2 Programming in C and C++ (AVSM)

(a) Consider unspecified behaviour in C.

(i) Define what unspecified behaviour means in the C standard and give two examples of such behaviour. [3 marks]

(ii) Briefly explain why it is important to have unspecified behaviour in the definition of the C language. [1 mark]

(b) Compare and contrast the struct and union keywords in C, supplying an example of a situation where it would be more appropriate to use a union rather than a struct. [4 marks]

(c) Explain the following C or C++ language concepts. You may find it helpful to use short code fragments or diagrams to illustrate your answer.

(i) The virtual keyword used to qualify a C++ member function and its impact on generated code. [4 marks]

(ii) The role of the C preprocessor in the source-code compilation cycle, and why it is a useful tool for debugging. [4 marks]

(iii) Templated functions in C++, giving one benefit and one drawback of using them compared with using a void* function in C. [4 marks]