Chemistry

Standard level

Paper 1B

Practice paper

Topic: Organic Chemistry

Chemistry

Standard level

Paper 1B

Specimen paper

45 minutes

Instructions to candidates

- Answer all questions.
- Answers must be written within the answer boxes provided.
- A calculator is required for this paper.
- The maximum mark for paper 1B is [20 marks].

Section B

1. A student performs a laboratory experiment to synthesize ethyl ethanoate by reacting ethanoic acid with ethanol.

(a) Deduce the structural formula of the ester produced, ethyl ethanoate, showing all bonds. **[1]**

(b) The reaction mixture is heated in a water bath rather than using a direct Bunsen burner flame. Explain two safety reasons for this choice. **[2]**

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(c) Concentrated sulfuric acid is specifically added to the reaction mixture. State the role of the acid in this reaction. **[1]**

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(d) Identify one physical observation that would confirm the presence of the ester in the reaction mixture. **[1]**

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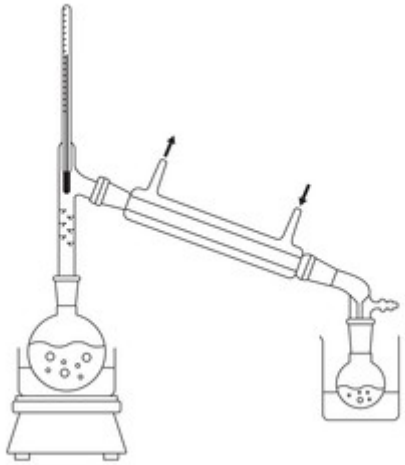
2. A student attempts to partially oxidize ethanol to ethanal. To achieve this, they utilize the generic apparatus represented in the schematic diagram below.



(a) Identify this experimental setup technique and explain why it is essential for successfully isolating ethanal, rather than allowing the reaction to proceed fully to ethanoic acid. **[3]**

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(b) State the specific reagents required to be mixed within the heated reaction flask. **[2]**

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