -2- methylpropane

B. 2 - methyl-1-phenylpropan -1- amine

C. 2 - methyl -1- amino -1- phenylpropane

D. 1 -isopropyl -1- phenylmethyl amine

Answer: B

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93. Select the correct order for the given properties -

(I) Thermal stability:

$BaSO_4 > SrSO_4 > CaSO_4 > MgSO_4$

(II) Basic Nature :

$ZnO > BeO > MgO > CaO$

(III) Solubility in water :

$LiOH > NaOH > KOH > RbOH$

(IV) Melting point :

$NaCl > KCl > RbCl > LiCl$

A. I, IV

B. I, II and IV

C. II, III

D. All are correct

Answer: A

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94. The reaction with incorrect major product is -

A. $HC \equiv CH \xrightarrow{47\%\, H_2SO_4} CH_3CHO$

B. $Me_2CHCl \xrightarrow{Ag_2O} Me_2CHOH$

C. $C_6H_6OH + CH_2N_2 \xrightarrow{BF_3} C_6H_5OCH_3$

D. $CH_3CBr_2CBr_2CH_3 + 2Z \xrightarrow{\text{EtOH}} CH_3C \equiv \text{CCH}_3$

Answer: A

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95. Which of the following represent the cosolvating effect?

A. The acidic strength HF increases in the presence of BF_3

B. The acidity of NH_4^+ is enhanced in the presence of Cu^{2+}

C. The acidity of H_3BO_3 is increased in the presence of glycerol

D. All of the given are examples of cosolvating effect

Answer: D

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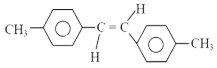
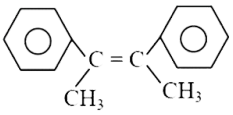
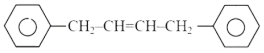
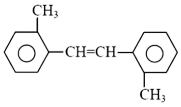
96. An alkene $(A)C_{16}H_{16}$ on ozonolysis gives only one product $(B)(C_8H_8O)$. Compound (B) on reaction with

NH_2OH followed by reaction with H_2SO_4, Δ gives N - methyl benzamide the compound 'A' is -

A. 

B. 

C. 

D. 

Answer: B

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97. Match List - I with List - II and select the correct answer using codes given below the lists -

List - 1 (Metal ions)	List - II Magnetic moment (B.M.)
$(1) Cr^{3+}$	$(A) \sqrt{35}$
$(2) Fe^{2+}$	$(B) \sqrt{30}$
$(3) Ni^{2+}$	$(C) \sqrt{24}$
$(4) Mn^{2+}$	$(D) \sqrt{15}$
	$(E) \sqrt{8}$

A. 1 - (B), 2 - (C), 3 - (E), 4 - (D)

B. 1 - (B), 2 - (C), 3 - (E), 4 - (A)

C. 1 - (D), 2 - (C), 3 - (E), 4 - (A)

D. 1 - (D), 2 - (E), 3 - (C), 4 - (A)

Answer: C

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98. Which is an incorrect statement ?

A. Diamond is unaffected by conc. Acids, but graphite reacts with hot conc. HNO_3 forming mellitic acid $C_6(COOH)_6$

B. CO is toxic because it forms a complex with hemoglobin in the blood

C. C_3O_2, carbon suboxide, is a foul - smelling gas

D. $COCl_2$ is called tear gas.

Answer: D

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99. Which test is used to distinguish aldehydes from Ketones?

A. Tollen's test

B. Fehling's test

C. Both (A) & (B)

D. None of the above

Answer: C

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100. Greater is the protective power of lyophilic colloid

A. Lesser is its gold number

B. Greater is its gold number

C. Either of the above

D. None of these

Answer: A

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101. Acrylic acid reacts with HBr to give :

A. $Br_2 - CH_2 - CH(Br) - COOH$

B. $Br - CH_2 - CH_2 - COOH$

C. $CH_2 = CH - COBr$

D. $CH_3 - CH(Br) - COOH$

Answer: B

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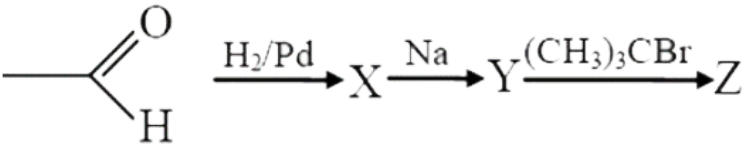

102.

In this sequence z is mainly -

A. Isobutylene

B. Isobutane

C. Isobutyl acetate

D. Ethyl tert. Butyl ether

Answer: A

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103. Factors affecting K_c is -

A. Increasing concentration of the reactant

B. Presence of catalyst

C. Method of writing balanced equation (or stoichiometry of reaction)

D. Time taken by the chemical reaction

Answer: C

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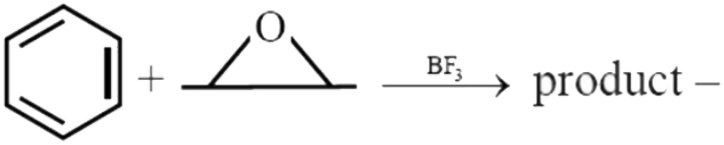
104.



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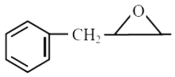
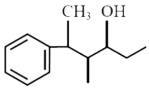
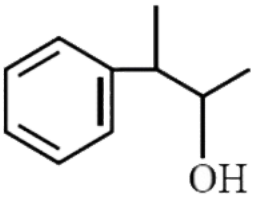
A. 

B. 

C. 

D. None of the above

Answer: C

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105. $CH_3CONH_2 \& HCONHCH_3$ are called

A. Position isomers

B. Chain isomers

C. Tautomers

D. Functional isomers

Answer: D

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106. For the reaction : $2N_2O_5 \rightarrow 4NO_g + O_2(g)$ if the concentration of NO_2 increases by $5.2 \times 10^{-3}M$ in 100 sec, then the rate of reaction is :

A. $1.3 \times 10^{-5}Ms^{-1}$

B. $0.5 \times 10^{-4}Ms^{-1}$

C. $2 \times 10^{-3}Ms^{-1}$

D. $2.5 \times 10^{-5}Ms^{-1}$

Answer: A

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107. For the formation of terylene the number of moles of ehtylene glycol required per mole of terephthalic acid is

A. 1

B. 2

C. 3

D. 3

Answer: A

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108. In the laboratory, H_2O_2 is prepared by the action of

A. MnO_2 is added to dilute cold H_2SO_4

B. BaO_2 is added to CO_2 bubbling through cold water

C. PbO_2 is added to an acidified solution of $KMnO_4$

D. Na_2O_2 is added to boiling water

Answer: B

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109. At certain Hill-station pure water boils at $99.725^\circ C$. If K_b for water is $0.513^\circ Ckgmol^{-1}$, the boiling point of $0.69m$ solution of urea will be:

A. $100.074^{\circ} C$

B. $103^{\circ} C$

C. $100.359^{\circ} C$

D. Un predicatable

Answer: A

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110. Which of the following is a water soluble vitamin ?

A. Retinol

B. Riboflavin

C. Tocopherol

D. Phylloquinone

Answer: B

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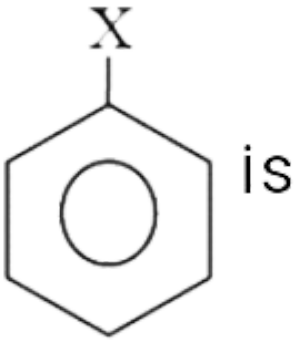
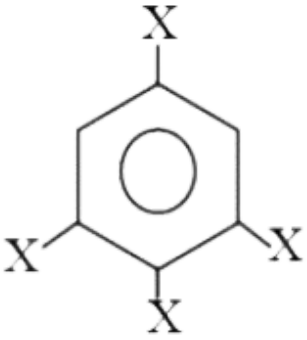
111. The dipole moment of  is 1.5 D.



The dipole moment of _____ is

A. 1 D

B. 1.5 D

C. 2.25 D

D. 3 D

Answer: B

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112. The statement which is false among the following is

A. Silicon carbide has a three dimensional structure with each silicon and carbon atom being tetrahedrally surrounded by four atoms of the other kine

B. Carbon can form $C = S$ bond because C has the ability to form $d\pi - d\pi$ bond

C. Boron nitride has satructure similar to that of graphite

D. Graphite conducts electricity because of availability of delocalised π electrons

Answer: B

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113. Which of the following compounds will exhibit geometrical isomerism?

A. 1 -phenyl -2- butene

B. 3-phenyl -1- butene

C. 2 - phenyl -1- butene

D. 1, 2-diphenyl -1- propene

Answer: A

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114. Select the correct matching -

List - I (Metal ions)	List - II Magnetic moment (BM)
$(1) XeF_4$	(A) Pyramidal
$(2) XeF_6$	(B) T-shape
$(3) XeO_3$	(C) Distorted octahedral
$(4) XeOF_2$	(D) Square planar

A. 1 - D, 2 - C, 3 - A, 4 - B

B. 1 - A, 2 - B, 3 - C, 4- D

C. 1 - B, 2 - B, 3 - C, 4 - D

D. 1 - C, 2 - A, 3 - A, 4 - B

Answer: A

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115. The no. of σ bonds in the compound P_4O_{10} is -

A. 1

B. 4

C. 3

D. 16

Answer: D

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116. $CH_3CH_2COOH \xrightarrow{\text{Red P/HI}}$ is $\xrightarrow{\text{alc. KOH}}$Product . Product

A. $CH_2 = CHCOOH$

B. CH_2CH_2OH

C. CH_3CH_2CN

D. $CH_2CHClCOOH$

Answer: A

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117. In a solid AB having the $NaCl$ structure, A atom occupies the corners of the cubic unit cell. If all the face-centred atoms along one of the axes are removed, then the resultant stoichiometry of the solid is

A. AB_2

B. A_2B

C. A_4B_3

D. A_3B_4

Answer: D

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118. Consider the following reaction $CH_3Br + Mg \xrightarrow{\text{ether}} A \xrightarrow{\text{HCHO}} B \xrightarrow{\text{HOH}} C$. Compound C is

A. Acetic acid

B. Acetaldehyde

C. Ethyl alcohol

D. Formic acid

Answer: C

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119. One among the following is an incorrect statement -

A. Molality of a solution is dependent on the temperature

B. Molarity of a solution is dependent on the temperature

C. Normality of 0.5 M aqueous solution of $H_2C_2O_4.2H_2O$ is 1 N

D. Molality of a solution relates moles of solute and mass of solvent

Answer: A

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120. N_2 and O_2 are converted into monocations, N_2^+ and O_2^+ respectively. Which of the following is wrong?

A. In N_2^+, the $N - N$ bond weakens

B. In O_2^+, the $O - O$ bond order increases

C. In O_2^+, the paramagnetism decreases

D. N_2^+ becomes diamagnetic

Answer: D

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121. Which of the following compounds on hydrolysis gives propyne?

A. CaC_2

B. Mg_2C_3

C. Al_4C_3

D. Be_2C

Answer: B

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122. Xenon trioxide (XeO_3) forms xenate ion in alkaline medium.

$$XeO_3 + NaOH \rightarrow Na[HXeO_4]$$

But the xenate ions slowly disproportionate in alkaline solution as

$$Na[HXeO_4] + NaOH \rightarrow Z + Xe + O_2 + H_2O$$

The compound Z is expexted to be

A. Na_2XeO_3

B. Na_2XeO_4

C. Na_4XeO_6

D. Na_4XeO_4

Answer: C

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123. Mn^{2+} can be converted into Mn^{7+} by reacting with

A. SO_2

B. Cl_2

C. PbO_2

D. $SnCl_2$

Answer: C

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124. Base catalysed condensation between the following compounds followed by dehydration gives methyl vinly ketone :

A. $HCHO$ and CH_3COCH_3

B. $HCHO$ and CH_3CHO

C. Two molecules of CH_3CHO

D. Two molecules of CH_3COCH_3

Answer: A

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125. In which of the following transition, the wavelength will be minimum :

A. n = 6 to n = 4

B. n = 4 to n = 2

C. n = 3 to n = 1

D. n = 2 to n = 1

Answer: C

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126. The increasing order of the rate of HCN addition compound $A - D$ is

A. $HCHO$

B. CH_3COCH_3

C. $PhCOCH_3$

D. $PhCOPh$

A. $A < B < C < D$

B. $D < B < C < A$

C. $D < C < B < A$

D. $C < D < B < A$

Answer: C

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127. CH_3NH_2 (0.12 mole, pK_b=3.3) is added to 0.08 moles of HCl and the solution is diluted to on litre, resulting pH of solution is :

A. 10.7

B. 3.6

C. 10.4

D. 11.3

Answer: C

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128. 64 g non - volatile solute is added to 702 g benzene. The vapour pressure of benzene has decreased from 200 mm of Hg to 180 mm of Hg. Molecular weight of the solute is

A. 128

B. 64

C. 96

D. 256

Answer: B

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129. Malonic acid and succinic acids are distinguished by:

A. Heating

B. $NaHCO_3$

C. Both (A) & (B)

D. None of these

Answer: A

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130. Match the geometry (given in column A) with the complexes (given in column B) in :

Geometry : A	Complex : B
I Octahedral	$(P)\left[Ni(CN)_4\right]^{2-}$
II Square planar	$(Q)Ni(CO)_4$
III Tetrahedral	$(R)\left[Fe(CN)_6\right]^{4-}$

A. I - P, II - Q, III - R

B. I - R, II - P, III - Q

C. I - R, II - Q, III - P

D. I - Q, II - P, III - R

Answer: B

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131. You are given a mixture of ZnS and PbS. The two compounds can be separated by

A. froth flotation on adding $NaCN$

B. electromagnetic separation

C. handpicking

D. leaching with $NaCN$

Answer: A

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132. A salt of $NaX \xrightarrow{MgCl_2}$ white ppt. on boiling. Thus, anion X is :

A. HCO_3^-

B. NO_3^-

C. CO_3^{2-}

D. SO_4^{2-}

Answer: A

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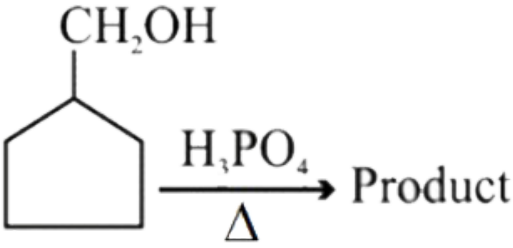
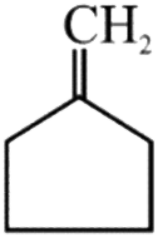
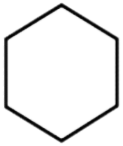
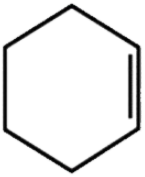
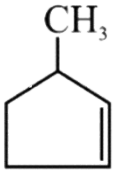
133. The product in the given reaction is :



A. 

B. 

C. 

D. 

Answer: C

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134. $CuSO_4$ reacts with excess KCN to form

A. $Cu(CN)_2$

B. $Cu(NCN)_2$

C. $K_2[Cu(CN)_4]$

D. $K_3[Cu(CN)_4]$

Answer: D

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135. If 30 ml of H_2 and 20 ml of O_2 react to form water, what is left at the end of the reaction ?

A. 10 mL of H_2

B. 5 mL of O_2

C. 10 mL of O_2

D. 5 mL of O_2

Answer: D

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