CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA TPC JEE MAIN TEST 104

Chemistry Single Choice

1. In which of the following solvents, ionic compound NaCl has highest solubility ?

(E =dielectric constant)

A. $CCl_4(E=0)$

B. $C_6H_6(E=0)$

C. Cyclohexane $(E \approx 2)$

D. $CH_3OH(E = 30)$

Answer: D

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2. Determine the inappropriate one.

A. The first ionization potential of Al is less than the first ionization potential of Mg.

B. The second ionization potential of Mg is greater than the second ionization potential of Na.

C. The first ionization potential of Na is less than the first ionization potential of Mg.

D. The third ionization potential of Mg is greater than the third ionization potential of Al.

Answer: B

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3. pKa of boric acid in water is nearly 9.00. On adding glucose in boric acid solution, pKa of reaction becomes:

A. > 9

B. < 9

C. Remains 9

D. can be either > 9 or < 9

Answer: B

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4. Identify the chemical reaction which does not take place in blast furnace during the extraction of Fe from Haematite.

A. $Fe + SiO_2 \rightarrow FeSiO_2$

B. $FeO + CO \rightarrow Fe + CO_2$

C. $CaO + SiO_2 \rightarrow CaSiO_3$

D. $FeO + C \rightarrow Fe + CO$

Answer: A

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5. Borazine is

A. Isoelectronic with C_6H_5

B. non planar structure

C. 6 membered cyclic structure in which all atoms are similar

D. All are incorrect

Answer: D

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6. Among the oxides,

$Mn_2O_7(I), V_2O_3(II), V_2O_5(III), CrO(IV)$ and $Cr_2O_3(V)$

, the basic oxides are

A. I and II

B. II and III

C. III and IV

D. II and IV

Answer: D

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7. Consider the following complexes :

(I) K_2PtCl_6

(II) $PtCl_4.2NH_3$

(III) $PtCl_4.3NH_3$

(IV) $PtCl_4.5NH_3$

Their electrical conductances in aqueous solution are :

A. 256, 0, 97, 404

B. 404, 0, 97, 256

C. 256, 97, 0,404

D. 404, 97, 256,0

Answer: A

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8. Among the following, which is expected to dissolve exothermically?

A. KCl

B. KBr

C. KI

D. KF

Answer: D

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9. Which of the following reactants can be used in the williamson's ether synthesis :

A. $C_2H_5OH + H_2SO_4$

B. $C_2H_5OH + Al_2O_3$

C. $C_2H_5Cl + C_2H_5ONa$

D. $C_2H_5Cl + Ag_2O$

Answer: C

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10. In the given reaction sequence the compound D is

$$CH_3CH_2Br \xrightarrow[\Delta]{\text{aq.KOH}} \text{A} \xrightarrow[\Delta]{KMnO_4/H^+} \text{B} \xrightarrow[\Delta]{NH_3} \text{C} \xrightarrow[\text{alkali}]{Br_2} D$$

A. CH_3Br

B. CH_3CONH_3

C. CH_3NH_2

D. CH_2Br_2

Answer: C

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11. (I) D-Glucose $\xrightarrow{NaBH_4} X$

(II) D-Mannose $\xrightarrow{NaBH_4} Y$

(III) D-Fructose $\xrightarrow{NaBH_4}$ Product

What will be the product(s) in the third reaction?

A. X Only

B. Y Only

C. Neither X nor Y

D. Both X and Y

Answer: D

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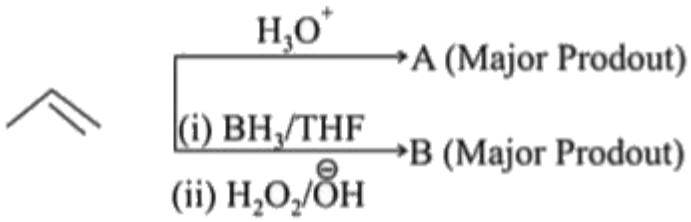

12.

Relation between products A and B is?

A. Functional isomer

B. Metamers

C. Position isomer

D. Geometrical isomer

Answer: C

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13. What is B in the following reaction?

$$CH_3 - \underset{\underset{Cl}{|}}{CH} - CH_3 + KOH \xrightarrow{\Delta} A \xrightarrow{HBr/R_2O_2\,\Delta} B$$

A. $CH_3 - \underset{\underset{Br}{|}}{\underset{\underset{Cl}{|}}{CH}} - CH_2 - Br$

B. $CH_3 - \underset{\underset{Cl}{|}}{\overset{\overset{Br}{|}}{C}} - CH_3$

C. $CH_3 - CH_2 - CH_2 - Br$

D. $CH_3 - \underset{\underset{Br}{|}}{CH} - CH_3$

Answer: C

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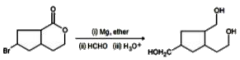
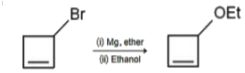
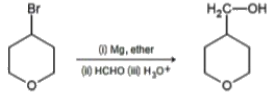
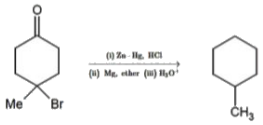
14. Which of the following is a correct conversion?

A. 

B. 

C. 

D. 

Answer: D

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15. Which of the following doesn't show functional group isomerism?

A. C_2H_6O

B. C_3H_8O

C. C_4H_{10}

D. $C_4H_{10}O$

Answer: C

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16. Which of the following can not displace H_2?

A. Li

B. Sr

C. Al

D. Ag

Answer: D

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17. In a solution of 90 g water, 30 g of non-volatile solute is present which has exactly a vapor pressure of 2.8kPa at 298 K. On further addition of 18 g water to the solution, the new vapour pressure of the solution becomes 2.9 kPa at 298 K. Determine (i) the molecular weight of the solute (ii) vapor pressure of water at 298 K

A. $23 \mathrm{g\ mol}^{-1}, 3.53$

B. $26 \mathrm{g\ mol}^{-1}, 3.53$

C. $28 \mathrm{g\ mol}^{-1}, 3.53$

D. $32 \mathrm{g\ mol}^{-1}, 3.53$

Answer: A

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18. An impure sample of silver (1.5g) is heated with S to form 0.124 g of Ag_2S. What was the percent yield of Ag_2S?

A. $21.6\,\%$

B. $7.2\,\%$

C. $1.7\,\%$

D. $24.8\,\%$

Answer: B

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19. Which one of the following salts when dissolves in water will hydrolyse :-

A. NaCl

B. NH_4Cl

C. KCl

D. Na_2SO_4

Answer: B

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20. The free energy change for the following reactions is as given below:

$C_2H_2(g) + \frac{5}{2}O_2(g) \rightarrow 2CO_2(g) + H_2O(l), \Delta G^\circ = -1234kJ$

$C(s) + O_2(g) \rightarrow CO_2(g), \Delta G^\circ = -394kJ$

$H_2(g) + \frac{1}{2}O_2(g) \rightarrow H_2O(l), \Delta G^\circ = -237kJ$

Then what will be the standard free energy change for the

reaction given below:

$H_2(g) + 2C(s) \rightarrow C_2H_2(g)$?

A. $-209kJ$

B. $-2259kJ$

C. $+2259kJ$

D. $+209kJ$

Answer: D

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Chemistry Subjective Numerical

1. The total number of lone pairs of electrons in I_3^- ion is .....

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2. Lithium hydride is used in the synthesis of other hydrides.

$LiH + B_2H_6 \rightarrow$ Product

What is the oxidation state of hydrogen in the product?

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3. Methyl cyanide $\xrightarrow[\text{conc. } HCl]{2[H], SnCl_2} P \xrightarrow{H_2O / H^+} Q$

$Q \xrightarrow{HCN} R \xrightarrow{H^+, H_2O} S$

The number of chiral carbon(s) present in the final product 'S' is -------

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4. 'X' moles of conc. hydroiodic acid react with acetamide in the presence of red phosphorus at $200^{\circ}C$ to form 1 mole of ethane. Find the value of 'X'.

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5. How many alcohols from the following set gives geometric isomers on dehydration?

1. propan-2-ol

2. 2-methyl propan-1-ol.

3. pentan-2-ol

4. ethanol

5. propan-1-ol

6. 2-methyl propan-2-ol

7. butan-1-ol

8. butan-2-ol

9. hexan-3-ol

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6. What is the pH of the resulting solution when equal volumes of 0.1 M NaOH and 0.01 M HCl are mixed? [Given: $\log_{10}(45) = 1.6532$]

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7. In the Freundlich adsorption isotherm, the value of $\left(\frac{1}{n}\right)$ is between 0 and ..... .

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8. A metal crystallises in a simple cubic unit cell. If the length of the edge of the unit cell is 6. 2Å, then the diameter of each atom of the metal is:

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9. The maximum number of electrons in a subshell with n = 4 and l=3 is ..... .

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10. Consider a first order gas phase decomposition reaction given below: $A_{(g)} \rightarrow B_{(g)} + C_{(g)}$

The initial pressure is 6.0 atm. The pressure drops to 3.0 atm after 6.93 min. How much time (in minutes) would it take to

lower the partial pressure of $A_{(g)}$ by 4.0 atm? [Consider: $\log_{10}(3) = 0.48$]

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