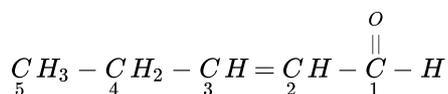
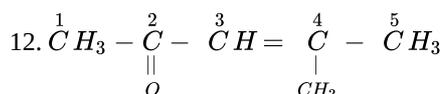




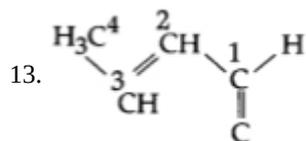
10. The IUPAC name is **Pent-2-en-1-al**



11. a. aquacyanidobis(ethane-1,2-diamine)cobalt(III) ion  
b. hexaamminenickel(II) chloride



The IUPAC name is **4-methylpent-3-en-2-one**



IUPAC name = But-2-enal

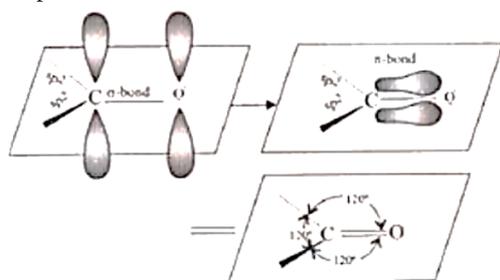
14. **IUPAC Name:** Heptanal; **Common name:** Oenanthaldehyde, Heptylaldehyde, Enanthole

15. (a) Both A and R are true and R is the correct explanation of A.

**Explanation:**

Formaldehyde is a planar molecule because it contains  $sp^2$  hybridised carbon atom.

Explanation:



Orbital diagram for the formation of the carbonyl group.

16. (b) (a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)

**Explanation:**

(a) - (iii), (b) - (iv), (c) - (i), (d) - (ii)

17. (a) (a) - (iv), (b) - (i), (c) - (ii), (d) - (iii)

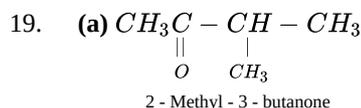
**Explanation:**

(a) - (iv), (b) - (i), (c) - (ii), (d) - (iii)

18. (a) (a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)

**Explanation:**

(a) - (iv), (b) - (iii), (c) - (i), (d) - (ii)

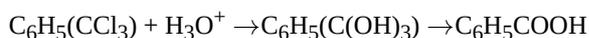
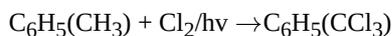


**Explanation:**

Numbering is done in such a way that CO gets the lower number as CO is the functional group and should get the first priority. The correct IUPAC name of the compound should be 3-methylbut-2-one.

20. (a) Benzoic Acid

**Explanation:**



- 21.

(d)  $(\text{CH}_3)_2\text{CH} - \text{CHO}$

**Explanation:**

$(\text{CH}_3)_2\text{CH} - \text{CHO}$  doesn't give cannizzaro reaction.

22. (a) Pentan-3-one

**Explanation:**

Pentan-3-one

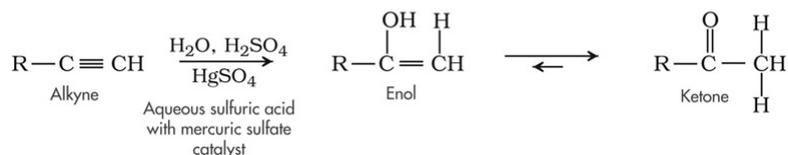
23.

(c)  $\text{PhCOCH}_2\text{CH}_3$

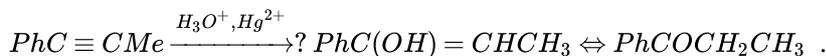
**Explanation:**

Hydration of given alkyne will occur according to Markovnikoff's rule leading to the formation of enol which will tautomerise to give keto form.

The general reaction of alkyne hydrations shown below:

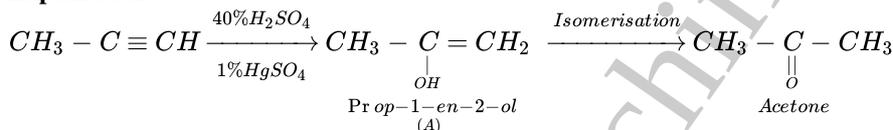


Same reaction will occur with



24.

(c) Prop-1-en-2-ol, tautomerism

**Explanation:**

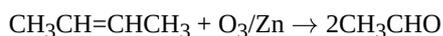
Prop-1-en-2-ol (A) acetone are tautomers.

25.

(b) 2-butene

**Explanation:**

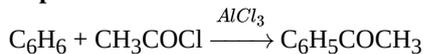
2-butene on reductive ozonolysis with  $\text{O}_3/\text{Zn}$  will give  $\text{CH}_3\text{CHO}$  which has a molecular mass of 44u.



Molecular mass of  $\text{CH}_3\text{CHO} = 12 + 3 + 12 + 1 + 16 = 44\text{u}$

26.

(c)  $\text{C}_6\text{H}_5\text{COCH}_3$

**Explanation:**

This is known as Friedel craft acylation reaction.  $\text{AlCl}_3$  acts as a lewis acid and will generate  $\text{CH}_3\text{CO}^+$  carbocation and this will attack benzene to give  $\text{C}_6\text{H}_5\text{COCH}_3$ .

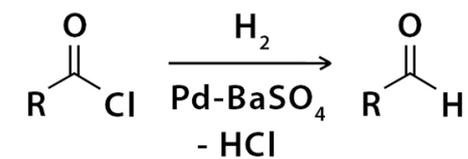
27.

(d) Using  $\text{H}_2$ -Pd,  $\text{BaSO}_4$

**Explanation:**

Catalytic hydrogenation of acid chloride using  $\text{H}_2$ -Pd,  $\text{BaSO}_4$  converts acid chloride selectively to aldehydes ( $\text{BaSO}_4$  reduces the activity of palladium). This is known as Rosenmund Reduction.

## Rosenmund Reduction

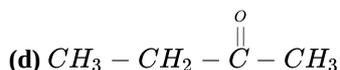


Acid chloride

Aldehyde

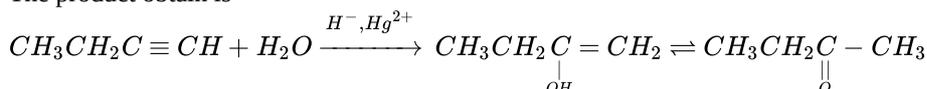
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28.



**Explanation:**

The product obtain is



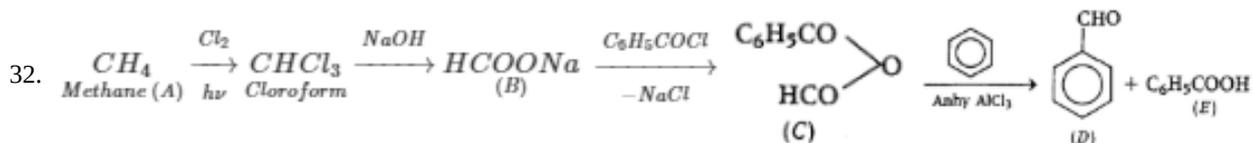
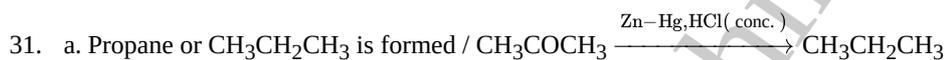
29.

(b)  $\text{Pd} - \text{BaSO}_4$

**Explanation:**

$\text{Pd} - \text{BaSO}_4$

30. Benzene 1, 4-dicarbaldehyde



33.

(d) If both Assertion and Reason are false statements.

**Explanation:**

In an electrophilic substitution reaction, the nitro group strongly deactivates the benzene ring. Nitrobenzene does not undergo Friedel Craft acylation reaction.

34.

(c) A is true but R is false.

**Explanation:**

Isobutanal does not give an iodoform test because it does not have the  $-\text{COCH}_3$  group.

35.

(b) any of these

**Explanation:**

Reductive ozonolysis yields aldehyde or ketone depending on the nature of alkene.

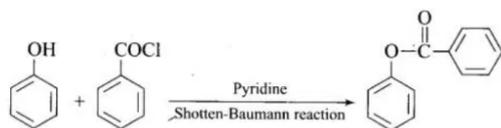
for example,  $\text{CH}_2 = \text{CH}_2$  on reaction with  $\text{O}_3/\text{Zn}$  will give 2 molecules of  $\text{HCHO}$  while  $\text{CH}_3\text{C}(\text{CH}_3) = \text{CHCH}_3$  on the reaction with  $\text{O}_3/\text{Zn}$  will give one molecule of propanone and one molecule of acetaldehyde, and  $\text{CH}_3\text{C}(\text{CH}_3) = \text{C}(\text{CH}_3)\text{CH}_3$  on reaction with  $\text{O}_3/\text{Zn}$  will give 2 molecules of propanone.

36.

(b) Phenol and benzoyl chloride in the presence of pyridine

**Explanation:**

$C_6H_5OCOC_6H_5$  can be prepared by the reaction of the phenol( $C_6H_5OH$ ) and benzoyl chloride in the presence of pyridine.



37.

(c) 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.

38. (a) 2,2-Dimethylbutanoic acid

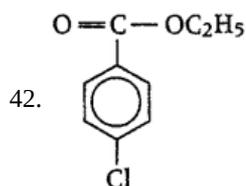
**Explanation:**

2,2-Dimethylbutanoic acid

39. 3,3-Dimethylbutanoic acid

40. 3-Phenylpropanoic acid

41. The structure of Hexane-1, 6-dioic acid is:



**IUPAC Name: Ethyl-4-chlorobenzoate**

43. 2-Methylcyclopentanecarboxylic acid

44. 3-Methylbut-2-enoic acid

45.

(d) (a) - (ii), (b) - (iii), (c) - (iv), (d) - (i)

**Explanation:**

(a) - (ii), (b) - (iii), (c) - (iv), (d) - (i)

46. (a) (a) - (ii), (b) - (i), (c) - (iv), (d) - (iii)

**Explanation:**

(a) - (ii), (b) - (i), (c) - (iv), (d) - (iii)

47. Fill in the blanks:

- (i) 1. Reimer-Tiemann reaction
- (ii) 1. 2, 3-dimethyl but-2-ene