Year 12 Chemistry - Activity Sheet 3
Group Synthesis Challenge & Flowchart Peer Review

Organic Chemistry

Module 7 - Lesson 3

Aim

To apply your integrated knowledge of organic reactions to design a multi-step synthesis pathway and communicate it using a conventional flowchart. To provide constructive feedback on peers' flowcharts.

Part A: Group Synthesis Challenge

Instructions: Work in your assigned group. Your task is to design a synthesis pathway for the problem below and represent it as a detailed, accurate flowchart.

1. Analyse the starting material and target product.
2. Use the Chord Diagram Visualisation tool and your knowledge to plan a logical sequence of reactions.
3. Construct a flowchart on the provided materials (paper/whiteboard/digital).
4. Ensure your flowchart includes:
    - Correct structures or IUPAC names for all compounds (starting material, intermediates, product) in boxes.
    - Arrows clearly indicating each reaction step.
    - Accurate reagents and conditions listed for every step on the arrows.
    - Adherence to standard flowchart conventions.
5. Be prepared to justify your chosen pathway.

Challenge Problem (Teacher will assign one per group)

Problem 1: Design a synthesis pathway to produce **ethyl propanoate** starting from **ethene** and **propane**. (Assume necessary inorganic reagents are available).

Problem 2: Design a synthesis pathway to produce **butanone** starting from **but-1-ene**.

Problem 3: Design a synthesis pathway to produce **1,2-dichloroethane** starting from **ethanol**.

Problem 4: Design a synthesis pathway to produce **propanoic acid** starting from **propane**.

Part B: Flowchart Peer Review Checklist

Instructions: When reviewing another group's flowchart, consider the following criteria:

Criteria	Description	Check ()
1. Logical Pathway	Does the sequence of reactions make chemical sense to get from start to target?	
2. Correct Structures/Names	Are the structures or names shown for reactants, intermediates, and products accurate?	
3. Correct Reagents/Conditions	Are the specified reagents and conditions appropriate for each reaction step shown?	
4. Flowchart Conventions	Are compounds in boxes? Are arrows used correctly? Are reagents/conditions placed appropriately on arrows?	
5. Clarity & Neatness	Is the flowchart easy to read and understand?	

Constructive Feedback / Comments: