

# CHEMISTRY

## BOOKS - NTA MOCK TESTS

### NTA NEET SET 113

#### Chemistry

1.  $40\text{mL}$  sample of  $0.1\text{M}$  solution of nitric acid is added to  $20\text{mL}$  of  $0.3\text{M}$  aqueous ammonia.

What is the  $pH$  of the resulting solution?

A. 8.95

B. 89.5

C. 0.895

D. 4.48

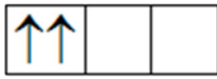
**Answer: A**



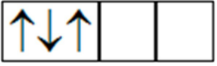
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2. Which of the following is not according to the Pauli exclusion principle?

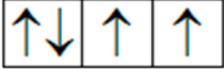
A.



B.



C.



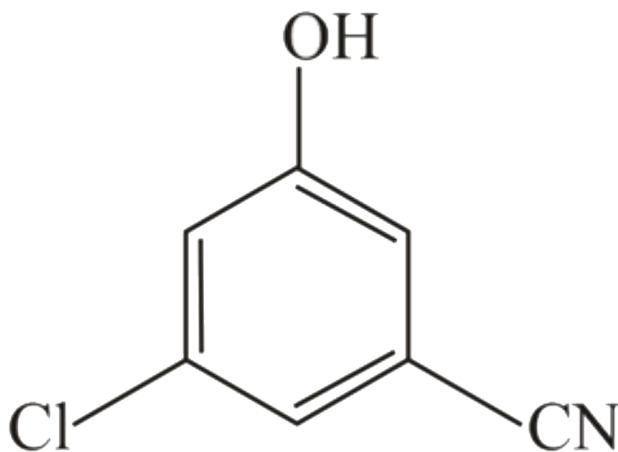
D. A and B both

**Answer: D**



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3. IUPAC name of the following compound is



- A. 3-hydroxy-5-chlorobenzonitrile
- B. 3-chloro-5-hydroxybenonitrile
- C. 3-chloro-5-cyanophenol
- D. 3-cyano-5-chlorophenol

**Answer: B**



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4. The vapour density of a volatile chloride of a metal is 95 and the specific heat of the metal is  $0.13 \text{ Cal/g}$ . The exact atomic weight of metal is

A. 50

B. 49.23

C. 19.693

D. 98.12

**Answer: A**



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5. When potassium superoxide is dissolved in water, the products obtained are

A.  $KOH$  and  $H_2O_2$

B.  $KOH$ ,  $H_2O_2$  and  $O_2$

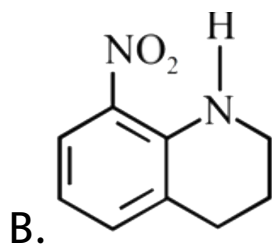
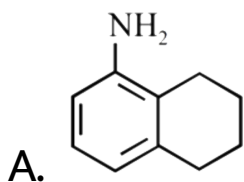
C.  $KOH$  and  $O_2$

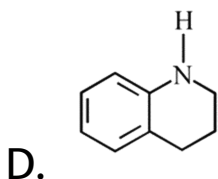
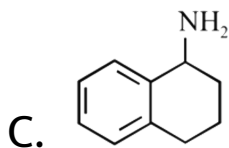
D.  $KOH$ ,  $H_2O_2$  and  $O_3$

**Answer: B**

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**6. Which is the strongest base ?**





**Answer: C**



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7. Two flasks A and B of equal volume containing equal masses of  $H_2$  and  $CH_4$  gases are at 100 K and 200 K temperature,



respectively. Which of the following is true about the total KE (kinetic energy) ?

- A. Total KE of  $H_2$  is four times that of  $CH_4$
- B. Total KE of  $CH_4$  is four times that of  $H_2$
- C. Total KE of  $H_2$  is two times that of  $CH_4$
- D. Total KE of  $CH_4$  is two times that of  $H_2$

**Answer: A**

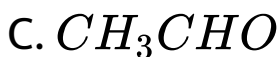
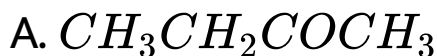


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8. In the following sequence of reactions, the alkene affords the compound *B*:



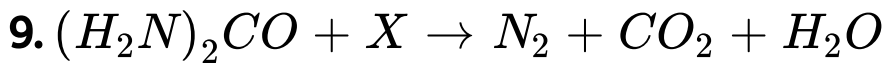
The compound *B* is



**Answer: C**



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Which nitrogen compound should X be here

- A. Ammonia
- B. Nitrous oxide
- C. Nitrous acid
- D. Hydrazoic acid

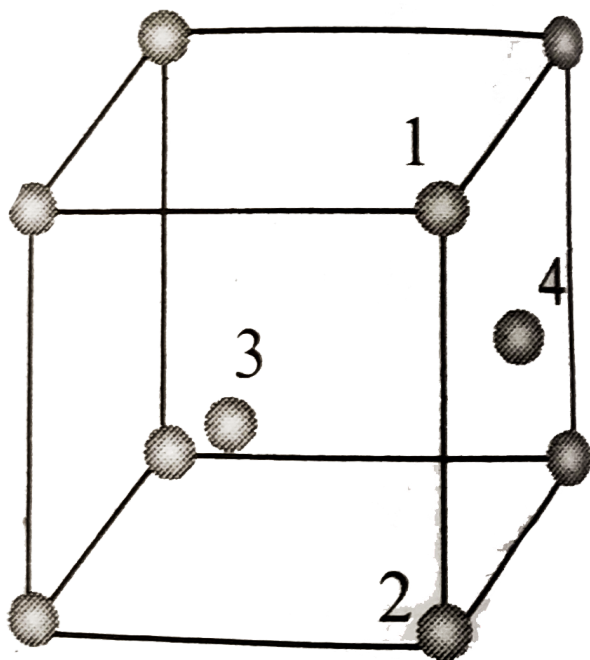
**Answer: B**



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10. In fcc unit cell, atoms are numbered as shown below.

The atoms not touching each other are (Atom numbered 3 is face centre of front face)



A. 3 and 4

B. 1 and 3

C. 1 and 2

D. 2 and 4

**Answer: C**



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**11. Which of the following is incorrect match?**

A.  $SiF_4$  can act as Lewis acid

B. In benzyne all C-atoms are  $sp^2$  - hybridized

C.  $PBr_3$  non polar

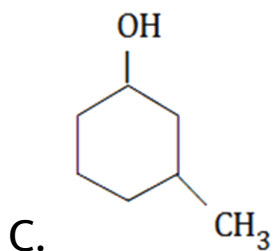
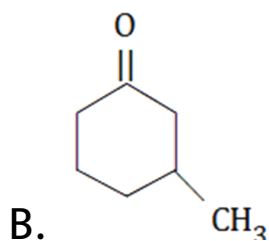
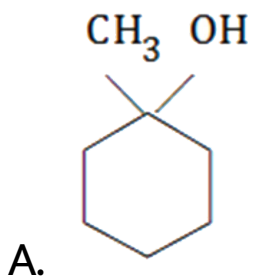
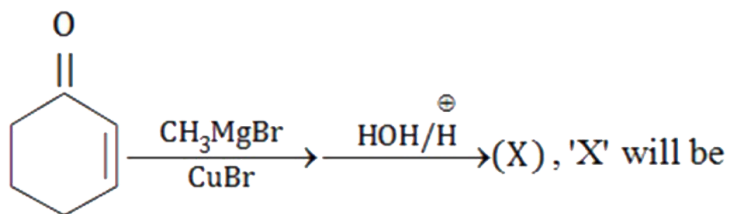
D.  $CHF = C = CHF$  nodal planes of  $\pi$ -bonds are not lying in same plane

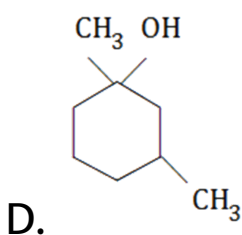
**Answer: C**



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12. In the given reaction





**Answer: B**

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13. Which of the following gives yellow ppt. with  $H_2PtCl_6$  ?

A. Ammonia

B.  $CO_2$



C.  $Cl_2$

D.  $CO$

**Answer: A**



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**14.** 28 g of  $N_2$  and 6 g of  $H_2$  were mixed. At equilibrium 17 g  $NH_3$  was produced. The weight of  $N_2$  and  $H_2$  at equilibrium are respectively

A. 11g, 20 g

B. 28g, 6g

C. 14g, 3g

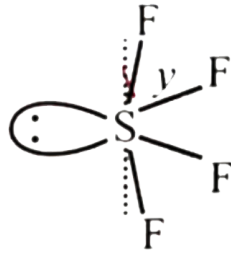
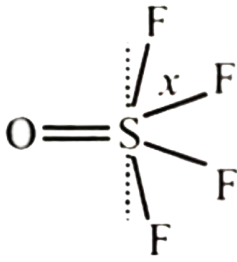
D. None of these

**Answer: C**



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**15.** Compare bond lengths ( $x$  and  $y$ ) for the following molecules



A.  $x > y$

B.  $y > x$

C.  $x = y$

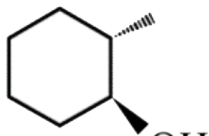
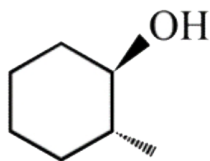
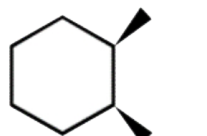
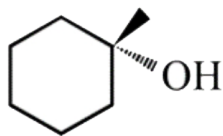
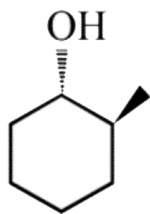
D. None of these

**Answer: B**



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16. What is the product of the reaction of methyl cyclohexene with  $BH_3$  - THF followed by oxidation with alkaline  $H_2O_2$  ?



A. II and III

B. II

C. III and IV

D. I and IV

**Answer: D**



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**17.** In Wilkinson's catalyst, the hybridization of central metal ion and its shape are respectively :

A.  $dsp^2$ , square planar

B.  $sp^3$ , tetrahedral

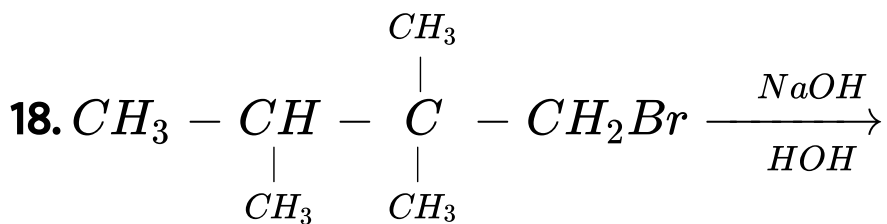
C.  $d^2 sp^3$ , octahedral

D.  $sp^3 d^2$ , octahedral

**Answer: A**



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Consider the following statement for the given reaction

1. The reaction is  $S_N1$
2. The reaction intermediate is carbocation
3. The major product will be 2,3-dimethyl-3-pentanol
4. The major product has one stereogenic centre

A. 1,2 and 3 are correct

B. 2,3 and 4 are correct

C. 1,2,3 and 4 are correct

D. 1,3 and 4 are correct

**Answer: C**



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**19.** Identify the correct statement regarding entropy

A. At absolute zero of temperature entropy

of perfectly crystalline substance is + ve

B. At absolute zero of temperature entropy

of perfectly crystalline substance is

taken to be zero



C. At  $0^{\circ}C$  the entropy of a perfectly crystalline substance is taken to be zero

D. At absolute zero of temperature, the entropy of all crystalline substance is taken to be zero

**Answer: B**

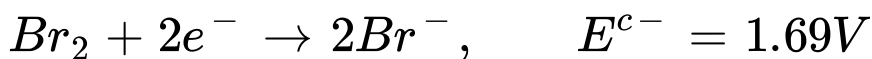
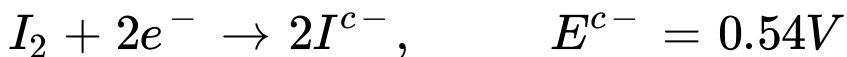


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20.

Given

that



Predict which of the following is true.

- A.  $I^{\ominus}$  ions will be able to reduce bromine
- B.  $Br^{\ominus}$  ions will be able to reduce iodine
- C. Iodine will be able to reduce bromine
- D. Bromine will be able to reduce iodide ions

**Answer: A**



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21. In  $P_4O_{10}$  molecule, bridging P - O bond length is

A. Larger than that of in  $P_4O_6$

B. Lesser than that of in  $P_4O_6$

C. Equal to that of in  $P_4O_6$

D. Cannot be compared

**Answer: B**



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**22.** A transition metal complex shows a magnetic moment of 5.9 B.M. at room temperature. The number of unpaired electron on the metal is

A. 3

B. 4

C. 5

D. 2

**Answer: C**



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**23.** Acidified potassium permanganate is dropped over sodium peroxide taken in a round bottom flask at room temperature, vigorous reaction takes place to produce:

A. Hydrogen peroxide

B. Mixture of hydrogen and oxygen

C. A colourless gas hydrogen

D. A colourless gas dioxygen

**Answer: D**



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**24.** Camphor is used as solvent to determine the molecular weight of non volatile solute because:

A. It is readily available

B. It is volatile

C. Molal depression constant is high

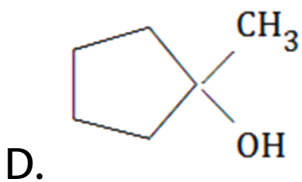
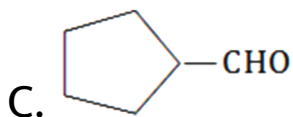
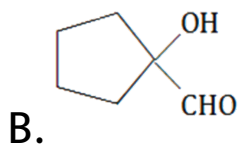
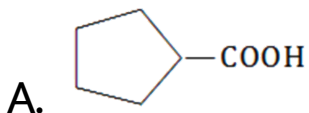
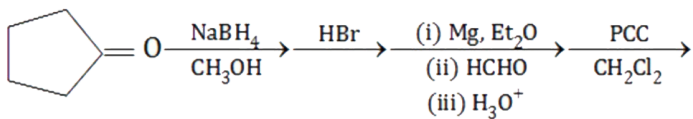
D. It is solvent for organic substances

**Answer: C**



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**25.** What is the product of the following reaction?



**Answer: C**



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26. Which one of the following reactions can be used for the preparation of  $\beta$  - hydroxy acid

- A. Perkin reaction
- B. Reformatsky reaction
- C. Aldol condensation
- D. Claisen condensation

**Answer: B**



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27. For the change,

$C_{\text{diamond}} \rightarrow C_{\text{graphite}}, \Delta H = -1.89 \text{ kJ}$ , if 6g

of diamond and 6g of graphite are separately

burnt to yield  $CO_2$ , the heat liberated in first

case is

A. Less than in the second case by 1.89 kJ

B. Less than in the second case by 11.34 kJ

C. Less than in second case by 14.34 kJ

D. More than in the second case by 0.945 kJ

**Answer: D**





28. Select the correct statement regarding oxides

A. As the electronegativity of element increases, acidic character of oxide increases

B. Down the group the acidic nature of oxide increases

C. Both  $B_2O_3$  and  $Al_2O_3$  are acidic oxides

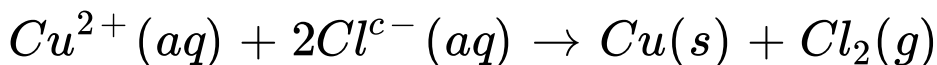
D. Nitrogen forms all the three type of oxides (neutral , basic and acidic)

**Answer: A**



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**29.** The reaction



has  $E^{\circ}_{cell} = -1.03V$ . This reaction

- A. Can be made to produce electricity in voltaic cell
- B. Can be made to occur in an electrolytic cell
- C. Can occur in acidic medium only
- D. Can occur in basic medium only

**Answer: B**



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30. If the formula of basic Beryllium nitrate is

$[Be_xO(NO_3)_6]$ . What is the value of 'n' here

A. 2

B. 3

C. 4

D. 5

**Answer: C**



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**31.** In vulcanization of rubber:

A. Rubber molecules are joined through S - S linkage at the ends

B. Rubber molecules are linked through S - S linkage at the various parts of polymer backbone

C. Vulcanization makes rubber perfectly crystalline

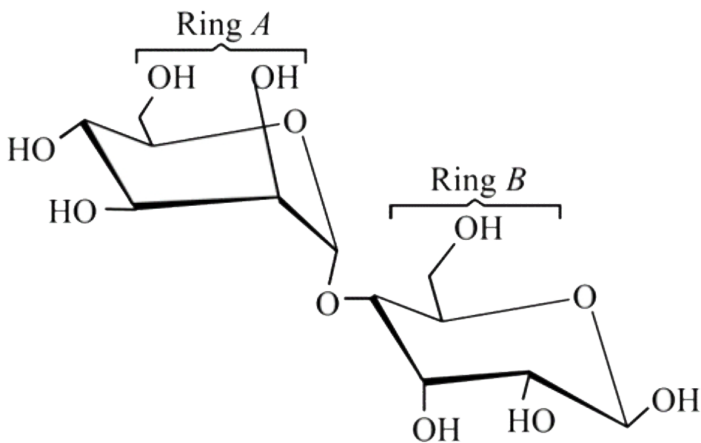
D. Vulcanization converts rubber into a thermosetting polymer

**Answer: B**



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**32.** Which statements are correct about the following disaccharide?





A. Ring A is a hemiacetal in the  $\beta$ -  
configuration, ring B is an acetal in the  $\alpha$   
- configuration

B. Ring A is a hemiacetal in the  $\alpha$ -  
configuration, ring B is the an acetal in  
the  $\beta$ - configuration

C. Ring A is an acetal in the  $\beta$ -  
configuration, ring B is a hemiacetal in  
the  $\alpha$ - configuration

D. Ring A is an acetal in the  $\alpha$ -  
configuration, ring B is a hemiacetal in  
the  $\beta$ - configuration

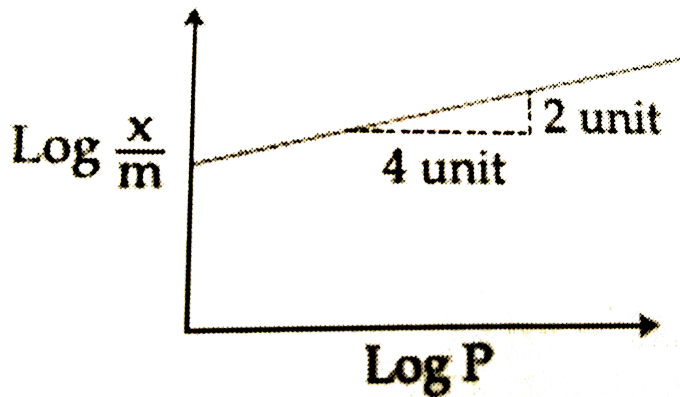
**Answer: D**



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**33.** Adsorption of a gas follows Freundlich adsorption isotherm. In the given plot,  $x$  is the mass of the gas adsorbed on mass  $m$  of the adsorbent at pressure  $P$ .  $\frac{x}{m}$  is

proportional to:



A.  $P^{\frac{1}{4}}$

B.  $P^2$

C.  $P$

D.  $P^{\frac{1}{2}}$

**Answer: D**



34. At room temperature, the reaction between  $NO$  and  $O_2$  to give  $NO_2$  is fast, while that between  $CO$  and  $O_2$  is slow. It is due to:

A. CO is smaller in size than that of NO

B. CO is poisonous

C. The activation energy for the reactions

$2NO + O_2 \rightarrow 2NO_2$  is less than

$2CO + O_2 \rightarrow 2CO_2$

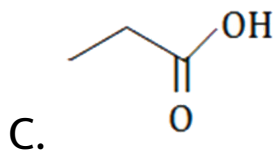
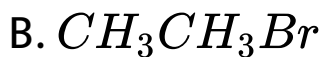
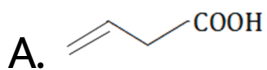
D. None of these

**Answer: C**



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**35.** Which of the compounds shown below will react with diethyl malonate in the presence of methoxide ion to give a compound, which on treatment with aqueous acid and gentle heating will decarboxylate to form butanoic acid?

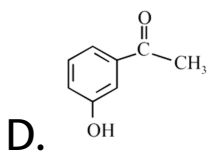
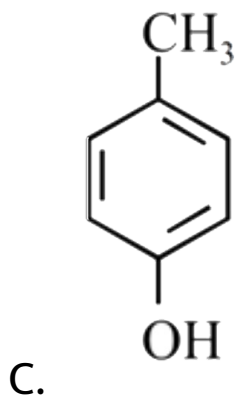
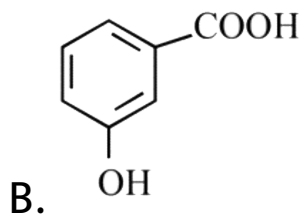
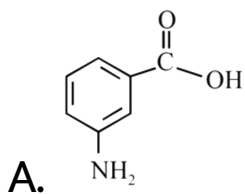
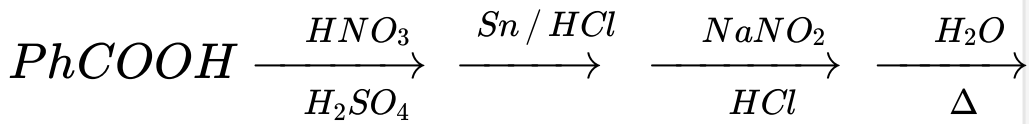


**Answer: B**



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**36.** What is the major product (Z) of the reaction?



**Answer: B**



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**37. Select the correct match here**

A.  $[Co(ox)(H_2O)(NH_3)]Br$       Optical

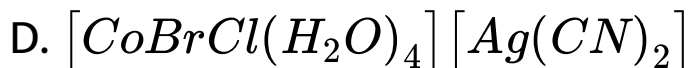
isomerism

B.  $[Cr(SCN)(H_2O)_3(en)](C_2O_4)$

Ionization isomerism

C.  $[ZnBr(CN)(SCN)(NH_3)]^-$



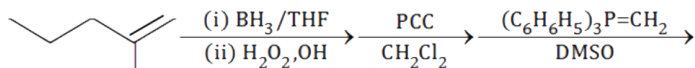


**Answer: D**



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**38.** What is the product of the reaction sequence below ?



A. 2-methyl-1-hexene

B. 2,3-dimethyl-2-pentene

C. 2-methyl-2-hexene

D. 3-methyl-1-hexene

**Answer: D**



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**39.** The process of removing dissolved impurities from a colloidal system by means of diffusion through suitable membrane under the influence of an electric field is called

A. Electro-osmosis

B. Electrodialysis

C. Electrophoresis

D. Peptization

**Answer: B**



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**40.** How many litres of  $Cl_2$  at STP will be liberated by the oxidation of  $NaCl$  with

$10gKMnO_4$  in acidic medium: (Atomic weight:

$Mn = 55$  and  $K = 39$ )

A. 3.54 litre

B. 7.08 litre

C. 1.77 litre

D. None of these

**Answer: A**



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41. At  $300^{\circ}C$  the pressure necessary to obtained 80% dissociation of  $PCl_5$  is numerically equal to

A.  $K_P = 17.7p$

B.  $K_P = 1.77p$

C.  $K_P = 2.22p$

D.  $K_P = 177p$

**Answer: C**



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**42.** In the closest packing of atoms

Note : OV stands for Octahedral voids and TV stands for Tetrahedral voids.

A. The size of TV is greater than that of OV

B. The size of TV is smaller than that of OV

C. The size of TV is equal to that of OV

D. The size of TV may be greater or smaller

or equal to that of OV depending upon

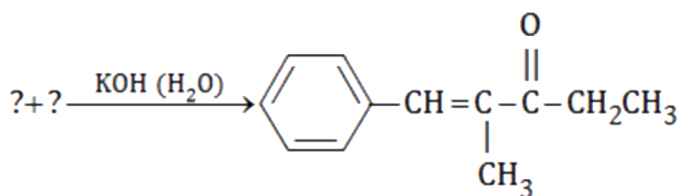
the size of atoms

**Answer: B**



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**43.** Identify the starting reagents needed to make the following compound by mixed aldol condensation.



A. Acetophenone and butanal

B. Benzaldehyde and pentan-2-one

C. Acetophenone and butan-2-one

D. Benzaldehyde and pentan-3-one

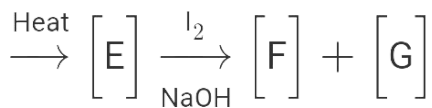
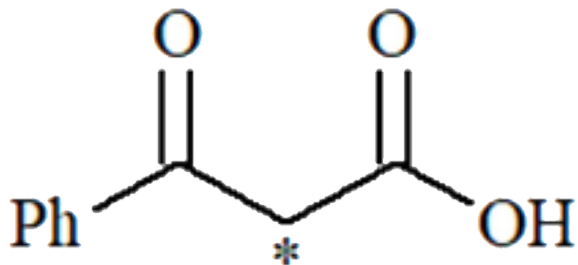
**Answer: D**



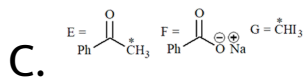
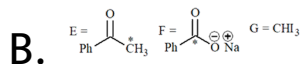
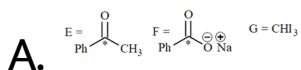
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**44.** In the following reaction sequence, the correct structures of E, F and G are





[\*implies  $^{13}\text{C}$  labelled carbon]



D. None of these

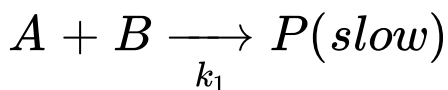
**Answer: C**



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45. Consider the reaction mechanism:

$A_2 \xrightleftharpoons{k_{eq}} 2A(\text{fast})$  (where  $A$  is the intermediate.)



The rate law for the reaction is

A.  $k_1[A][B]$

B.  $k_1K^{1/2}[A_2]^{1/2}[B]$

C.  $k_1K^{1/2}[A][B]$

$$D. k_1 K^{1/2} [A]^2 [B]$$

**Answer: B**



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