



NATIONAL OPEN UNIVERSITY OF NIGERIA
PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI – ABUJA
FACULTY OF SCIENCES
DEPARTMENT OF COMPUTER SCIENCE
OCTOBER 2019 EXAMINATION

COURSE CODE: CIT383

COURSE TITLE: INTRODUCTION TO OBJECT-ORIENTED PROGRAMMING

COURSE CREDIT: 2 UNITS

TIME ALLOWED: 2 HOURS

INSTRUCTION: ANSWER QUESTION 1 AND ANY OTHER THREE (3) QUESTIONS

Question 1

- (a) i. Discuss the concept of object as it relates to OOP? **(3 marks)**
ii. What are the effects of **new** operator and **finalise ()** method on Java object. **(2 marks)**
- (b) i. Mention two differences between the declarations of interfaces and abstract classes. **(2 marks)**
ii. Describe a typical abstract method for Java class. **(2 marks)**
- (c) i. What is an instance variable? **(2 marks)**
ii. Mention two differences between local and instance variables. **(2 marks)**
- (d) i. Briefly explain the concept of modular programming? **(2 marks)**
ii. State one advantage and disadvantage of modular programming. **(2 marks)**
- (e) i. Briefly explain the difference between composition and aggregation with an example. **(3 marks)**
ii. Briefly describe static method. **(2 marks)**
- (f) Why is it illegal to use **abstract** keyword on static method? **(3 marks)**

[25 marks]

Question 2

- (a) i. Define class within the context of Java programming concept? **(4 marks)**
ii. Briefly explain the general syntax for a class in OOP? **(3 marks)**
- (b) Describe four (4) rules guiding the formation of abstract data type. **(4 marks)**
- (c) Mention four (4) advantages of using interface in a program. **(4 marks)**

[15 marks]

Question 3

- (a) i. Briefly describe message passing in pure OOP? (4 marks)
ii. List four examples of message passing styles. (2 marks)
- (b) Describe the three (3) access modifiers that are explicitly declared by Java programmer? (3 marks)
- (c) Write a Java class called FactorialFinder that computes and displays the factorial of a number. The class should declare and use a method called factorialCalculator, which should accept an integer number for the factorial computation and return the answer of the computation. (6 marks)

[15 marks]

Question 4

- (a) i. Describe encapsulation as one of the concepts in OOP. (4 marks)
ii. Write a Java class named Student that has one-member field called height, which is double data type. The implementation of the class should encapsulate the member field. (3 marks)
- (b) i. Briefly describe accessor and mutator methods? (3 marks)
ii. State two differences between constructor and other typical method. (3 marks)
- (c) Differentiate between subclass and superclass. (2 marks)

[15 marks]

Question 5

- (a) i. Explain inheritance within the context of OOP concept? (4 marks)
ii. List three (3) benefits of inheritance? (3 marks)
- (b) i. What is a no argument constructor? (4 marks)
ii. Outline two (2) differences between a no argument and default constructors? (2 marks)
- (c) Enumerate two (2) advantages of abstraction to programmer. (2 marks)

[15 marks]