

TORORO GIRLS' SCHOOL
SENIOR FIVE ORGNIC CHEMISTRY TRIAL, 2020

1. Define;
(a) Isomerism

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- (b) Structural isomerism

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- (c) Position isomerism

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- (d) Functional isomerism

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2. Using the molecular formula C_4H_8O , rite the structural formula ad teir corresponding names for each of the following;
(a) Position isomers

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(b) Functional isomers.

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3. Discuss each of the following reaction;

(a) Reaction between sulphuric acid and ethanol.

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(b) Reaction between chlorine and methylbenzene

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(c) Reaction between phenylmethylbromide and sodium hydroxide.

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(d) Reaction between propene and hydrogen bromide.

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4. Using suitable examples, describe each of the following reactions.

(a) Elimination reaction.

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(b) Substitution reaction

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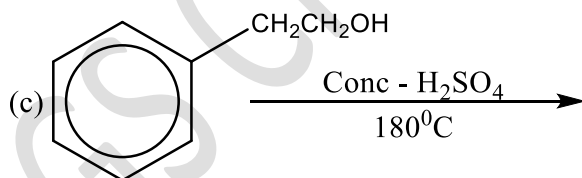
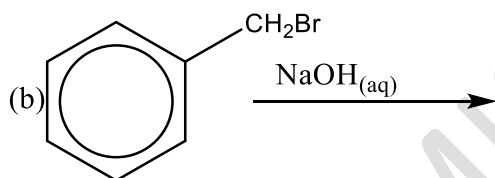
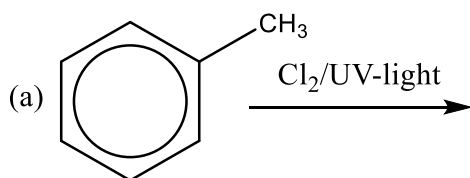
(c) Addition reaction.

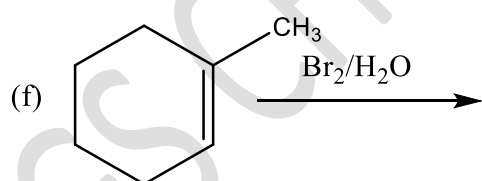
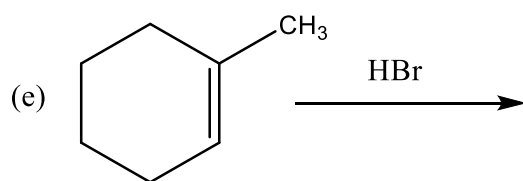
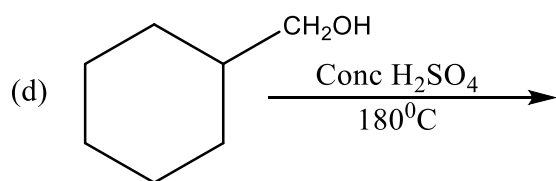
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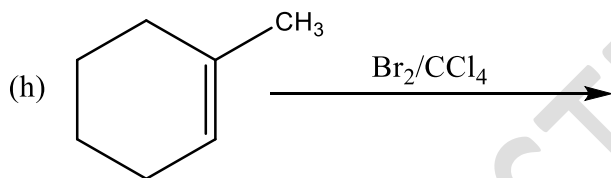
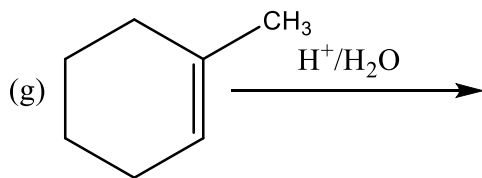
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5. Complete each of the following equations and write a mechanism for the reaction.







6. An organic compound X, contains carbon, hydrogen and oxygen with a percentage by mass of 60% carbon, 13.3% hydrogen and rest being oxygen. The molecular mass of X is 60g/mol.

(a) (i) Calculate the empirical formula of X.

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(ii) determine the molecular formula of X.

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(b)(i) Write and name all the possible structural isomers of X.

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(ii) compound X reacts with concentrated sulphuric acid at 180°C to form an alkene. Identify X.

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(c) Write equation and a mechanism for the reaction between X and;

(i) Hydrogen bromide

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(ii) Acidified water.

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7. A hydrocarbon X contains 85.71% carbon.

(a) (i) Calculate the empirical formula of X.

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(iii) determine the molecular formula of X, X has a vapor density of 28.

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(b) Compound X decolorizes bromine water, write the names of all the possible structural isomers of X.

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(c) When compound X is reacted with acidified water, 2-methylpropan-2-ol is formed.

(i) Identify X.

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(ii) Write a mechanism for the reaction between X and acidified water.

(d) Write an equation for the reaction leading to the formation of X from bromoalkane.

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8. 8g of an organic compound P containing carbon, hydrogen and oxygen on complete combustion produced 19.027g of carbon dioxide and 9.729g of water.

(a) (i) determine the empirical formula of P.

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- (iii) determine the molecular formula of P, given that the relative molecular mass of P is 74.

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- (b)(i) When compound P is reacted with Lucas's reagent, a white precipitate is formed immediately. identify P.

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- (ii) write the equation and a mechanism for the reaction between P and concentrated sulphuric acid at 180°C.

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- (c) write the equation and the corresponding mechanism for the reaction between the organic compound produced in b(ii) and;

- (i) hydrogen bromide

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- (ii) bromine water.

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(d) Using equations only, show how the compound P can be converted to 2-methylpropan-1-ol.

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9. 20 cm³ of a hydrocarbon K was burnt in 100 cm³ of oxygen, the resultant volume of the gas occupied 70 cm³ and on addition of sodium hydroxide, the volume of the gas decreased to 10 cm³.

(a) (i) Calculate the molecular formula of hydrocarbon K.

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(iii) write the structural formula of all the isomers of the hydrocarbon K.

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(b) Compound K, reacts with hydrogen bromide to give 2-bromopropane. Identify K.

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(c) Compound K reacts with bromine water to give 1-bromopropan-2-ol as the major product and not 1,2-dibromopropane, explain.

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END

TGS CHEMISTRY 2020