CHEMISTRY ONLINE
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CHEMISTRY

ORGANIC CHEMISTRY II

Level & Board	AQA (A-LEVEL)
TOPIC:	ORGANIC SYNTHESIS
PAPER TYPE:	QUESTION PAPER - 2
TOTAL QUESTIONS	10
TOTAL MARKS	/23

Organic Synthesis - 2

1. A benzene ring containing two hydroxy groups, $C_6H_4(OH)_2$, can exist as a range of isomers.

(a) Draw the structure of each isomer.

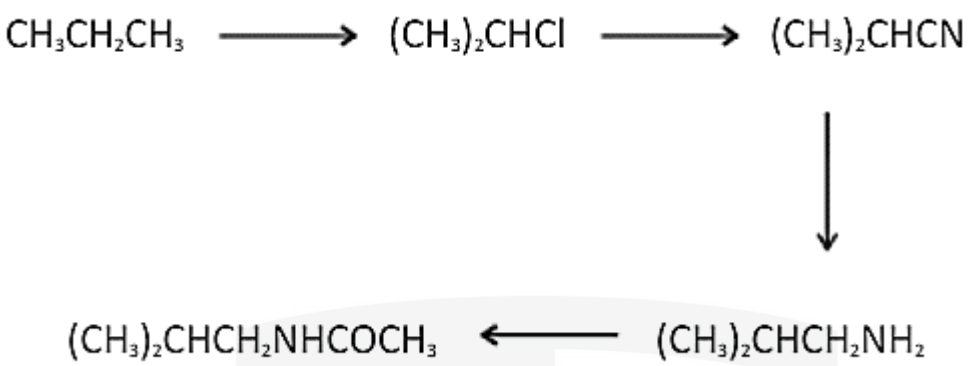
(2)

(b) A polymer can be formed by reacting one of these isomers with the di-acyl chloride, $ClCOCH_2COCl$.

Draw a diagram indicating clearly the structure of such a polymer.

(2)

2. Which one of the following types of reaction mechanism is not involved in the above sequence?



A. Free-radical substitution
B. Nucleophilic substitution
C. Elimination
D. Nucleophilic addition-elimination

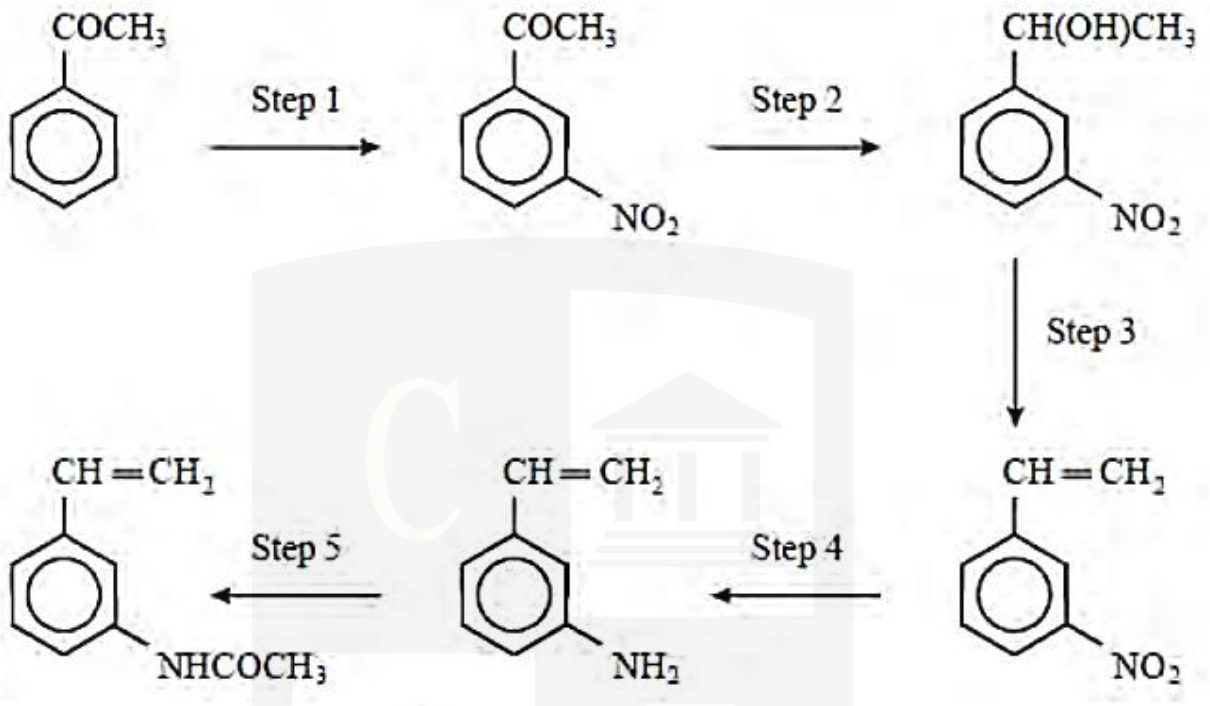
(1)

3. Phenol, C_6H_5OH, reacts differently from benzene with ethanoyl chloride.

State the type of reaction that would occur between phenol and ethanoyl chloride and give the structure of the organic product.

(2)

4. Refer to the following reaction sequence:



Which one of the following types of reaction is not involved in the above sequence?

A. Acylation
B. Oxidation
C. Reduction
D. Dehydration

(1)

5. Benzene, C_6H_6, reacts with ethanoyl chloride, CH_3COCl, to give a compound of molecular formula C_8H_8O.

(a) Identify another substance that must be present for this reaction to occur and state the function of this substance in this reaction.

(2)

(b) Give the mechanism for this reaction.

(4)

6. Which of the following isomers of $C_4H_{10}O$ has a chiral centre?

A. Butan-1-ol
B. Butan-2-ol
C. 2-methylpropan-1-ol
D. 2-methylpropan-2-ol

(1)

7. A characteristic reaction of the carbonyl group, C=O, is nucleophilic addition.

The C=C double bond reacts by electrophilic addition.

Suggest the reason for the difference.

(2)

8. When the colourless liquid chlorobenzene is shaken with bromine water, the chlorobenzene becomes a yellow orange colour.

What is the interpretation of this?

A. An addition compound of chlorobenzene and bromine has formed.
B. The chlorine atom has been replaced by a bromine atom.
C. A hydrogen atom has been replaced by a bromine atom.
D. The bromine is more soluble in chlorobenzene than in water.

(1)

9. Define

(a) The standard enthalpy of formation of benzene, $C_6H_6(l)$.

(2)

(b) The standard enthalpy of combustion of benzene, $C_6H_6(l)$.

(2)

10. What class of organic compound has a characteristic smell and gives a solution in water with a pH of about 10?

I am Sorry !!!!!

A. Arene
B. Amine
C. Aldehyde
D. Carboxylic acid

(1)

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