

5. (a) Define the ADT *stack*. [5 marks]
- (b) Draw a binary tree which represents the arithmetic expression $(1 + 9) * ((6 - 2) / (3 * 4))$ [4 marks]
- (c) Rewrite the expression in (b) using postfix (Reverse Polish) notation. [4 marks]
- (d) With reference to your answer to (c), explain how a stack can be used to evaluate an arithmetic expression. Why is the use of a stack desirable in this instance? [7 marks]
- (e) State **two** other situations where you might encounter the use of a stack within a computer system, and for each one explain briefly why a stack would be used. [4 marks]