



# CHEMISTRY

## BOOKS - NTA MOCK TESTS

### NTA TPC JEE MAIN TEST 60

#### Chemistry

1. Find the exact number of lone pair of electrons at the central atom in  $XeF_4$ ,  $XeO_4$  and  $XeO_2F_2$ , respectively

A. 2,2,1

B. 2,0,1

C. 2,1,1

D. 2,2,2

**Answer: B**



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2. The correct values of ionization enthalpies (in  $\text{kJ mol}^{-1}$ ) of Si, P, Cl and S respectively are:

A. 786, 1012, 999, 1256

B. 1012, 786, 999, 1256

C. 756, 1012, 1256, 999

D. 786, 999, 1012, 1256

**Answer: C**



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**3.** Which of the following options are correct?

a. Cast iron is obtained by remeting pig iron with scrap iron and coke using hot air blas.

b. In extraction of silver, silver is extracted as cationic complex

c. Nickel is purified by zone refining

d. Zr and Ti are purified by van Arkel method

A. b,c

B. a,d

C. b,d

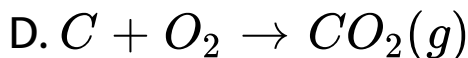
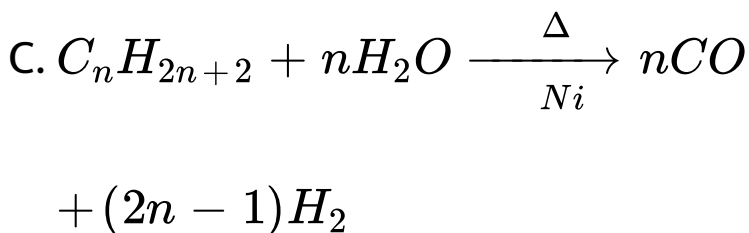
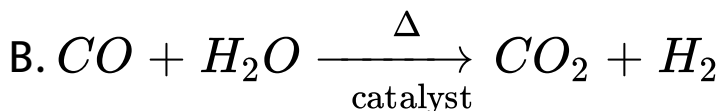
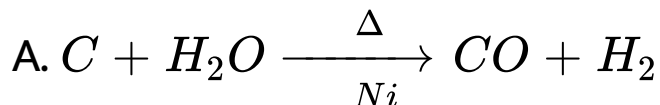
D. a,c,d

**Answer: B**



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4. Identify the chemical reaction involved in water gas shift reaction:

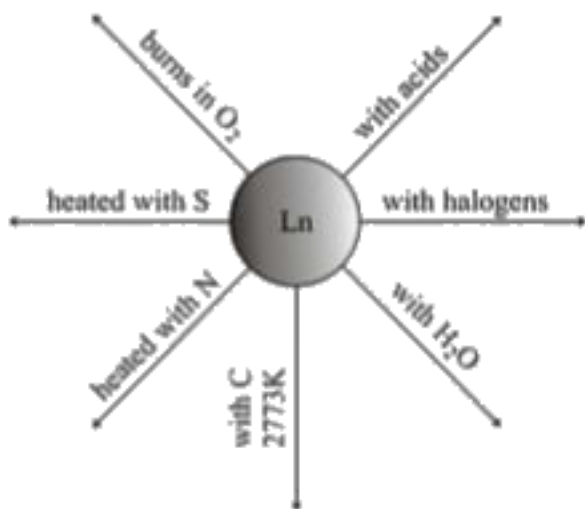


**Answer: B**



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5. The number of gaseous product (s) are formed on the basis of following reactions



(Chemical reactions of the lanthanoids)

(Chemical reactions of the lanthanoids)

A. 1

B. 2

C. 3

D. 4

**Answer: B**



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**6.** Both geometrical and optical isomerism are exhibited by:

- A. Dichlorobis (ethylenediamine) cobalt (III) ion
- B. Pentaamminechlorocobalt (III)
- C. Triamminotrichlorocobalt (III) ion
- D. Tetraamminedichlorocobalt (III) ion

**Answer: A**



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7. Which of the following is correctly matched?



A.  $Na_2CO_3 \cdot 10H_2O$ . Baking soda

B.  $CaCO_3$  -slaked lime

C.  $NaOH$ - washing soda

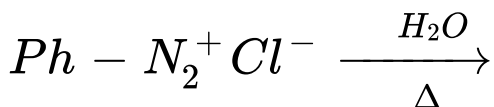
D.  $CaSO_4$ - Dead Burnt Plaster

**Answer: D**



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8. Product of the following reaction is



A.



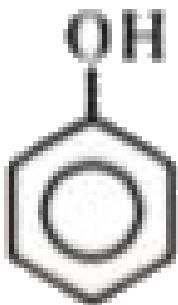
B.



C.



D.



**Answer: D**



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9. Given 3 isomeric compounds M,N and P of  $C_5H_{10}O$  which gives the following tests,

(I) M and P form an adduct by reacting with sodium bisulfite.

(II) N consumes 1 mole of bromine and also gives turbidity with conc.

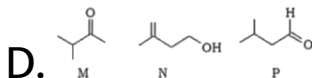
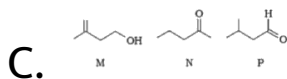
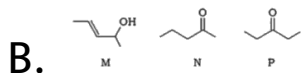
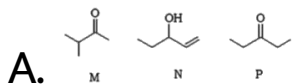
HCl/anhydrous  $ZnCl_2$  after prolonged heating.

(III) M reacts with excess of iodine in alkaline solution to give yellow crystalline compound with a characteristic smell.

(IV). p-Rosaniline treated with sulphur dioxide

develop pink colour on shaking with P.

What are the structures of M,N and P, respectively?



**Answer: D**

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10. Which of the given statement is correct:

A. Fructose is reducing sugar

B. Amylopectine is soluble in  $H_2O$

C.  $\alpha$ - form of glucose has higher melting point than its  $\beta$ - form

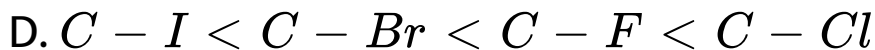
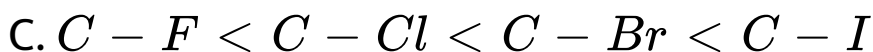
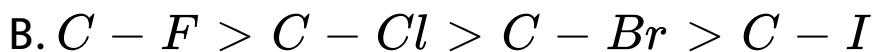
D. Sucrose is made of  $\beta - D -$  glucose and  $\beta - D$  fructose

**Answer: A**



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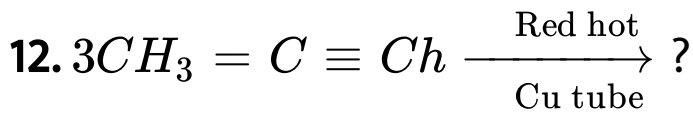
11. Correct bond length order for carbon halogen bond:



**Answer: C**



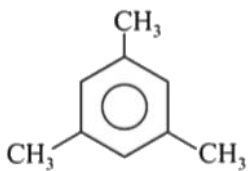
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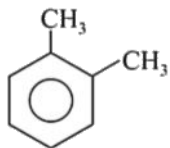
A.



B.



C.



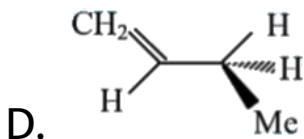
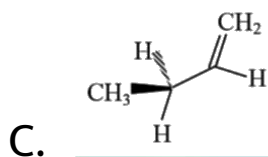
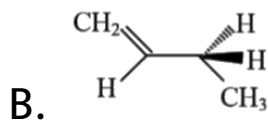
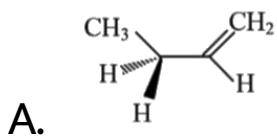
D.

**Answer: C**



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13. Which is the most stable conformation among the following?



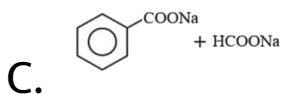
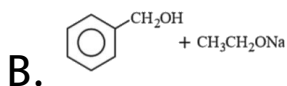
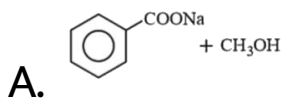


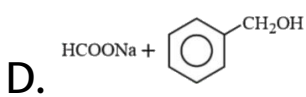
**Answer: D**



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**14.** Reaction of Benzaldehyde with formaldehyde in the presence of conc. NaOH gives:





**Answer: D**

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**15.** IUPAC name of the antiseptic chloroxylenol is

- A. 4-chloro-3,5-dimethyl phenol
- B. 3-chloro-4,5-dimethyl phenol
- C. 4-chloro-2,5- dimethyl phenol

## D. 5-chloro-3,4-dimethyl phenol

**Answer: A**



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16. The resistance of  $\frac{M}{10}$  *KCl* solution is  $250\Omega$

. Calculate the molar conductance of the solution if the electrolytes in the cell are 7 cm apart and each has an area of  $7\text{cm}^2$ .

A.  $2\Omega^{-1}\text{cm}^2\text{mol}^{-1}$

B.  $20\Omega^{-1}cm^2mol^{-1}$

C.  $40\Omega^{-1}cm^2mol^{-1}$

D.  $80\Omega^{-1}cm^2mol^{-1}$

**Answer: C**



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**17. In Schottky defect:**

A. Density remains unchangedd

B. Density gets decreased

C. Density gets increased

D. limiting radius ratio is low

**Answer: B**



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**18.** How many electrons would be lost when 13.5 g of aluminium atoms change to  $Al^{3+}$  ions?

A.  $18.0 \times 10^{23}$  electrons

B.  $6.023 \times 10^{23}$  electrons

C.  $3.01 \times 10^{23}$  electrons

D.  $9.1 \times 10^{23}$  electrons

**Answer: D**



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**19.** The average velocity of an ideal gas molecule at  $27^\circ C$  is  $0.3\text{m/sec}$  the average velocity at  $927^\circ C$  will be:

A.  $0.6m \text{ sec}^{-1}$

B.  $0.3m \text{ sec}^{-1}$

C.  $0.9m \text{ sec}^{-1}$

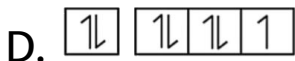
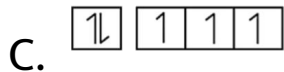
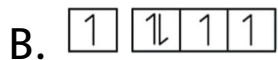
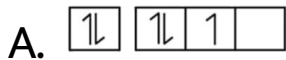
D.  $3.0m \text{ sec}^{-1}$

**Answer: A**



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**20.** The orbital diagram in which aufbau principle is violated is:



**Answer: B**



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**21.** Ethylene Diammine Tetra Acetate (EDTA) forms stable complexes with most of the transition metals. In an octahedral complex like

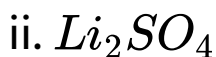
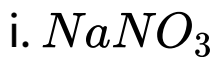


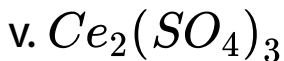
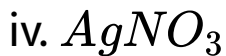
$[M(EDTA)]^{2-}$  where M is central metal atom having +2 oxidation state, find the number of M-O bonds



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22. How many of the following salts show increase in solubility in water with rise in temperature?





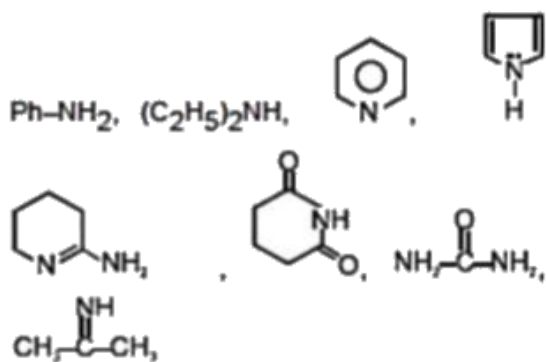
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**23.** How many metalloid (s) present in group 15 of the periodic table?



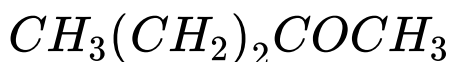
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24. Among the following compounds, how many number of compounds liberates ammonia on reaction with  $NH_4Cl$ ?



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25. How many of the total number of compounds that gives positive iodoform test?



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26. Determine  $K_p$  for following reaction at same Temperature if A flask contains an

equilibrium mixture of  $I_2(g)$  and I atomic (g)

as



The equilibrium pressure was 2.4 atm at constant volume and temperature. At constant volume and Temperature if  $I_2(g)$  at a partial pressure of 3 atm is added to the new equilibrium pressure was 5.66 atm.



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27. In 100 mL of water, a sample of hydrazine sulphate ( $N_2H_6SO_4$ ) was dissolved. 10 mL of this solution was reacted with excess of ferric chloride solution and warmed to complete the reaction. Ferrous ion formed was estimated and it required 20 mL of  $M/50$  potassium permanganate solution.

Find out the amount of hydrazine sulphate in one litre of the solution. The reaction is given below:



A. 6.5

B.

C.

D.

**Answer:**



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**28.** How many grams of  $KMnO_4$  will be present in a 500 g solution of  $KMnO_4$  labelled as 5% w/w?



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**29.** For a certain reaction involving a single reactant, it is found that  $C_0\sqrt{t_{1/2}}$  is constant where  $C_0$  is the initial concentration of reactant and  $t_{\frac{1}{2}}$  is the half life. The order of reaction is



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**30.** Calculate the heat of combustion of trans-2-butene. Also calculate the bond energy of C=C bond in trans-2-butene. Express your Answer in terms of the sum of both (magnitude only) divided by 100 to the nearest integer.

For the reaction

cis-2-butene  $\rightarrow$  trans-2-butene and cis-2-butene  $\rightarrow$  1-butene

$\Delta H^\circ = -960$  and  $+1771$  cal/mol

respectively. The heat of combustion of

1-butene is  $-649.8$  kcal/mol

Given

Be of  $C = O = 196$ ,  $O - H$

$= 110$ ,  $O = O = 118$ ,  $C - C = 80$

and  $C - H = 98$  kcal/mol respectively.



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