

## CHEMISTRY

### BOOKS - NTA MOCK TESTS

### NTA TPC JEE MAIN TEST 69

#### Chemistry

1. Among the following molecules/ions, what is the correct order of increasing s-character (in percentage) in the hybrid orbitals?

(I)  $CO_3^{2-}$  (II)  $XeF_4$  (III)  $I_3^-$  (IV)  $NCl_3$  (V)  $BeCl_2$

A. II < III < IV < I < V

B. II < IV < III < V < I

C. III < II < I < V < IV

D. II < IV < III < I < V

**Answer: A**



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2. Lothar Meyer curve is in between

A. Atomic volume with increase in atomic number

B. Atomic volume with increase in atomic weight.

C. Atomic radii with increase in atomic weight.

D. Atomic weight with increase in atomic number.

**Answer: B**



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3.  $NCl_3$  is pyramidal whereas  $BCl_3$  is a planar molecule, because

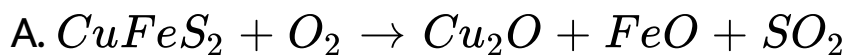
- A. B - Cl bond is more polar than N - Cl bond
- B. N - Cl bond is more covalent than B - Cl bond.
- C. Nitrogen atom is smaller than boron atom.
- D.  $BCl_3$  has no lone pair, but  $NCl_3$  has a lone pair of electrons

**Answer: D**

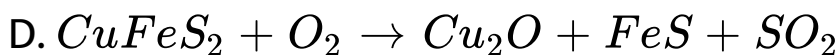
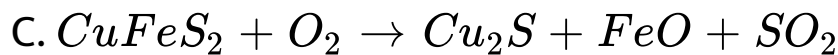
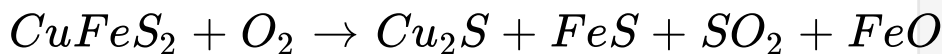


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4. Main chemical change during roasting of  $CuFeS_2$ —



B.

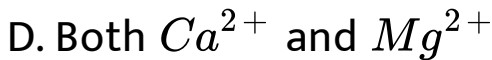
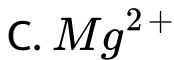


**Answer: B**



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5. When zeolite (hydrated sodium aluminium silicate) is treated with hard water, with which of the following the sodium ions are exchanged?



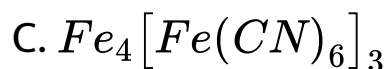
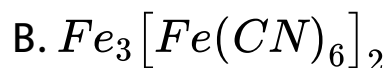
**Answer: D**



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6. Which of the following salt does not give test of

$Fe^{+2}$  ion in aq solution :-



D. (2) and (3)

**Answer: C**



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7. Which of the following compounds is used in fire extinguishers?

A. Baking Soda

B. Gypsum

C. Soda ash

D. Cryolite

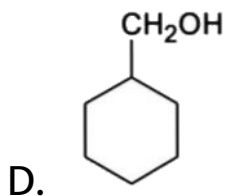
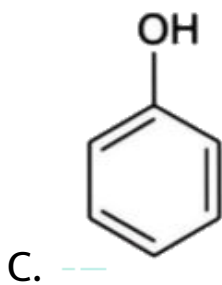
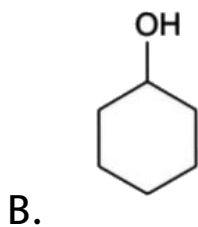
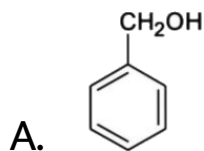
**Answer: A**



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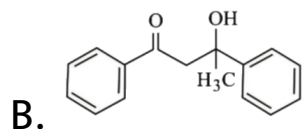
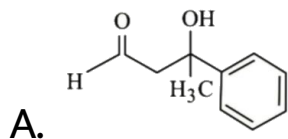
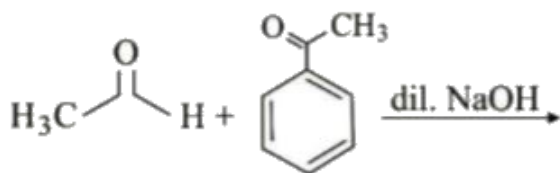
8. The compound with most acidic hydrogen of the following is:

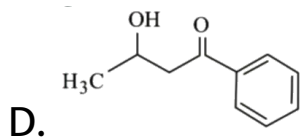
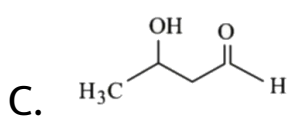


Answer: C

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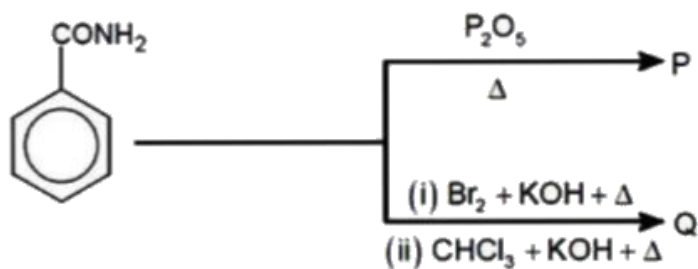
9. What is the major product formed in the following reaction?





**Answer: D**

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**10.**

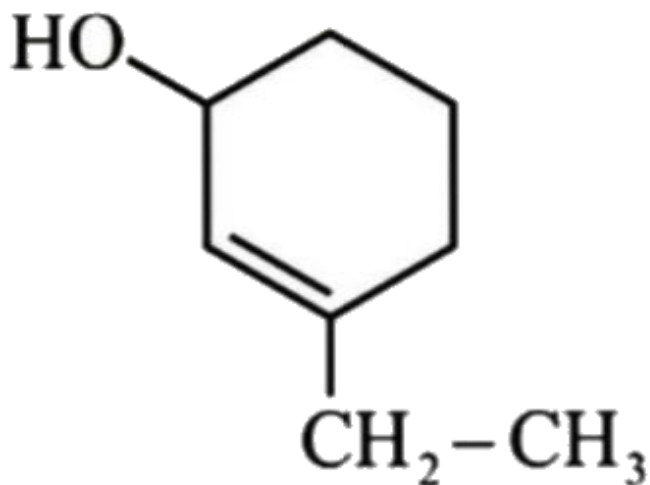
Which statement is incorrect :

- A. Reduced product of P and Q will be metamers to each other.
- B. By dry distillation of hydrolysed products of P with  $Ca(OH)_2$ , gives benzophenone.
- C. Hydrolysed product of Q, reacts with  $NaNO_2 + HCl$  followed by reaction with phenol, give orange red dye
- D. Electrophile involved in the formation of Q is dichlorocarbene

**Answer: A**



11. IUPAC name of the following compound is:



- A. 1 - Ethylcyclohex - 1 - en - 3 - ol
- B. 1-Ethyl- 3- hydroxy cyclohex-1- ene
- C. 3 - Ethylcyclohex - 2 - en - 1 - ol

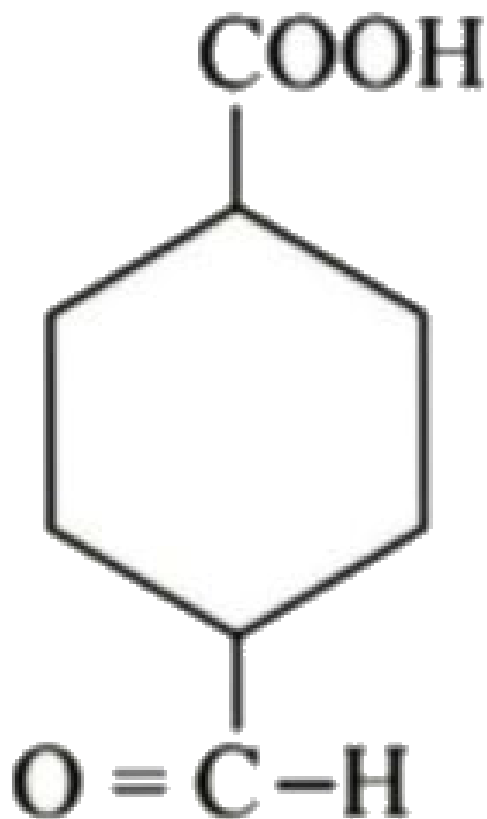
D. 2-Ethyl - 6- hydroxy cyclohexene

**Answer: C**



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12. The IUPAC name of



A. 4-Oxobenzoic acid

B. 4-Formyl benzoic acid

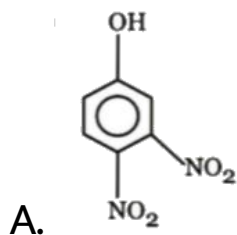
C. 4-Formyl cyclohexane carboxylic acid

D. None of these

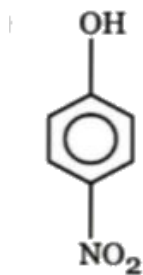
**Answer: C**

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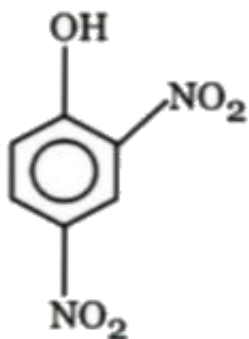
**13.** Most acidic hydrogen containing compound among the following is



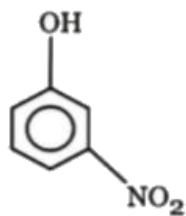




B.



C.

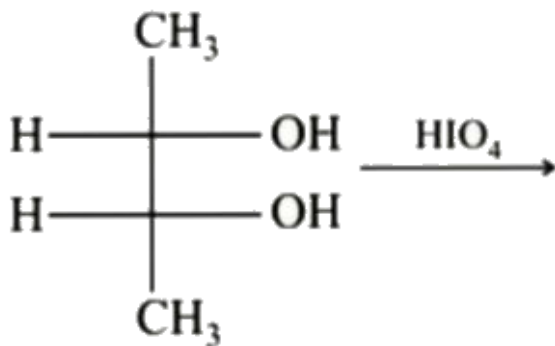


D.

**Answer: C**

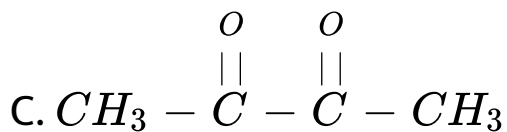
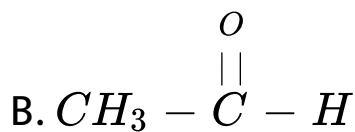
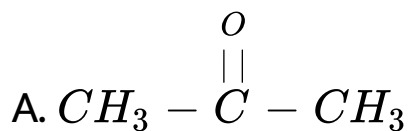


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14.

The product will be:



D. None

**Answer: B**



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**15. Which is not a broad spectrum antibiotics?**

- A. Ampicillin
- B. Chloramphenicol
- C. Chloramphenicol
- D. Penicillin G

**Answer: D**



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16. A variable, opposite external potential ( $E_{ext}$ ) is applied to the cell  $Zn|Zn^{2+}(1M)||Cu^{2+}(1M)|Cu$  of potential 1.1 V. When  $E_{ext} < 1.1$  V and  $E_{ext} > 1.1$  V, respectively electrons flow from :

- A. anode to cathode in both cases
- B. anode to cathode and cathode to anode
- C. cathode to anode in both cases
- D. cathode to anode and anode to cathode

**Answer: B**



17. The  $\Delta G^\circ$  at 300 K is 2494.2 J for the reaction  $2A \rightleftharpoons B + C$ . At a particular time, the composition of the reaction mixture is  $[A] = 1/2$ ,  $[B] = 2$  and  $[C] = \frac{1}{2}$ . The reaction proceeds in the:  $[R = 8.314 \text{ J/K} \cdot \text{mol}$ ,  $e=2.718]$  {Given  $\text{antilog}(-0.44)=0.36$ }

- A. Reverse direction because  $Q < K_c$
- B. Forward direction because  $Q > K_c$
- C. Reverse direction because  $Q > K_c$
- D. Forward direction because  $Q < K_c$

**Answer: C**



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**18.** A 5.25% solution of a non-electrolyte is isotonic with a 1.5% solution of urea (molar mass =  $60 \text{ g mol}^{-1}$ ) in the same solvent. If the densities of both the solutions are assumed to be equal to  $1 \text{ g cm}^{-3}$ , then the molar mass of the nonelectrolyte substance will be:-

A.  $115 \text{ g mol}^{-1}$

B.  $105 \text{ g mol}^{-1}$

C.  $210 \text{ g mol}^{-1}$

D.  $90 \text{ g mol}^{-1}$

**Answer: C**



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**19.** An impure sample of pyrolusite ore ( $MnO_2$ ) consist of 70 %  $MnO_2$ , 20% inert impurities and rest is the moisture. On strong heating, all  $MnO_2$  is converted into MnO alongwith formation of  $O_2$ . What is the % of Mn in dried sample? (Atomic mass of Mn = 55)

A. 57.4 %

B. 0.5

C. 0.478

D. 0.701

**Answer: A**



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**20.** Which of the following statement is not correct :-



A. Isotones are atoms of different elements having same number of neutrons.

B. Isobars are atom of different elements having same number of nucleons

C. Isotopes are atom of different elements having same number of protons

D. Isotones & isobars are atom of different elements.

**Answer: C**



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21. How many of the following are ambidentate ligands?

i. CO

ii. CN

iii. F

iv.  $\text{OH}^-$

v. SCN

vi.  $\text{NO}_2^-$

vii.  $\text{CH}_3\text{NH}_2$

viii.  $\text{H}_2\text{N}(\text{CH}_2)_2\text{NH}_2$



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**22.** The number of cations produced when 1 mole of potash alum is dissolved in excess of water:



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**23.** In alkaline medium, thiosulphate ions are oxidised to sulphate ions by  $MnO_4^-$  ions. The oxidation number of Mn decreases by \_\_\_\_\_ units.



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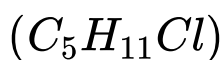
**24.** How many different tripeptide molecules can be formed, starting with three different amino

acid molecules?



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**25.** Calculate the number of secondary ( $2^\circ$ ) alkyl halide in nature (except stereoisomers if any) in the following given possible isomers of Pentyl chloride



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**26.** The statements which refer to "reduction" are:

- i. Removal of oxygen
- ii. Addition of electropositive element
- iii. Removal of hydrogen
- iv. Loss of electrons
- v. Addition of electronegative element
- vi. Gain of electrons
- vii. Oxidation number of the element increases.



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27. An element (X) undergoes following transition on heating at a particular temperature:

fcc unit cell

$$d = y \text{ g cm}^{-3}$$

$\Delta$   
 $\rightarrow$

bcc unit cell

$$d = y \text{ g cm}^{-3}$$

The volume of fcc unit cell/volume of bcc unit cell is \_\_\_\_



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28. The composition (by moles) of effused mixture after 4 effusion steps is  $X : 1 : Y$  respectively. If a gaseous mixture containing equal moles of  $H_2$ ,  $O_2$  and He is subjected to series of effusion steps. What is the value of  $X/ Y$ ?



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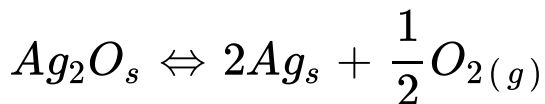
29. For a reaction of iodide ion with hydrogen peroxide at room temperature, what will be the order of reaction with respect to Iodide ion?



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30. For the following reaction,  $\Delta H$ ,  $\Delta S$  and T are  $40.63 \text{ KJ mol}^{-1}$ ,  $108.8 \text{ JK}^{-1} \text{ mol}^{-1}$  and  $373.4 \text{ K}$ .

Calculate the value of  $\Delta G$  of reaction (in J) .



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