

Practice Question Set For A-Level
Subject : Chemistry
Paper-2 Topic: Organic Synthesis

Name of the Student: _____

Max. Marks : 20 Marks

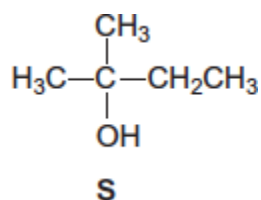
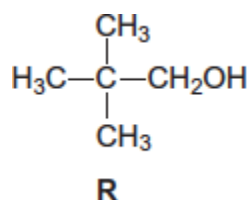
Time : 20 Minutes

Q1.

Describe how you could distinguish between the compounds in the following pairs using **one** simple test-tube reaction in each case.

For each pair, identify a reagent and state what you would observe when both compounds are tested separately with this reagent.

(a)



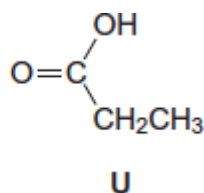
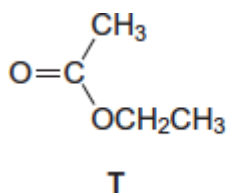
Reagent _____

Observation with **R** _____

Observation with **S** _____

(3)

(b)



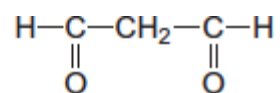
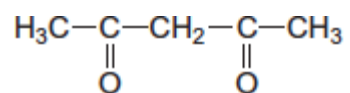
Reagent _____

Observation with **T** _____

Observation with **U** _____

(3)

(c)



Reagent _____

Observation with **V** _____

Observation with **W** _____

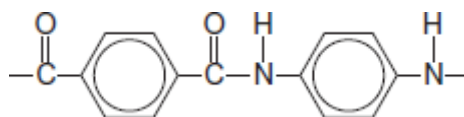
(3)

(Total 9 marks)

Q2.

Kevlar is a polymer used in protective clothing.

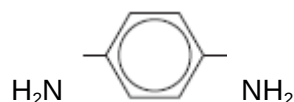
The repeating unit within the polymer chains of Kevlar is shown.



- (a) Name the strongest type of interaction between polymer chains of Kevlar.

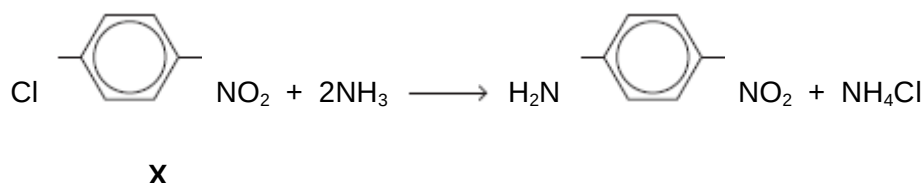
(1)

- (b) One of the monomers used in the synthesis of Kevlar is



An industrial synthesis of this monomer uses the following two-stage process starting from compound **X**.

Stage 1



Stage 2



- (i) Suggest why the reaction of ammonia with **X** in Stage 1 might be considered unexpected.

(2)

- (ii) Suggest a combination of reagents for the reaction in Stage 2.

(1)

- (iii) Compound **X** can be produced by nitration of chlorobenzene.

Give the combination of reagents for this nitration of chlorobenzene.

Write an equation or equations to show the formation of a reactive intermediate from these reagents.

Reagents _____

Equation(s) _____

(3)

- (iv) Name and outline a mechanism for the formation of **X** from chlorobenzene and the reactive intermediate in part (iii).

Name of mechanism _____

Mechanism

(4)

(Total 11 marks)