

**CICT PART II SECTION 4**  
**OBJECT ORIENTED PROGRAMMING**

**THURSDAY: 20 May 2021.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question.**

**ALL programs written should be in Java object oriented programming language.**

**QUESTION ONE**

- (a) Describe each of the following terms as used in object oriented programming:
- (i) An accessor method. (2 marks)
  - (ii) A mutator method. (2 marks)
- (b) Explain the following terminologies as used in object destruction:
- (i) Finalisation. (2 marks)
  - (ii) Garbage collection. (2 marks)
- (c) Distinguish between "reusability" and "extensibility" as used in object oriented programming. (4 marks)
- (d) Write a program in Java programming language that prompts the user to input three numbers and then finds the largest of the number using a method that returns a value. (8 marks)
- (Total: 20 marks)**

**QUESTION TWO**

- (a) Explain the advantage of exception handling in event management. (2 marks)
- (b) Differentiate between a "private member" and a "protected member" as used in object oriented programming. (4 marks)
- (c) In order to execute a class as a thread, the runnable interface should be implemented.
- Required:**  
Using illustrations, assess the three steps of achieving the above. (6 marks)
- (d) Describe the role of refactoring in mobile application development. (3 marks)
- (e) An object oriented program has a class named A. The class has two public functions and two objects.
- Required:**  
Outline the syntax of the program to implement the above class. (5 marks)
- (Total: 20 marks)**

**QUESTION THREE**

- (a) (i) Explain the term "interface" as used in object oriented programming. (2 marks)
- (ii) "An interface is different from a class".  
Defend the above statement by outlining four differences that make an interface different from a class. (4 marks)

(b) In a tabular form, highlight two differences between static and dynamic polymorphism as used in object oriented programming. (4 marks)

(c) Write an object oriented program that implements a class named "working\_days" with the following properties:

- A data member named "day":
- A member function named "w-day" for inputting an integer (1 to 5) representing an official working day.

The program should appropriately determine and display the name of the official working day. For example, 1 for Monday, 2 for Tuesday and 3 for Wednesday, otherwise it displays "Not a working day". (6 marks)

(d) Explain the importance of packages in object oriented programming languages. (2 marks)

(e) Evaluate the result of the following Java expressions after the program execution:

$$5/2 + 3;$$

(2 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

(a) Describe the following terms as used in object oriented programming:

- (i) Method. (2 marks)
- (ii) Constructor. (2 marks)

(b) Using illustrations, distinguish between a Java paragraph comment and a javadoc comment. (4 marks)

(c) You have been tasked to develop a class that passes a string of values to the main method of another class. The second class should display the values passed to it.

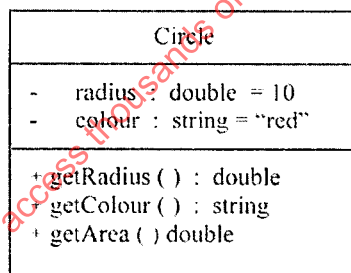
**Required:**  
Implement both classes. (8 marks)

(d) Construct the flowchart that would be used to design the program you have written in (c) above. (4 marks)

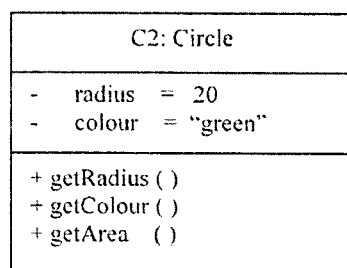
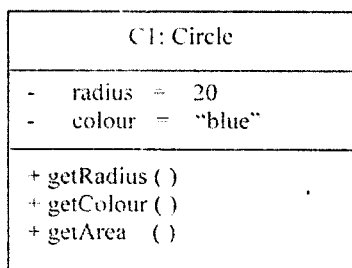
**(Total: 20 marks)**

**QUESTION FIVE**

(a) A class called circle is defined as shown in the class diagram below:



**Required:**  
Write a Java program to implement instances of circles named C1 and C2 shown below:



(6 marks)

(b) The following code is for sending e-mail in Java:

Void send (Message.ReceipientType type, Address [ ] addresses) throws Messaging Exception.

**Required:**

Explain the contents of the 'type' and 'addresses' parameters.

(4 marks)

(c) Distinguish between a program and a thread.

(4 marks)

(d) Using a code segment, illustrate how the following could be used to concatenate strings:

(i) By using operator +.

(2 marks)

(ii) By using string buffer class.

(2 marks)

(iii) By using string builder class.

(2 marks)

**(Total: 20 marks)**

.....

access thousands of free content on [www.freekcepastpapers.com](http://www.freekcepastpapers.com)