CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 88

Chemistry

1. A forms ccp lattice B occupy half of the octahedral voids and O occupy all the tetrahedral voids. Calculate formula-

A. $X_5Y_4Z_8$

B. $X_8Y_4Z_5$

C. X_2YZ_2

D. XYZ_2

Answer: A

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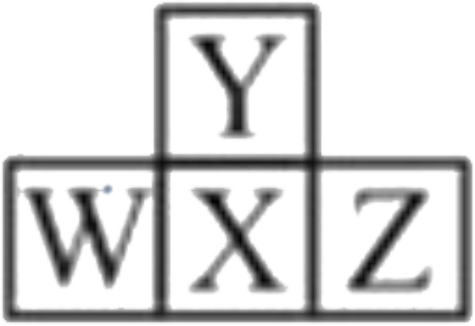
2. Consider the following four elements, which are represented according to long form of periodic table



Here W, Y and Z left, up and right elements with respect to the element 'X' and 'X' belongs to 16^{th} group and 3^{rd} period. Then according to given information the incorrect statement regarding given elements is

A. Maximum electronegativity : Y

B. Maximum catenation property : X

C. Maximum electron affinity : Z

D. Y exhibits variable covalency

Answer: D

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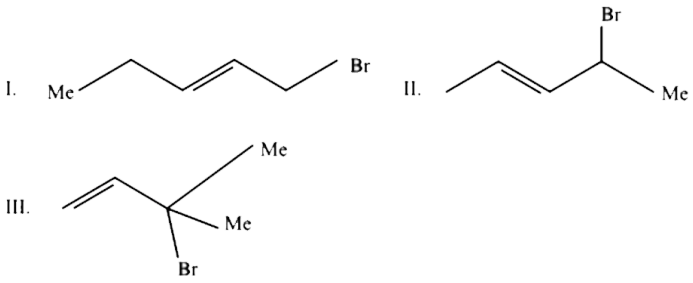
3. Which of the following halides will be most reactive in S_N1 reaction and S_N2 reactions, respectively



A. (I), (II)

B. (II), (I)

C. (I), (III)

D. (III), (I)

Answer: D

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4. Incorrect statement is

A. $MgO > AlF_3 > MgF_2$: Lattice energy

B. $Ni > Na > Mg$: Electron affinity

C. $SF_6 > PF_5 > SiF_4$: Lewis acidic character

D.

$SiCl_4 > SiBr_4 > SiI_4$: Decreasing order of electronegativity of Si

Answer: C

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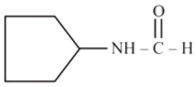
5. Complete the following reaction

A. 

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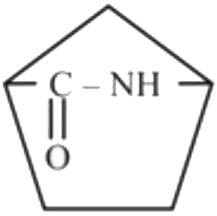
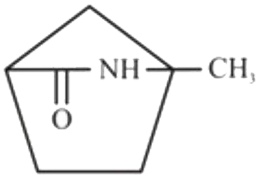
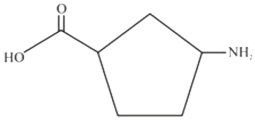


C.



D.



Answer: B

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6. Determine the value of equilibrium constant for the reaction $2Br^-(aq) + I_2(s) \Leftrightarrow Br_2(l) + 2I^-(aq) E^\circ_{\text{cell}} = -0.54v$

A. 5.01×10^{-19}

B. 18.3

C. 1.7×10^{54}

D. 1.9×10^{18}

Answer: A

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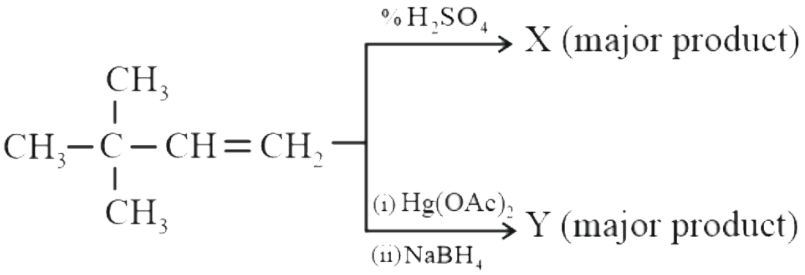
7. Consider the following reaction



[X] and [Y] respectively be

A. 2, 3 - dimethyl -2- butanol and 3, 3 - dimethyl - 2 - butanol

B. 3, 3 - dimethyl -2- butanol and 3, 3 - dimethyl -1- 2 - butanol

C. 3, 3 - dimethyl -2- butanol and 3, 3 - dimethyl - 3 - butanol

D. 2, 3 - dimethyl -2- butanol and 2, 3 - dimethyl -2- butanol

Answer: A

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8. The reaction sequence

$$C_6H_5 - CH = CH - Ch \xrightarrow{[X]} C_6H_5 - CH_2 - CH_2 - CH_2OH$$

[X] will be

A. $LiAlH_4$

B. $NaBH_4$

C. Aluminium isopropoxide

D. All of these

Answer: A

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9. The correct increasing order of extent of hydrolysis is

A. $CCl_4 < MgCl_2 < AlCl_3 < SiCl_4 < PCl_5$

B. $CCl_4 < AlCl_3 < MgCl_2 < PCl_5 < SiCl_4$

C. $CCl_4 < SiCl_4 < PCl_5 < AlCl_3 < MgCl_2$

D. $CCl_4 < PCl_5 < SiCl_4 < AlCl_3 < MgCl_2$

Answer: A

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10. Let a fully charged lead storage battery contains 1.5 L 5 M H_2SO_4. What will be the concentration of H_2SO_4 in the battery after 2.5 ampere current is drawn from the battery for 6 hour?

A. 4.626 M

B. 0.1865 M

C. 0.373 M

D. 9.627 M

Answer: A

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11. Three sparingly soluble salts that have same solubility products as given below

I. A_2X II. AX III. A_2X_3

Their solubilities in a saturated solution will be such that

A. $III > II > I$

B. III gt I gt II

C. II gt III gt I

D. II gt I gt III

Answer: A

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12. Correct sequence of CO bond order in given compounds is:

(P) $Fe(CO)_5$

(Q) CO

(R) $H_3B \leftarrow CO$

(S) $\left[Mn(CO)_5\right]^-$

A. $P > R > S > Q$

B. $S > P > R > Q$

C. $Q > S > P > R$

D. $R > Q > P > S$

Answer: D

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13. Give the correct order of initials T or F for following statements. Use T if statements is true and F if it is false.

(i) In gold schmidt thermite process aluminium acts as a reducing agent.

(ii) Mg is extracted by electrolysis of aq. solution of $MgCl_2$.

(iii) Extraction of Pb is possible by carbon reduction method

(iv) Red Bauxite is purified by Serpeck's process.

A. TTTF

B. TFFT

C. FTTT

D. TFTF

Answer: D

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14. In the given reaction

$$CH_2 - cH_2 - \overset{O}{\overset{||}{C}} - CH_2COOC_2H_5 \xrightarrow{[X]} (A) \xrightarrow[(ii)\, H_2O/H^{\oplus}]{(i)\, LiAlH_4} CH_3 - CH_2 - \overset{O}{\overset{||}{C}}$$

[X] will be

A. $HCHO$

$CH_2 - OH$

B. $|$, $H^{\oplus}$

CH_2OH

$CH_2 - OH$

C. $|$, $OH^{\oplus}$

CH_2OH

D. HCN

Answer: B

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15. Volume of 0.1 M $K_2Cr_2O_7$ required to oxidize 35 mL of 0.5 M $FeSO_4$ solution is

A. 26.2 mL

B. 175 mL

C. 185 mL

D. 145 mL

Answer: A

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16. The correct order of increasing solubility in water is:

A. $KF < NaF < LiF$

B. $NaHCO_3 < KHCO_3 < RbHCO_3$

C. $K_2CO_3 < Na_2CO_3 < Li_2CO_3$

D. $LiNO_3 < NaNO_3 < KNO_3$

Answer: B

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17. In the given reaction sequence

$$C_6H_5CHO + CH_3 - NO_2 \xrightarrow{(i)\,NaOH\,(ii)\,\Delta} [X]$$

[X] will be

A. $C_6H_5 - CHOH - CH_2 - CHO$

B. $C_6H_5CH_2OH$

C. $C_6H_5 - COOH$

D. $C_6H_5 - CH = CH - NO_2$

Answer: D

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18. For $(A) + K_2CO_3 + air \xrightarrow{Heat} (B)$

$(B) + CI_2 \rightarrow (C)$pink

Which of the following is correct ?

A. $X = black, \mathrm{MnO\_(2)}, Y = Blue, K_2CrO_4, Z = KMnO_4$

B. $\mathrm{X = green =,}\ \ Cr_2O_3, \mathrm{Y = Yellow,}\ \ K_2CrO_4, Z = K_2Cr_2O_7$

C. $\mathrm{X = black,}\ \ MnO_2, \mathrm{Y = green,}\ \ K_2MnO_4, Z = KMnO_4$

D. $\mathrm{X = black,}\ \ Bi_2O_3, \mathrm{Y = colourless}\ \ KBiO_2, Z = KBiO_3$

Answer: C

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19. Consider the following carbanions

$(i)CH_3 - \overset{\ominus}{C}H_2 \quad (ii)CH_2 = \overset{\ominus}{C}H \quad (iii)CH \equiv \overset{\ominus}{C}$

Correct order of stability of these carbanions in decreasing order is

A. $1 > 2 > 3$

B. $2 > 1 > 3$

C. $3 > 2 > 1$

D. $3 > 1 > 2$

Answer: C

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20. The degree of dissociation $'\alpha'$ of the reaction

$N_2O_4(g) \Leftrightarrow 2NO_2(g)$

Can be related of K_p as [Given : Total pressure at equilibrium = P]

A. $\alpha = \dfrac{\frac{Kp}{p}}{4 + \frac{Kp}{p}}$

B. $\alpha = \dfrac{Kp}{4 + Kp}$

C. $\alpha = \left[\dfrac{K_p / P}{4 + K_p / P}\right]^{1/2}$

D. $\alpha = \left[\dfrac{K_p}{4 + K_p}\right]^{1/2}$

Answer: C

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21. The wave function orbital of H-like atoms is given as under

$$\psi_{2s} = \frac{1}{4\sqrt{2\pi}} Z^{3/2} (2 - Zr)^{Zr/2}$$

Given that the radius is in $\mathring{A}$ then which of the following is the radius for nodal surface for He^{Θ} ion ?

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22. At 273 K one atm, 'a' litre of N_2O_4 decomposes to NO_2 as : $N_2O_4(g) \Leftrightarrow 2NO_2(g)$. To what extent has the decomposition proceeded when he original volume is $25\ \%$ less then that of existing volume ?

[Report your answer up to decimal places.]

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23. The energy released during conversion of million atoms of iodine in gaseous state to iodide ions in gaseous state is $4.9 \times 210^{-13} J$. What is the electron gain enthalpy in eV/atom.

[Report your answer by rounding it up to nearest whole number]

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24. The Henry's law constant for the solubility of N_2 gas in water at 298 K is $1 \times 10^{-5}\ \text{atm}$. The mole fraction of N_2 in air in 0.8. If the number of moles of N_2 of air dissolved in 10 moles of water at 298 K and 5 atm x. 10^{-4}. Find the value of x.

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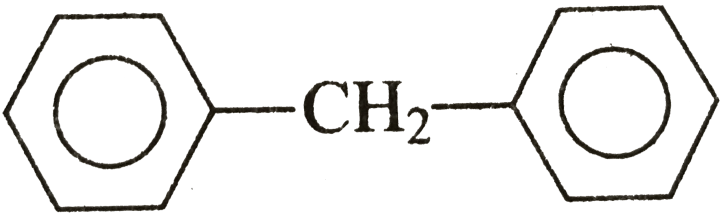
25. How many structural isomers are possible when one of the hydrogen in compound given below is replaced by chlorine atom



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