ST. STEPHEN'S COLLEGE BBAJJA
S.5 CHEMISTRY PAPER TWO

INSTRUCTIONS:

Answer all questions

Begin each question on a fresh page.

1. Write notes on the following
   Your answers should include suitable examples and mechanisms for reaction in each case.
   a) Elimination reaction
   b) Electrophilic substitution reaction
   c) Electrophilic addition reaction
   d) Nucleophilic substitution unimolecular
   e) Nucleophilic substitution bimolecular

2. a) i) What is by stability of nucleus?

   ii) Explain the factors that determine the stability of a nucleus

   b) The graph below show a plot of the number of neutrons versus th enumber of protons in stable nuclei:

   i) State what lines A and B represent
   ii) Describe briefly how nuclei X and Y can gain stability

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3. a) Define the term relative atomic mass.

   b) Explain how relative atomic mas can be determined by the mass spectrometer.

   c) The mass spectrum of an element A contained four lines at mass/ charge of 54, 56, 57 and 58 with relative intensities of 5.84, 91.68, 2.17 and 0.31 respectively.

      i) Explain what the term relative intensities means.

      ii) Calculate the relative atomic mass of A

   d) Explain why the values of relative atomic masses have no units.

   e) Thorium decays according to the following equation.

   $^{232}_{90}Th \xrightarrow{\propto} X \xrightarrow{\beta} Y \xrightarrow{\beta} Z$

   Determine the mass numbers and atomic numbers of X, Y, and Z.

4. a) The mass spectrum of naturally occuring Y is shown in the figure below.

      i) Briefly describe how the mass spectrum was obtained.

      ii) State why themass spectrum of Y shows three peaks.

      iii) Calcualte the relative atomic mass Y.

5. a) i) What is structural Isomerism?

      ii) Describe the three types of structural Isomerism giving a suitable example in each case.

   b) A compound has the following formula $C_3H_6Cl_2$. Write down the three possible structures for the compound.

END.

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