# CHEMISTRY

## BOOKS - NTA MOCK TESTS

## NTA JEE MOCK TEST 38

Chemistry

**1.** $AlCl_3$ forms dimer in vapour phase but $BCl_3$ does not because

A. In Al there are vacant d orbitals in which it accommodates lone pair from chlorine atoms

B. In $BCl_3$ there is back bonding

C. There is hyrogen bonding in between two $AlCl_3$ molecules in vapour phase

D. None of these

**Answer: A**

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**2.** A red solid is insoluble in water. However, it becomes soluble if some KI is added to water. Heating the red solid in a test tube results in liberation of some violet coloured fumes and droplets of a metal appear on the cooler parts of the test tube. The rod solid is:

A. $HgI_2$

B. $HgO$

C. $Pb_3O_4$

D. $(NH_4)_2Cr_2O_7$

**Answer: A**

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**3.** $H_2O_2$ acts as an oxidising agent in

A. neutral medium

B. acidic medium

C. alkaline medium

D. both acidic & alkaline medium

**Answer: D**

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**4.** Mixture of volatile components A and B has a total vapour pressure (in torr)p=$254 - 119x_A$is where$x_A$mole fraction of A in mixture .Hence$P_A^\circ$ and $P_B^\circ$ are(in torr)

A. 254, 199

B. 119, 254

C. 135, 254

D. 119, 373

**Answer: C**

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**5.** How many molecules are acidic oxides among the following :

$CO, NO_2, SO_2, SO_3, NO, N_2O, SiO_2, Cl_2O_7$

A. 4

B. 5

C. 6

D. 7

**Answer: B**

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**6.** A $\xrightarrow{\text{cold KMnO}(4)}$ Mesobutane - 2, 3 - diol. A is

A. Cis 2 - butane

B. Trans 2 - butene

C. 1 - butene

D. Iso - butene

**Answer: A**

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**7.** 10 moles of $A_2$, 15 moles of $B_2$ and 5 moles of AB are placed in a 2 litre vessel and allowed the come to

equilibrium. The final concentration of AB is 10.5 M,

$A_2(g) + B_2(g) \Leftrightarrow 2AB(g)$

Determine the value of equilibrium constant $(K_C)$ for the reaction.

A. 25.3

B. 31.5

C. 36.3

D. 40.5

**Answer: B**

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**8.** The number of molecules with pyramidal shape are :

$NH_3, ClF_3, SO_3, PCl_3, XeO_3, BCl_3, ClO_3^-, SO_3^{2-}$

A. 5

B. 4

C. 3

D. 6

**Answer: A**

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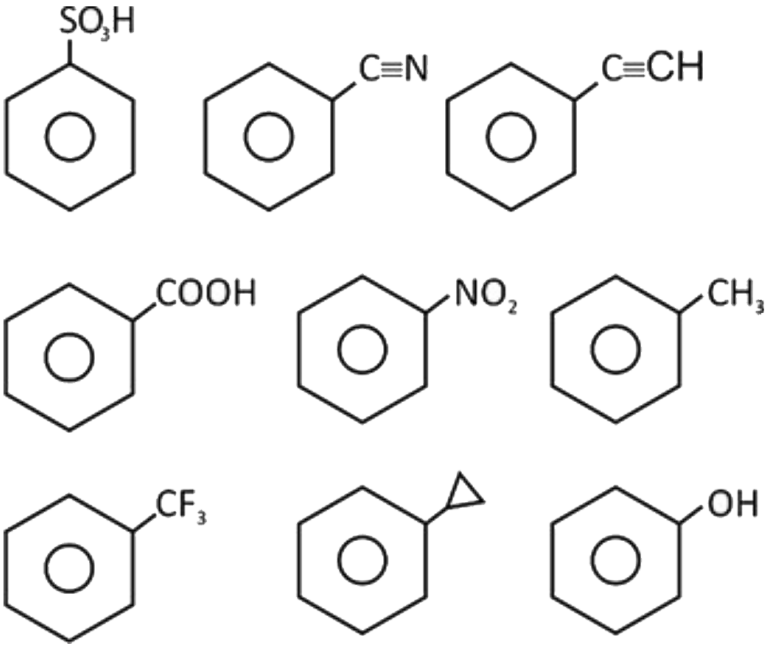
**9.** X = number of compounds having - I group directly attached to benzene.




Find the value of X ?

A. 5

B. 6

C. 7

D. 8

**Answer: C**

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**10.** The incorrect statement among the following is :

A. The colour of $\left[Ni(H_2O)_6\right]^{2+}$ changes on adding ethylene diamine.

B. Crystal field theory consider the covalent character of bonding between ligand and central atoms.

C. The magnitude of CFSE of octahedral complexes is higher than that of corresponding tetrahedral complexes.

D. $\left[Co(C_2O_4)_3\right]^{3-}$ does not contains unpaired electrons.

**Answer: B**

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**11.** The substances $A\left(t_{\frac{1}{2}} = 5 \text{ min}\right)$ and $B\left(t_{\frac{1}{2}} = 15 \text{ min}\right)$ follow first order kinetics, are taken is such a way that initially $[A] = 4[B]$. The time after which the concentration of both substances will be equal is :

A. 5 min

B. 10 min

C. 15 min

D. 20 min

**Answer: C**

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**12.** During the process of electrolyic refining of copper some metals present as impurity settle as anode mud. These are

A. Sn and Ag

B. Pb and Zn

C. Ag and Au

D. Fe and Ni

**Answer: C**

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**13.** The coagulation value in millimoles per litre of the electrolyes used for the coagulation of $As_2S_3$ are given below:

I. $(NaCl) = 52$ , II. $(BaCl_2) = 0.69$

III. $(MgSO_4) = 0.22$

The correct order of their coagulating power is

A. III gt I gt II

B. I gt II gt III

C. II gt I gt III

D. III gt II gt I

**Answer: D**

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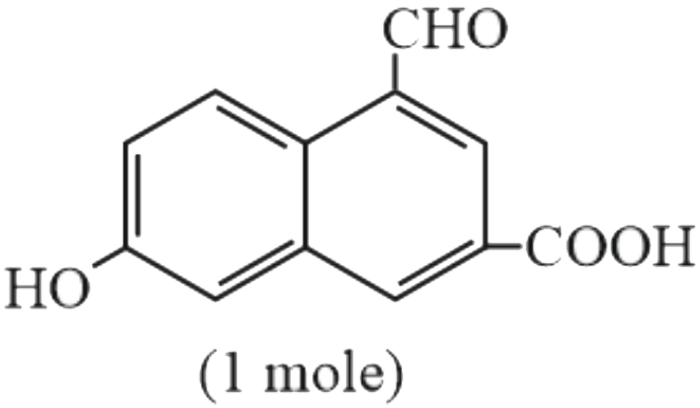


(1 mole)

**14.**

$$+\underset{(\text{Excess})}{CH_3MgBr} \rightarrow \underset{(\text{Gas})}{P} + Q$$

How many litres of gas 'P' is formed in above reaction at NTP. (molar volume of gas a NTP is 22.4 L)

A. 22.4 L

B. 33.6 L

C. 44.8 L

D. 66 L

**Answer: C**

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**15.** Analysis show that iron oxide consist of Iron ion with $94\%$ ions having $d^6$ configuration and $6\%$ having $d^5$ configuration. Which amongst the following best represents the formula of the oxide?

A. $Fe_{0.97}O$

B. $Fe_{1.03}O$

C. $Fe_{0.60}O$

D. $Fe_{0.94}O_{0.94}$

**Answer: A**

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**16.** Which of the following amines give mustard oil smell with $HgCl_2 + CS_2$?

(I) Aniline

(II) Diethyl amine

(III) P - toluidine

(III) P - toluidine

(IV) N, N - Diethyl propanamine

A. (I) & (II)

B. (II) & (IV)

C. (II) & (III)

D. (I) & (III)

**Answer: D**

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**17.** Bond dissociation on energy of $Cl_2$ is 240 kJ/mol. The longest wavelength of photon that can break this bond would be $\left[N_A = 6 \times 10^{23}, h = 6.6 \times 10^{-34} \frac{J}{s}\right]$

A. $4.95 \times 10^{-7} m$

B. $9.9 \times 10^{-7} m$

C. $4.95 \times 10^{-6} m$

D. $9.9 \times 10^{-6} m$

**Answer: A**

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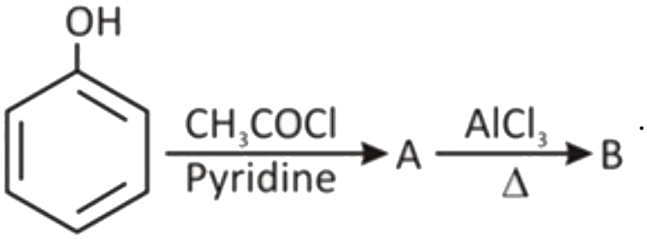
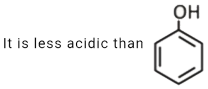
**18.** In the reaction sequence.




Correct statement regarding B is :

A. It is less acidic than 


B. Degree of unsaturation in B is 6

C. It reacts with $Br_2$/ acetic acid to form tetra bromo product

D. B give violet colour with neutral $FeCl_3$.

**Answer: D**

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**19.** If 20 mL of 0.1 M NaOH is added to 30 mL of 0.2 M $CH_3COOH$(pK_(a)=4.74), the pH of the resulting solution is :

A. 3.44

B. 4.01

C. 4.44

D. 4.71

**Answer: C**

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**20.** Among the give amino acids, the basic essential amino acid is :

A. Valine

B. Lysine

C. Alanine

D. Arginine

**Answer: B**

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**21.** 1 Mole of $CO_2$ gas at 300 K expanded under that reversible adiabtic condition such that its volume becomes 27 times. The magnitude of work (in kJ/mol) is :

$\left(\text{Given } \ y = 1.33 \text{ and } C_v = 25.10 \text{ J mol}^{-1}K^{-1} \text{ for } CO_2\right)$

report your answer by rounding it up to nearest whole number

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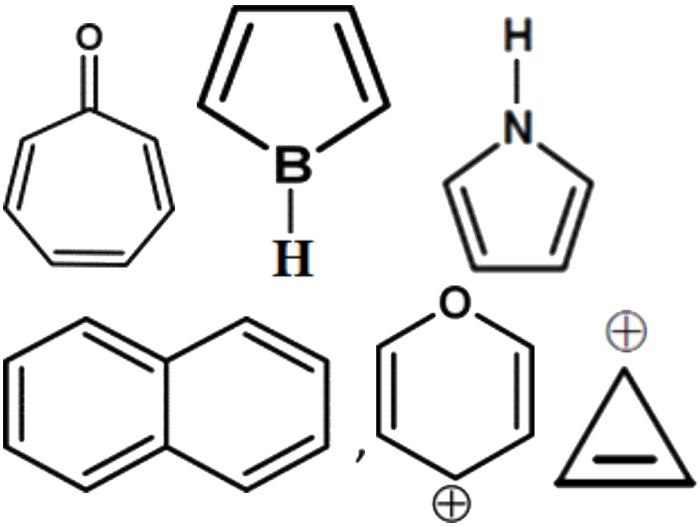
**22.** How many structures (s) out of the following are aromatic : -

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**23.** The total number of boron - oxygen bonds in borax is 'x' and boron - oxygen - boron bonds are 'y'. Then the value of $x - y$ is :

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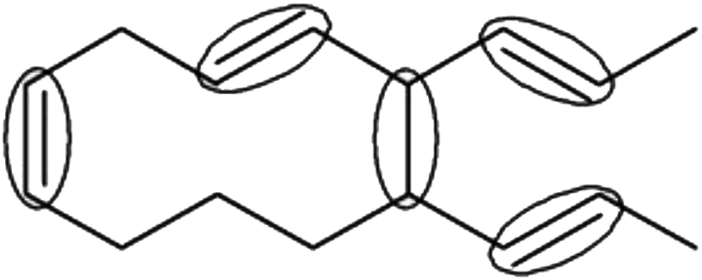
**24.** X = total number of possible geometrical isomerism of the below compound. Find the value of $\frac{x}{4}$ is :



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**25.** Given that ( $ohm^{-1}cm^2eq^{-1}$), $T = 298K$

$\lambda_E^{\infty}\ for Ba(OH)_2 = 228.8$ | specific conductance

$\lambda_E^{\infty}\ for BaCl_2 = 120.3$ | for $0.2N NH_4OH$ solution

$\lambda_E^{\infty}\ f\ \text{or}\ NH_4Cl = 129.8$ | $is 4.766 \times 10^{-4} ohm^{-1}cm^{-1}$

then value of pH of the solution of $NH_4OH$ will be nearly

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