

4. (a) When writing a program in Java, the programmer chooses to design the software by using a particular Abstract Data Type. When coding the program, the programmer discovers that a class exists within the Java Collection Framework (JCF) which appears to implement that ADT.

State *three* reasons why the programmer may choose to use the JCF class rather than implement the ADT directly. [3 marks]

- (b) What are the differences between an *interface* and an *abstract class* in Java? [4 marks]

- (c) How would a programmer use a Java *interface* in order to assist them coding an ADT? [6 marks]