# CHEMISTRY

## BOOKS - NTA MOCK TESTS

## NTA JEE MOCK TEST 75

**Chemistry**

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**1.** The critical constants $P_C \& T_C$ for methane are 45 atm and 180 K. The correct statement is -

A. $V_C = 2.4L$

B. $b = 0.04L/mol$

C. $V_C = 0.8L$

D. $b = 0.8L/mol$

**Answer: B**

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**2.** If the dipole moment of Toluene and Nitro - benzene are 0.43 D and 3.93 D respectively, then what is the expected dipole moment of p-Nitrotoluene?

A. 3.50 D

B. 2.18 D

C. 4.36 D

D. 5.30 D

Answer: C

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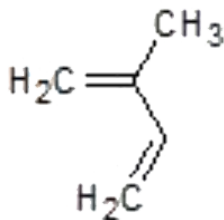3. Benzoyl chloride is prepared from benzoic acid by :

A. $Cl_2, hv$

B. $SO_2Cl_2$
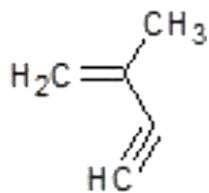
C. $SOCl_2,$ pyridine

D. $Cl_2, H_2O$

**Answer: C**

**4.** An organic compound $(E)(C_5H_8)$, on hydrogenation gives a compound $(F)(C_5H_{12})$. Compound $(E)$ on ozonolysis gives formaldehyde and $2-$ ketopropanal. Deduce the structure of the compouns $(E)$.
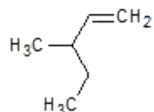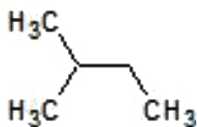


A.

B.



C.



D.

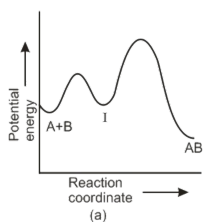

**Answer: A**

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**5.** For an exothermic reaction, following two steps are involved.
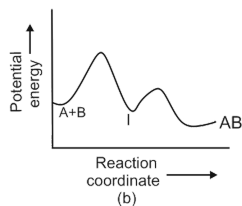
Step 1.   $A + B \rightarrow I$     (slow)
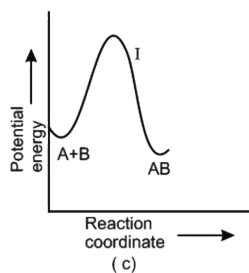
Step 2. $I \rightarrow AB$     (fast)

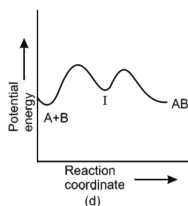Which of the following graphs correctly represent this reaction ?

A.

B.

C.

D.

**Answer: B**

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**6.** Which of the following pairs of a chemical reaction

is certain to result in a spontaneous reaction ?

    A. Exothermic and increasing disorder

    B. Exothermic and decreasing disorder

    C. Endothermic and increasing disorder

    D. Endothermic and decreasing disorder

**Answer: A**

7. The equivalent conductance of $NaCl$ at concentration of $C$ and at infinite dilution are $\lambda_C$ and $\lambda_\infty$ respectively. The correct relationship between $\lambda_C$ and $\lambda_\infty$ is given as :

( where the constant $B$ is positive )

A. $\lambda_C = \lambda_\infty + (B)C$

B. $\lambda_C = \lambda_\infty - (B)C$

C. $\lambda_C = \lambda_\infty - (B)\sqrt{C}$

D. $\lambda_C = \lambda_\infty + (B)\sqrt{C}$

Answer: C

**8.** Phenol when it first reacts with concentrated sulphuric acid and then with concentrated nitric acid gives:

A. 6 - trinitrotoluene

B. Nitrophenol

C. 2, 4, 6 0 trinitrophenol

D. None of the above

**Answer: C**

**9.** The reagent with which both acetaldehyde and acetophenone react easily are

    A. Fehling's solution
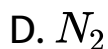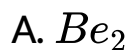
    B. Schiff's reagent

    C. Tollen's reagent

    D. 2, 4 - dinitrophenylhydrazine

**Answer: D**

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**10.** Assuming $2s - 2p$ mixing is $NOT$ operative, the paramagnetic species among the following is .

A. $Be_2$

B. $B_2$

C. $C_2$

D. $N_2$

**Answer: C**

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**11.** In a period, atom with smaller radius is

A. Chalcogen

B. Halogen

C. Aerogen

D. Pnicogen

**Answer: B**

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**12.** Calcium crystallizes in a face centred cubic unit cell with a = 0.560 nm. The density of the metal if it contains $0.1\%$ schottky defects would be:

A. $1.51 gcm^{-3}$

B. $2.51 gmc^{-3}$

C. $15.1 gcm^{-3}$

D. $0.151 gmc^{-3}$

**Answer: A**

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**13.** At a definite temperature, the equilibrium constant for a reaction, $A + B \Leftrightarrow 2C$, was found to be 81. Starting with 1 mole A and 1 mole B, the mole fraction of C at equilibrium is :

A. $\dfrac{9}{11}$

B. $\dfrac{1}{11}$

C. $\dfrac{2}{11}$

D. $\dfrac{7}{11}$

**Answer: A**

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**14.** Select the correct statements among the following.

A. Co (III) is stabilised in presence of weak field ligands, while Co (II) is stabilised in presence of

strong field ligabd,

B. Four coordinated complexes of Pd(II) and Pt(II)

are paramagnetic and square planar.

C. $\left[Ni(CN)_4\right]^{4-}$ ion and $\left[Ci(CO)_4\right]$ are

tetrahedral and square planar respectively.

D. $Ni^{2+}$ ion does not form inner orbital
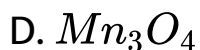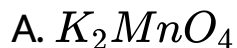
octahedral complexes in presence of weak

ligand fields.

**Answer: D**

**15.** In which of the following compounds, Mn has highest oxidation state?

A. $K_2MnO_4$

B. $MnO_2$

C. $KMnO_4$

D. $Mn_3O_4$

**Answer: C**

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**16.** The ease of dehydrohalogenation of alkyl halide with alcoholic KOH is-

A. $3° < 2° < 1°$

B. $3° < 2° < 1°$

C. $3° < 2° > 1°$

D. $3° > 2° < 1°$

**Answer: B**

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**17.** The important step in the extraction of metal from carbonate ore is

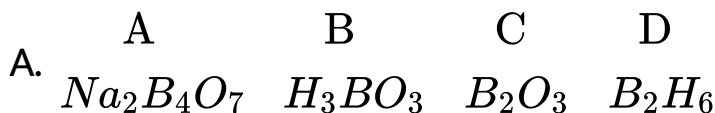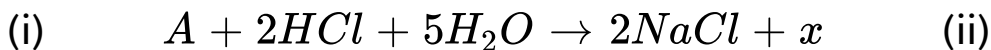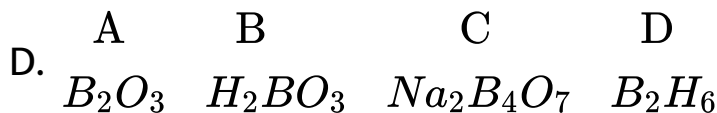A. Calcination
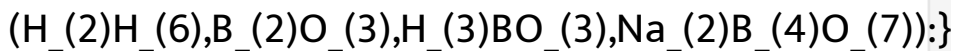
B. Roasting

C. Electro - reaction

D. Cupellation

**Answer: A**

**18.** Identify the compound A, X and Z in the following reactions:

(i) $\qquad A + 2HCl + 5H_2O \rightarrow 2NaCl + x$ (ii)

$X \xrightarrow[370k]{\Delta} HBO_2 \xrightarrow[>370k]{\Delta} Z$

| | A | B | C | D |
|---|---|---|---|---|
| A. | $Na_2B_4O_7$ | $H_3BO_3$ | $B_2O_3$ | $B_2H_6$ |

|   | A | B | C | D |
|---|---|---|---|---|
| B. | $H_3BO_3$ | $Na_2B_4O_7$ | $B_2H_6$ | $B_2O_3$ |

C. `{:(" A"," B"," C"," D"),

$(H\_(2)H\_(6),B\_(2)O\_(3),H\_(3)BO\_(3),Na\_(2)B\_(4)O\_(7)):}$

|   | A | B | C | D |
|---|---|---|---|---|
| D. | $B_2O_3$ | $H_2BO_3$ | $Na_2B_4O_7$ | $B_2H_6$ |
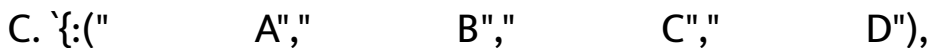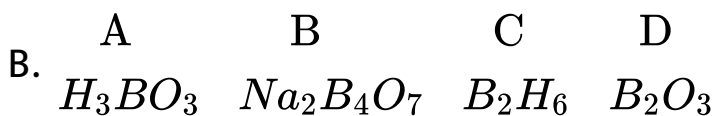
**Answer: A**

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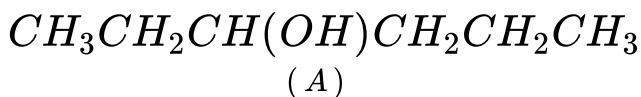
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**19.** Place the following alcohols in decreasing order of

rate of dehydration with $H_2SO_4$.

$$CH_3CH_2CH(OH)CH_2CH_2CH_3$$
$$(A)$$

$$(CH_3)_2C(OH)CH_2CH_2CH_3$$
$$(B)$$

$$(CH_3)_2C(OH)CH(CH_3)_2$$
$$(C)$$

$$CH_3CH_2CH(OH)CH(CH_3)_2$$
$$(D)$$

$$CH_3CH_2CH_2CH_2CH_2CH_2OH$$
$$(E)$$
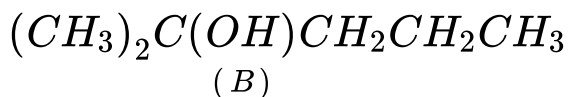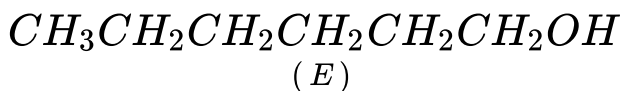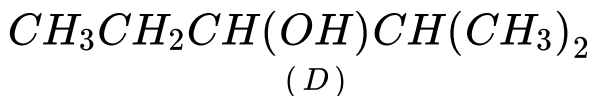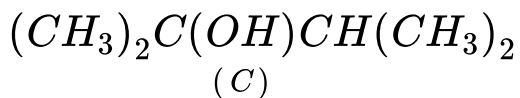
A. 3 gt 2gt 4 gt 5 gt 1

B. 3 gt 2 gt 4 gt 1 gt 5

C. 3 gt 2 gt 1 gt 4 gt 5

D. 3 gt 2 gt 1 gt 5 gt 4

**Answer: B**

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**20.** How many enols (including stereo isomers) exist for 3 - hexanone?

    A. Two

    B. Three

    C. Four

    D. Six

**Answer: C**

**21.** Adenine is one of the two purine bases involved in the formation of nucleotides of the nucleic acids. The molecular formula of adenine is $C_x H_x N_x$ the value of 'x' is

**22.** $30mL$ of $0.1MKI_{aq.}$ and $10mL$ of $0.2MAgNO_3$ are mixed. The solution is then filtered out. Assuming that no change in total volume, the resulting solution will freezing at:

$[K_f for H_2O = 1.86 K kgmol^{-1}$, assume molality = molality]

**23.** Calculate the volume of water required to dissolve $0.1g$ lead (II) chloride to get a saturaed solution $(K_{sp}$ of $PbCI_2 = 3.2 \times 10^{-8}$, atomic mass of $Pb = 207u)$ . Multiply your answer with 10 to get answer.

**24.** How many of the following are saline hydrides?

$CH_4, NaH, HF, CrH, PdH_{0.7}, LiH, CaH_2, TiH_{1.6}$

**25.** A light of wavelength 3000Å falls on a metal surface. Ejected $e^-$ is further accelerated by a potential difference of 2V, then final K.E of the $e^-$ is found to be $8 \times 10^{-19} J$. If threshold energy for the metal surface is $'\phi'eV$. Then find the numerical value of $8\phi$