Question 3 – Aromatic Chemistry

NB. ‘Half a question’ (out of 12.5 marks)

Answer part (a) and EITHER part (b) OR part (c) of this question.

(a) With reference to Hückel’s rule, answer the following:

(i) Which of the following hydrocarbons are aromatic. Explain your reasoning.

![Chemical structures](image1)

(2 marks)

(ii) The pKa values of the indicated protons in two pairs of molecules are shown below. Rationalise the differences observed.

![Chemical structures](image2)

(2 marks)

(iii) Which of the following compounds contains the longest carbon-carbon bonds and which one contains the shortest carbon-carbon bonds? Explain your reasoning.

![Chemical structures](image3)

(2 marks)

(b) Draw the expected major product of the following reaction, draw a mechanism and briefly justify the regiochemical outcome.

![Chemical structures](image4)

(6.5 marks)

(c) Draw the expected major product of the following reaction, draw a mechanism and briefly justify the regiochemical outcome.

![Chemical structures](image5)

(6.5 marks)