



# TEVETA

## DIPLOMA IN COMPUTER STUDIES

### LEVEL 6 EXAMINATIONS

#### FINAL INTEGRATED SUMMATIVE EXAMINATION

NOVEMBER/DECEMBER 2018

## ADVANCED PROGRAMMING

TIME 3 HOURS

TOTAL MARKS: 100

PASS MARK: 50

### INSTRUCTIONS

1. Write your examination number and national registration card number on the answer booklet.
2. There are seven (7) questions in this booklet.
3. You are required to attempt any five (5) questions.
4. All questions carry equal marks.
5. Cell phones and programmable calculators are not allowed in the examination room.

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO



**Question 1**

Discuss FIVE (5) characteristics of Artificial Intelligence technology. ✓

(20 marks)  
[Total: 20 Marks]

**Question 2 \***

Define the following terms:

- (i) Object (4 marks)
- (ii) Class (4 marks)
- (iii) Instantiation (4 marks)
- (iv) Garbage collection (4 marks)
- (v) Destructor (4 marks)

[Total: 20 marks]

**Question 3 ✓**

- (a) Describe three modifiers which can be used to define the visibility of class members (fields and methods). (6 marks)
- (b) Explain why it is considered good practice to limit the scope of fields and methods in object-oriented programming. (5 marks)
- (c) Explain the following terms:
  - (i) Inheritance (3 marks)
  - (ii) Single inheritance (3 marks)
  - (iii) Multiple inheritance. (3 marks)

[Total: 20 marks]

**Question 4**

OYDC Kids Playgroup is an after-school club for children under 12. The club wishes to keep information on the children and the staff who work there. Two types of staff are employed: Secretaries and Play Workers. Personal details, such as name and address are recorded for all staff and if they are a Play Worker they must also pass a police check. The system must record when this has been passed and when it must be renewed, because a Play Worker cannot work with the children until this condition is met.

When a child starts at the club, a Secretary records personal details such as name, address, date of birth and at least one emergency contact number, up to a maximum of three. As part of the registration process, the Secretary also records who is allowed to collect the child and their contact details. The Play Worker will use these contact details, so that they can check that the person collecting the child at the end of a session is authorised to make the collection.

Some children have special circumstances (e.g. suffers from asthma) which are treated with medication, and the Secretary will record what the condition is, what medicine can be used and what to do in an emergency.

There are different groups a child can join, after an initial assessment the Play Worker is responsible for allocating each child to a group appropriate to their age and ability.

Each week the Play Worker will generate a letter for the parents to advise them which activities their children will take part in.

At the end of each month the Secretary will generate an invoice for the parents to pay.

Draw a **flow chart** diagram for this system.

**(20 marks)**

**[Total: 20 Marks]**

### **Question 5**

In order to develop an ICT project that is systematic, one need to use systems development life circle approach. Discuss systems development life circle in relation to object-oriented programming.

**(20 marks)**

**[Total: 20 marks]**

### **Question 6**

Explain why a developer might declare a member function as private, and show an example code fragment, in an object-oriented programming language of your choice, that contains both public and private methods to demonstrate how they may be used.

**(20 marks)**

**[Total: 20 marks]**

### **Question 7**

Your Company has decided to develop an article which sets out the history of programming languages. You have been asked to provide a page on object-oriented programming languages. Describe steps on how you would define an object-oriented programming language on this article page.

**(20 marks)**

**[Total: 20 Marks]**