CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 78

Chemistry

1. Which of the following gives the molarity of a $17.0\,\%$ by mass solution of sodium acetate,$CH_3COONa(FM = 82.0a\mu)$ in water? Given the density is 1.09 g/mol.

A. $2.26 \times 10^{-6}M$

B. 0.207M

C. 2.07M

D. 2.26M

Answer: D

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2. A cylinder of compressed gas that bears no label is supposed to contain either ethane or ethene. Combustion of the sample shows that $16cm^3$ of the gas require $48cm^3$ of oxygen for complete combustion. This shows that the gas is

A. only ethane

B. only ethene

C. $1:1$ mixtures of two gases

D. some unknown mixture of the two gases

Answer: B

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3. Among the following, the reaction that is accompanied by a decrease in the entropy is

A. $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$

B. $C_6H_{12}O_6(s) + 6O_2(g) \rightarrow 6CO_2(g) + 6H_2O(l)$

C. $PCl_5(s) \rightarrow PCl_3(l) + Cl_2(g)$

D. $2H_2O(l) \rightarrow 2H_2 + O_2(g)$

Answer: A

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4. What is the order of reactivity of these alkenes

$(CH_3)_2C = CH_2(I), CH_3CH = CH_2(II)$ and CH_(2)=CH_(2)(III)`

when subject to acid - catalysed hydration?

A. $I > II > III$

B. I gt III gt II

C. III gt II gt I

D. II gt I gt III

Answer: A

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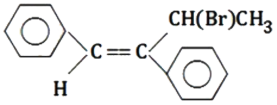
5. Which of the following will show optical isomerism?

A.



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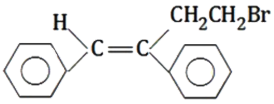

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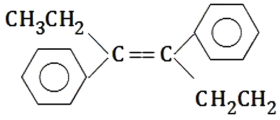

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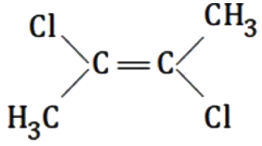

Answer: A

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6. The aqueous 0.01 Molal solution of $\left[Cr(NH_3)_6\right]_2\left[Co(NH_3)(NO_2)_5\right]_3$ is expected to have ΔT_f equal to Given : K_f of H_2O is $1.86\ \mathrm{K\ kg\ mol^{-1}}$.

A. 0.0186

B. 0.0372

C. 0.558

D. 0.093

Answer: D

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

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

Which of the following is correct ?

A. $\mathrm{X} = \text{black}, \quad MnO_2, \mathrm{Y} = \text{Blue}, \quad K_2CrO_4, Z = KMnO_4$

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

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

D. $\mathrm{X} = \text{black}, \quad BiO_2O_3, \mathrm{Y} = \text{colourless} KBiO_2, Z = KBiO_3$

Answer: C

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8. Which of the following has smallest radius?

A. $1s^2, 2s^2 2p^6, 3s^2$

B. $1s^2, 2s^2 2p^6, 3s^2 3p^1$

C. $1s^2, 2s^2 2p^6, 3s^2 3p^5$

D. $1s^2, 2s^2 2p^6, 3s^2 3p^3$

Answer: C

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9. If r_1 is the radius of first orbit of hydrogen atom, then the radii of second, third and fourth orbits in terms of r_1 are

A. r_1^2, r_1^3, r_1^4

B. $8r_1, 27r_1, 64r_1$

C. $4r_1, 9r_1, 16r_1$

D. $2r_1, 6r_1, 8r_1$

Answer: C

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10. N_2 and O_2 are converted to mono cations N_2^+ and O_2^+ respectively, which statement is wrong ?

A. the n N- N bond weakens

B. the O - O bond order increases

C. the O - O bond length decreases

D. N_2^+ becomes diamagnetic

Answer: D

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11. In the carbylamine reaction, $R-X$ converted $R-Y$ via the intermediate Z, $R-X$, $R-Y$ and Z, respectively are

A. $R-NH_2, R-NC$, carbene

B. $R-NH_2, R-NC,$ nitrene

C. $R-NC, R-NH_2,$ carbene

D. $R-OH, R-NC,$ nitrene

Answer: A

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12. The equilibrium constant for the reaction $H_2O(g)+CO(g) \Leftrightarrow H_2(g)+CO_2(g)$ is 0.44 at 1660 K. The equilibrium constant for the reaction

$2H_2(g)+2CO_2(g) \Leftrightarrow 2CO(g)+2H_2O(g)$

at 1660 K is equal to

A. 0.44

B. 0.88

C. 5.16

D. 126

Answer: C

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13. Ammonia forms the complex $\left[Cu(NH_3)_4\right]^{2+}$ with copper ions in alkaline solution but not in acid solution. The reasons for it is:

A. In alkaline solution $Cu(OH)_2$ is precipitated which is soluble in excess of alkali

B. Copper hydroxide is amphoteric substance

C. In acidic solution hydration protects Cu^{2+} ions

D. In acidic solution protons are coordinated with ammonia molecules forming NH_4^+ ions

Answer: D

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14. Sodium carbonate is prepared by Solvay process. Which of the following compounds is obtained as a by - product?

A. NH_4Cl

B. NH_3

C. CO_2

D. $CaCl_2$

Answer: D

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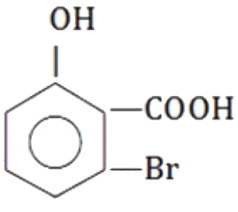
15. The reaction of $p - HOC_6H_4COOH$ with excess Br_2 forms

A.



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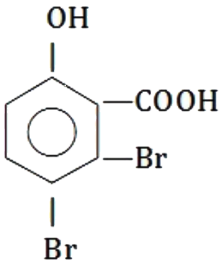
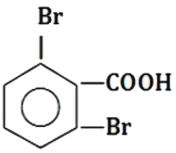
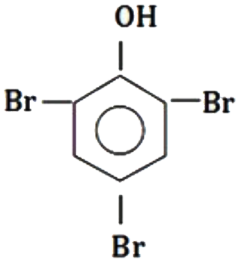


C.



D.



Answer: D

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16. Melamine polymer is a copolymer of

A. melamine and acetaldehye

B. melamine and formaldehyde

C. phenol and formaldehyde

D. none of the above

Answer: B

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17. When an inorganic compound (X) having 3c - 2e as well as 2c - 2e bonds react with ammonia gas at a certain temperature, gives a compound (Y) isostructural with benzene. Compound (X) with ammonia at a high temperature produces a substance (Z). Which option is not correct?

A. (X) is B_2H_6

B. (Z) is known as inorganic graphite

C. (Y) is $B_3N_3H_6$

D. (Z) is soft like graphite

Answer: D

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18. Maltose on hydrolysis gives

A. Mannose + glucose

B. Galactose + glucose

C. Glucose

D. Mannose + fructose

Answer: C

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19. Which product will be obtained by Gridnard reaction, when Formaldehyde reacts with Ethyl magnesium lodide?

A. 2 - Propanol

B. 1 - Propanol

C. Ethanol

D. 2 - Metyl, 2 - Propanol

Answer: B

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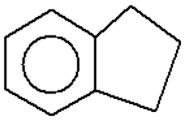
20. Consider the following sequence of reactions and identify the final product (Z)

$$C_6H_6 + CH_2 = CHCH_2Cl \xrightarrow{AlCl_2} (X) \xrightarrow[(ii)\, H_2O_2, OH^-]{(i)\, BH_3, THF} (Y) \xrightarrow{H^+ / \Delta} Z(C_9H_{10})$$

A. $PhCH_2CH = CH_2$

B. $PhCH = CH - CH_3$

C. 

D. $PhC(CH_3) = CH_2$

Answer: C

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21. An exothermic reaction, $A \rightarrow B$, has an activation energy of $15\,\text{kcal mol}^{-1}$ and the energy of reaction is $5\,\text{kcal mol}^{-1}$. The activation energy in kcal mol^{-1} for the reaction, $B \rightarrow A$ is

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22. The enolic form of given compound contians

$$CH_3 - CH_2 - \overset{\overset{O}{||}}{C} - CH_3$$

x, σ bonds, y π bonds, z lone pairs. The sum value of $(x + y + z)$ is

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23. A certain buffer solution sontains equal concentration of X^- and HX. The K_a for HX is 10^{-8}. The of the buffer is

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24. In cyclic structure of $(SO_3)_x$ if x is number of SO_3 moleculles involved in cycle formation and y is the number of sp^3 hybridised S - atoms What is the sum of $x + y$?

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25. If number of lone pairs on central atom in XeF_2, XeF_4 and XeF_6 are x, y, z. What is the sum of $x + y + z$ here?

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