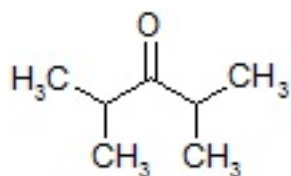


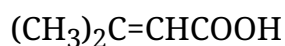
CBSE Test Paper - 01

Class - 12 Chemistry (Aldehydes, Ketones and Carboxylic Acids)

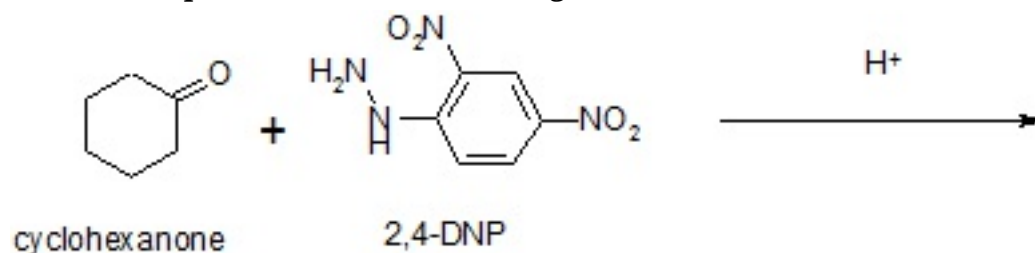
- Which of the following does not give silver mirror test?
 - $\text{CH}_3\text{CH}_2\text{CHO}$
 - HCOOH
 - CH_3CHO
 - CH_3COCH_3
- The compound formed as a result of oxidation of ethyl benzene by KMnO_4 is
 - Benzophenone
 - Acetophenone
 - Benzoic acid
 - Benzyl alcohol
- IUPAC name of CH_3CHO is
 - Ethanal
 - Formaldehyde
 - None of these
 - Acetaldehyde
- Give the IUPAC name of the following compound:
$$\text{CH}_3 - \text{CH}_2 - \text{CH}_2 \overset{\text{Br}}{\underset{|}{\text{CH}}} - \overset{\text{CH}_3}{\underset{|}{\text{CH}}} - \text{CH}_2 - \overset{\text{O}}{\underset{||}{\text{C}}} - \text{H}$$
 - 4-bromo-3-methylheptanone
 - 3-methyl-4-bromoheptanal
 - 4-bromo-3-methylheptanal
 - None of these
- The common name for pentanedioic acid is:
 - succinic acid
 - pimelic acid
 - oxalic acid
 - glutaric acid
- Write the IUPAC name of the compound:



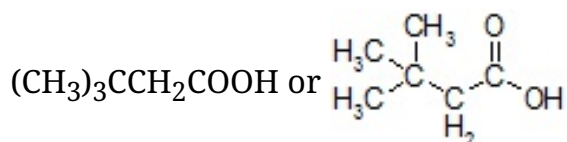
7. Give the IUPAC name of the following compound:



8. Predict the products of the following reaction.



9. Write the IUPAC name of the following compound.



10. Give chemical reaction to prepare $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{Br}$ from $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{COOH}$

11. Describe the following reactions:

- i. Cannizzaro's reaction.
- ii. Cross Aldol Condensation reaction.

12. Write balanced chemical equations for the following reactions.

- i. Thionyl chloride reacts with benzoic acid.
- ii. Acetic acid is reacted with red phosphorus and HI.
- iii. Acetic acid is treated with Zn metal.

13. Write the steps for the conversion of ethyl alcohol to acetone.

14. Convert Toluene to m-Nitrobenzoic acid.

15. A compound 'A' with formula $\text{C}_5\text{H}_{10}\text{O}$ gives a positive 2, 4 -DNP test but a negative Tollen's test. It can be oxidizing to carboxylic acid 'B' of molecular formula $\text{C}_3\text{H}_6\text{O}_2$, when treated with alk. KMnO_4 under vigorous conditions. The salt of 'B' gives a hydrocarbon 'C' on Kolbes' electrolytic decarboxylation. Identify A, B,C & write chemical equations.

CBSE Test Paper - 01

Class - 12 Chemistry (Aldehydes, Ketones and Carboxylic Acids)

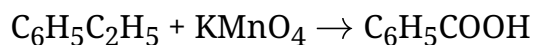
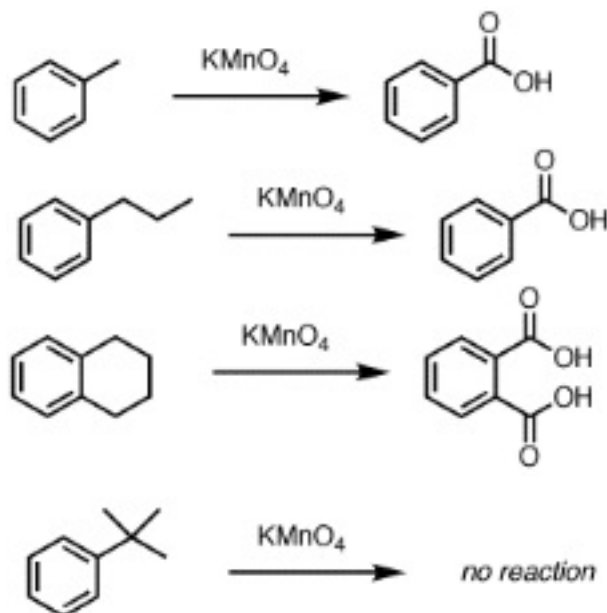
Solutions

1. (d) CH_3COCH_3

Explanation: CH_3COCH_3 will not give silver mirror test (Tollens Test). Tollens test is given by aldehydes only and HCOOH is the only acid which gives tollen's test. Ketones does not give tollen's test

2. (c) Benzoic acid

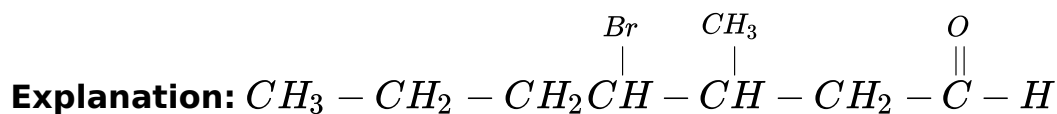
Explanation: Alkylbenzenes having at least one alpha hydrogen when reacts with KMnO_4 then, alkyl group oxidises to COOH group.



3. (a) Ethanal

Explanation: CH_3CHO is ethanal as we have two carbons in main chain so, the word root is 'Eth' and the functional group is aldehydic group so, suffix is 'al'. Hence, IUPAC name will be Ethanal.

4. (c) 4-bromo-3-methylheptanal



since functional group CHO is present so it is given first priority and consider a part of

main chain. Then name of substituents are given first in alphabetical order followed by word root which is 'hept' and finally suffix which is 'al'.

5. (d) glutaric acid

Explanation: Pentanedioic acid is known as glutaric acid.

(COOH)₂ is known as oxalic acid.

Butanedioic acid is known as succinic acid.

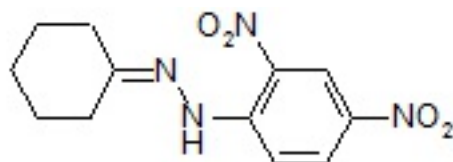
hexanedioic acid is known as adipic acid.

heptanedioic acid is known as pimelic acid.

6. 2,4-Dimethylpentan-3-one

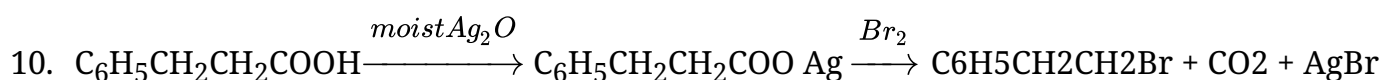
7. 3-Methylbut-2-enoic acid

- 8.

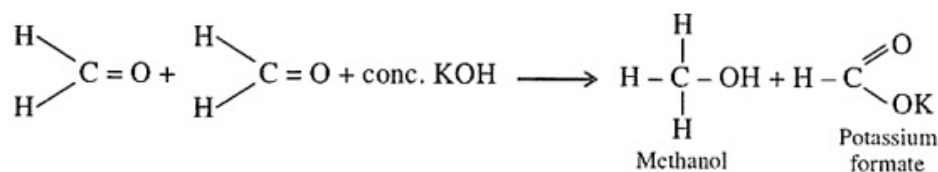


Cyclohexanone-2,4-dinitrophenylhydrazone

9. 3,3-Dimethylbutanoic acid

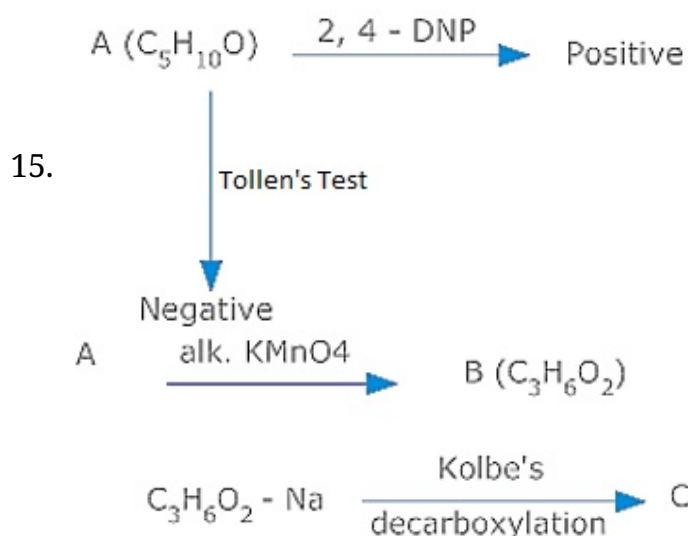
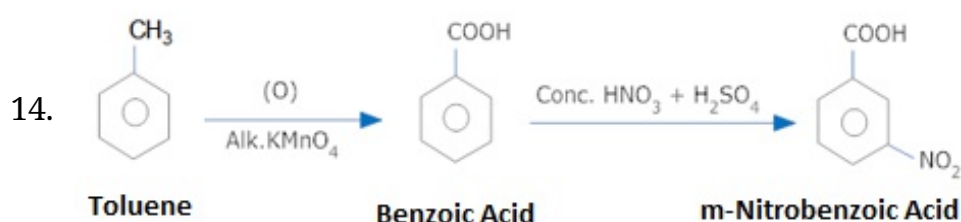
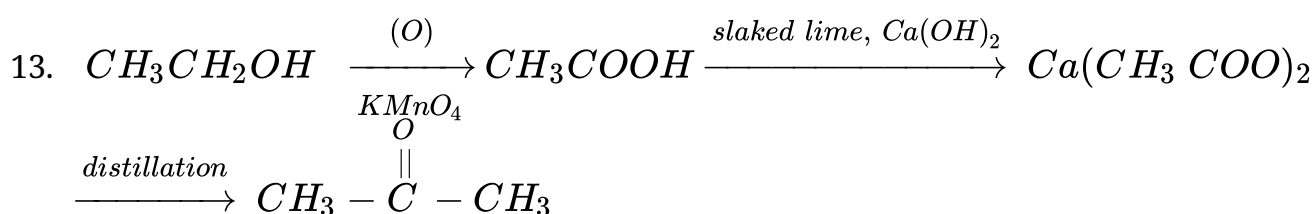
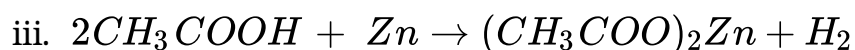
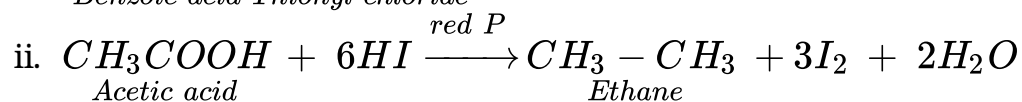
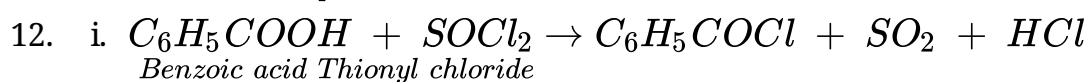
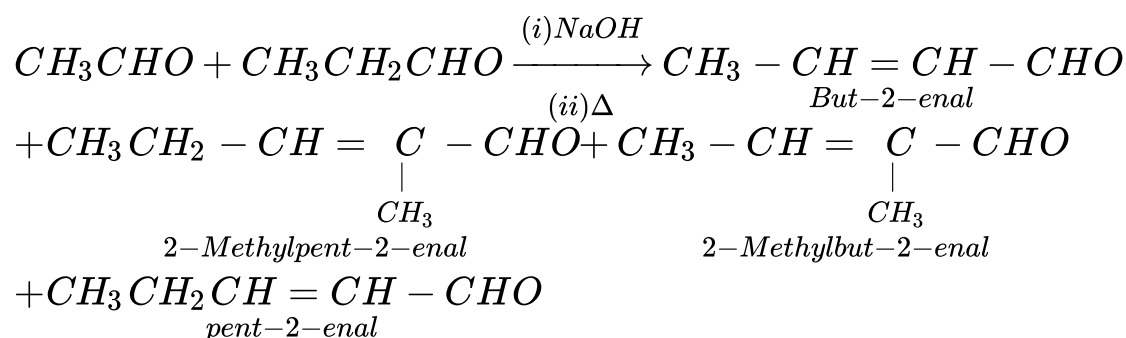


11. i. **Cannizzaro's reaction:** Aldehydes which do not have an alpha-hydrogen atom, undergo self-oxidation and reduction (disproportionation) reaction on treatment with concentrated alkali.



In this reaction, one molecule of the aldehyde is reduced to alcohol while another is oxidised to carboxylic acid salt.

- ii. **Cross Aldol Condensation reaction:** When aldol condensation is carried out between two different aldehydes and/or ketones, it is called cross aldol condensation. If both of them contain alpha-hydrogen atoms, it gives a mixture of 4 products. Following reactions explain cross aldol condensation.



As the compound A gives a positive 2, 4-DNP test but negative Tollen's test, it is a ketone. Since on oxidation, it gives an acid B, of molecular formula $C_3H_6O_2$, it is $CH_3CH_2COCH_2CH_3$ and B is CH_3CH_2COOH . As C is obtained by Kolbes

decarboxylation of B therefore C is $CH_3CH_2CH_2CH_3$. Therefore A = Pentan-3-one, $CH_3CH_2COCH_2CH_3$; B = Propanoic acid CH_3CH_2COOH ; and C = Butane $CH_3CH_2CH_2CH_3$. The sequence of reactions are as follows:

