CHEMISTRY

BOOKS - NTA MOCK TESTS

NTA JEE MOCK TEST 57

Chemistry

1. Which one of the following transition metal ions is diamagnetic?

A. Co^{2+}

B. Ni^{2+}

C. Cu^{2+}

D. Zn^{2+}

Answer: D

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2. X - rays can generated by accelerating electrons in a vacuum and letting them impact on atoms in a metal surface. If the 1000 eV kinetic energy of the electrons is completely converted to photon energy. If the electron current is $1.5 \times 10^{-5} A$, how many photons are produced in 10^{-10} second?

A. 9375 photons

B. 1000 photons

C. 8687 photons

D. 1610 photons

Answer: A

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3. The species in which the N-atom is in a state of sp hybridisation is

A. NO_3^-

B. NO_2

C. NO_2^+

D. NO_2^-

Answer: C

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4. Among the following metal oxides, which is most basic?

A. ZnO

B. Al_2O_3

C. As_2O_3

D. K_2O

Answer: D

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5. The heats of combustion of C_xH_y, carbon and hydrogen are a, b and c cal respectively. The heat of formation of C_xH_y, will be:

A. $-\left(xb+\frac{yc}{2}-\frac{a}{2}\right)$ cal

B. $-\left(xb+\frac{yc}{2}-a\right)$ cal

C. $\left(xb-\frac{yc}{2}+\frac{a}{2}\right)$ cal

D. $\left(xb-\frac{yc}{2}-\frac{a}{2}\right)$ cal

Answer: B

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6. The compound fromed when Ethyl bromide is heated with dry silver oxide is

A. dimethylether

B. diethylether

C. methyalcohol

D. ethylalcohol

Answer: B

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7. A mixture of CH_4 and C_2H_2 occupied a certain volume at a total pressure equal to 63 torr. The same gas mixture was burnt to CO_2 and $H_2O(l)$. $CO_2(g)$ alone was collected in the same volume and at the same temperature, the pressure was found to be 99 torr. What was the mole fraction of CH_4 in the original gas mixture?

A. $\frac{19}{21}$

B. $\frac{19}{20}$

C. $\frac{17}{18}$

D. $\frac{15}{16}$

Answer: A

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8. Phenolphthalein is obtained by heating phthalic anhydride with conc. H_2SO_4 and

A. Benzyl alcohol

B. Benzene

C. Phenol

D. Benzoic acid

Answer: C

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9. In a cell that utilizes the reactions.

$Zn(s) + 2H^+(aq) \rightarrow Zn^{2+}(aq) + H_2(g)$

addition of H_2SO_4 to cathode compartment, will

A. Lowers the E and shifts equilibrium to the left

B. Lowers the E and shifts the equilibrium to the right

C. Increases the E and shifts the equilibrium to the right

D. Increases the E and shifts the equilibrium to the left

Answer: C

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10. The rate of reaction is doubled for every $10^{\circ}C$ rise in temperature. The increase in rate as result of an increase in temperature from $10^{\circ}C$ to $100^{\circ}C$ is how many times of the original rate?

A. 112

B. 512

C. 400

D. 256

Answer: B

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11. Consider the atomization of $Br_2(g)$ according to the reaction :

$Br_2(g) \Leftrightarrow 2Br(g) \qquad \{\text{Given antilog } (-7.02) = 9 \times 10^{-4}\}$

If the heat of atomization of bromine gas is 82 Kj/mol, standard molar entropies of $Br(g)$ and $Br_2(g)$ are 175 and $245.4\,\text{JK}^{-1}$ respectively,

calculate degree of dissociation when the total pressure is 40 atm at 500 K.

(assume $\alpha < < 1$ in your calculation)

A. 2.37×10^{-3}

B. 3.20×10^{-4}

C. 4.30×10^{-5}

D. 3.60×10^{-2}

Answer: A

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12. In which of the following molecules, the number of possible $\angle XAX$ angles is maximum in the anionic part of their solid state ? [A : Central atom , X : Surrounding atom]

A. PBr_5

B. N_2O_5

C. PCl_5

D. Cl_2O_6

Answer: C

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13. Give the IUPAC name of $m - ClCH_2C_6H_4CH_2C(CH_3)_3$

A. 1 - (3 - Chloro -3- methylphenyl) -2, 2 - diethyl propane

B. 2 - (3 - Chloromethyl propyl) - 2 , 2 - dimethyl propane

C. 1 - (3 - Chloromethyl phenyl) - 3, 3 - dimethyl propane

D. 1 - Chloromethyl -3 - (2, 2 - dimethyl propyl) benzene

Answer: D

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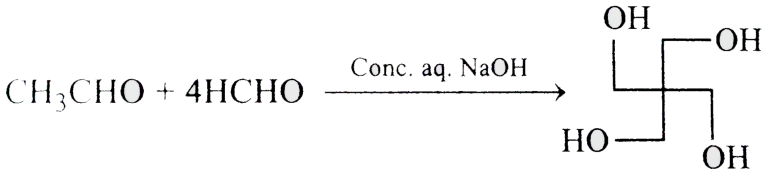
14. The number of aldol reaction (s) that occurs in the given transformation is



A. 1

B. 2

C. 3

D. 4

Answer: C

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15. $CH_3 - CH_2 - N = O$ and $CH_3 - CH = N - OH$ are:

A. Functional group isomer

B. Tautomer

C. Position isomer

D. Not an isomer

Answer: B

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16. Which of the following presents the correct order of the acidity in the given compounds?

A.

$$CH_3COOH > BrCH_2COOH > ClCH_2COOH > FCH_2COOH$$

B.

$$FCH_2COOH > CH_3COOH > BrCH_2COOH > ClCH_2COOH$$

C.

$$BrCH_2COOH > ClCH_2COOH > FCH_2COOH > CH_3COOH$$

D.

$$FCH_2COOH > ClCH_2COOH > BrCH_2COOH > CH_3COOH$$

Answer: D

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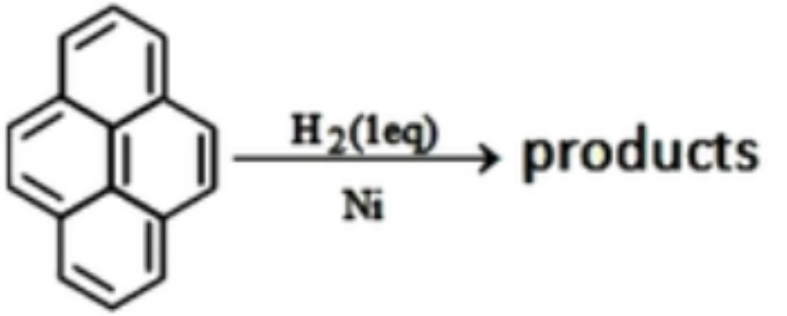
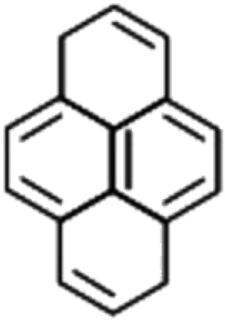
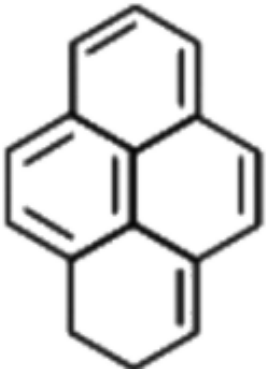
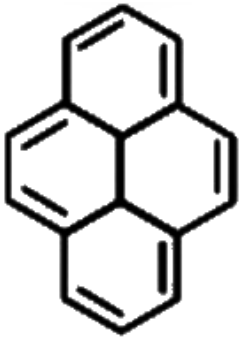
17.

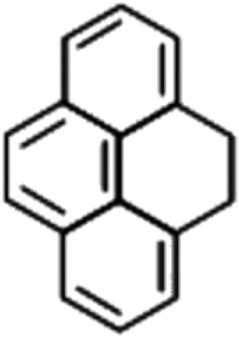


The major product is -

A. 

B. 

C. 

D. 

Answer: C

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18. 4 ml of HCl solution of pH = 2 is mixed with 6 ml of NaOH solution of pH=12 . What would be the final pH of solution ?(log 2 = 0.3)

A. 10.3

B. 11.3

C. 11

D. 4.3

Answer: B

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19. How many among the following imparts colour to the Bunsen flame, when flame test is carried out?

$Ba, Mg, Ca, Be, Na, Sr, L$

A. 5

B. 6

C. 7

D. 4

Answer: A

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20. Aqueous solution of Ni^{2+} contains $\left[Ni(H_2O)_6\right]^{2+}$ and its magnetic moment is 2.83 B.M. When ammonia is added in it, the predicted change in the magnetic moment of solution is:

A. It decreases from 2.83 BM

B. It increases from 2.83 BM

C. It will remains same

D. Cannot be predicted by given information

Answer: C

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21. When $1.22gC_6H_5COOH$ is added into two solvents, the following data of ΔT_b and K_b are obtained:

i. In $100gCH_3COCH_3$,$\Delta T_b = 0.17$,$K_b = 1.7kgKmol^{-1}$.

ii. In $100g$ benzene,$\Delta T_b = 0.13$ and $K_b = 2.6kgKmol^{-1}$.

Find out the molecular weight of C_6H_5COOH in both cases and interpret the results.

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22. The change in the oxidation state of iodine when axcess chlorine water is added to an iodide salt is

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23. How many of the following compounds exhibit stereoisomerism?

i.	**2-Hydroxypropanoic acid**
li.	2-Methylbut-1-ene
iii.	Butane-2, 3-diol
iv.	3-Methylbutanoic acid
v.	3 -Methylbut- l-yne
vi.	2,3- Dichlorobutane
vii.	2-Bromo-3-methylpentane
viii.	2-Methylbutanoic acid

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24. Two important ores of metals are given below

Malachite $CuCO_3.\ Cu(OH)_2.\ xH_2O$

Carnallite $KCl.\ MgCl_2.\ yH_2O$

What is y-x?

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25. Malonic acid

$$\xrightarrow[150^\circ C]{P_2O_5} \text{Foul smell}(A) \xrightarrow{200^\circ C} (B) + \text{Carbon}$$

The total number of σ and Π bonds present in compound A are :

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