CHEMISTRY ONLINE
TUITION

Phone: +442081445350

www.chemistryonlinetuition.com

Email:asherrana@chemistryonlinetuition.com

CHEMISTRY

INORGANIC CHEMISTRY II

Level & Board	AQA (A-LEVEL)
TOPIC:	ORGANIC SYNTHESIS
PAPER TYPE:	QUESTION PAPER - 1
TOTAL QUESTIONS	10
TOTAL MARKS	27

Organic Synthesis

1. Phenylamine is prepared from benzene.

Give the reagents and conditions needed for each of the steps in the conversion of benzene to phenylamine.

(6)

2. Which one of the following pairs of reagents reacts to form an organic product that shows only 2 peaks in its proton n.m.r. spectrum?

A. Butan-2-ol and acidified potassium dichromate(VI)
B. Ethanoyl chloride and methanol
C. Propanoic acid and ethanol in the presence of concentrated sulphuric acid
D. Ethene and hydrogen in the presence of nickel

(1)

3. Give the structural formula of the organic product when phenol is reacted with.

(a) Sodium hydroxide solution

(1)

(b) Aqueous bromine

(1)

(c) Ethanoyl chloride

(1)

4. Which one of the following pairs reacts to form an organic product with only 2 singlets in its proton n.m.r. spectrum?

A. Ethene and bromine
B. Propan-2-ol and acidified potassium dichromate(VI)
C. Ethanol and concentrated sulphuric acid
D. Epoxyethane and water in the presence of dilute sulphuric acid

(1)

5. Benzene can be converted into nitrobenzene.

(a) Give the reagents for the reaction.

(2)

(b) Write the mechanism for the reaction, including the formation of the species that attacks the benzene molecule.

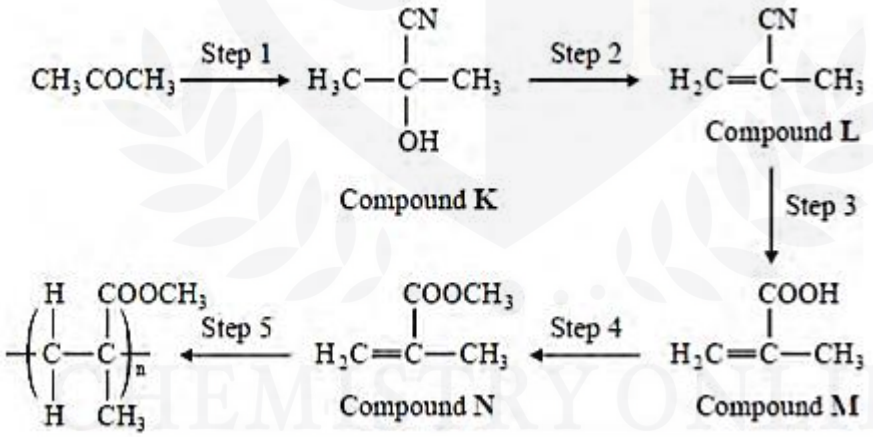
(4)

(c) Name the type of mechanism involved in this reaction.

(1)

6. This question concerns the preparation of the plastic poly(methyl 2-methylpropenoate) (Perspex), starting from propanone.

Which one of the following sets of reagents is not suitable for the step indicated?



A. Step 1 HCN (NaCN then dilute HCl)
B. Step 2 hot ethanolic KOH
C. Step 3 warm aqueous H_2SO_4
D. Step 4 CH_3OH with an acid catalyst

(1)

7. Arenes like methoxybenzene are made from benzene.

(a) What is the natural resource from which benzene is produced?

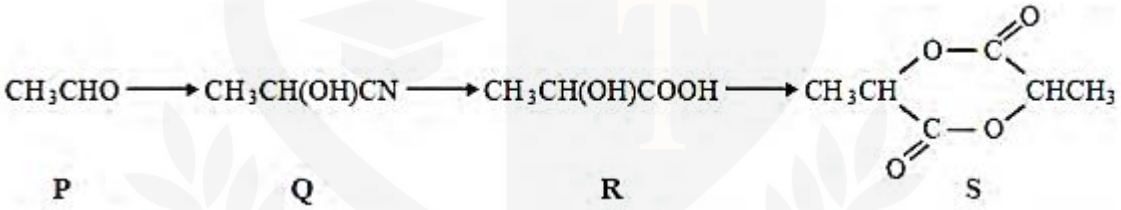
(1)

(b) Suggest why methoxybenzene rather than benzene is used in schools and colleges.

(1)

8. This question refers to the reaction sequence below.

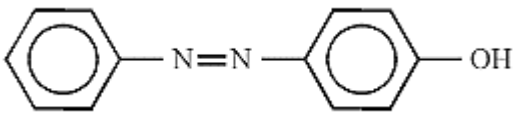
Which one of the following is not involved in the reaction sequence?



A. Esterification
B. Hydrolysis
C. Nucleophilic addition
D. Reduction

(1)

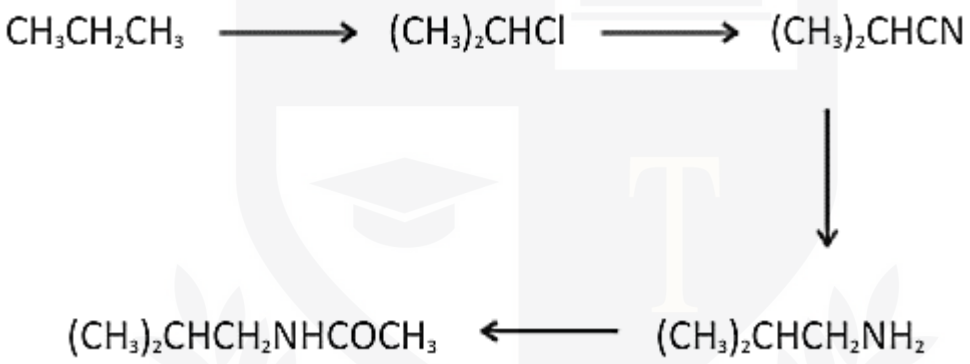
9. The compound 4-hydroxyazobenzene can be obtained from phenylamine and phenol in two steps.



Identify the intermediate formed and give the reagents and conditions for each step.

(4)

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



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

(1)

DR. ASHAR RANA

CHEMISTRY ONLINE TUITION

Phone: +442081445350
www.chemistryonlinetuition.com
Email: asherrana@chemistryonlinetuition.com

- Founder & CEO of Chemistry Online Tuition Ltd.
- Tutoring students in UK and worldwide since 2008
- CIE & EDEXCEL Examiner since 2015
- Chemistry, Physics, and Math's Tutor

CONTACT INFORMATION FOR **CHEMISTRY ONLINE TUITION**

- UK Contact: 02081445350
- International Phone/WhatsApp: 00442081445350
- Website: www.chemistryonlinetuition.com
- Email: asherrana@chemistryonlinetuition.com
- Address: 210-Old Brompton Road, London SW5 OBS, UK