

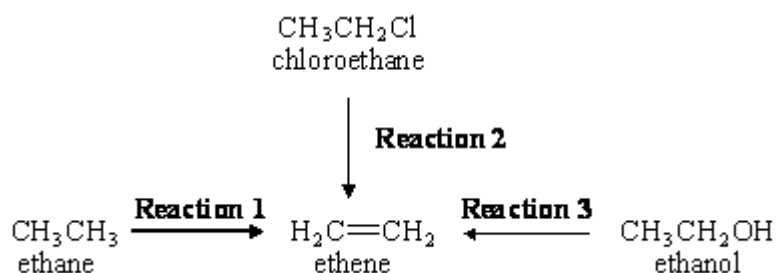
Name of the Student: _____

Max. Marks : 15 Marks

Time : 15 Minutes

Q1.

Ethene is an important starting point for the manufacture of plastics and pharmaceutical chemicals. Most of the ethene used by industry is produced by the thermal cracking of ethane obtained from North Sea gas (**Reaction 1**). It is also possible to make ethene either from chloroethane (**Reaction 2**) or from ethanol (**Reaction 3**).



- (a) Give essential conditions and reagents for each of **Reactions 2 and 3**.

(4)

- (b) Name and outline a mechanism for **Reaction 2**. Suggest a reason why chloroethane is **not** chosen by industry as a starting material to make ethene commercially.

(5)

- (c) Name and outline a mechanism for **Reaction 3**. Suggest why this route to ethene may become used more commonly in the future as supplies of North Sea gas begin to run out.

(6)

(Total 15 marks)