



**NATIONAL OPEN UNIVERSITY OF NIGERIA,
PLOT 91, CADASTRAL ZONE, UNIVERSITY VILLAGE, JABI – ABUJA
FACULTY OF SCIENCES**

Course Code: CIT 383

Course Title: Introduction to Object-Oriented Programming

Time: 2 Hours

Credit: 2 Units

Instruction: Attempt 4 questions. Question 1 is Compulsory and any other three (3)

Question 1

- (a). Explain Inheritance, state its usefulness and give an example of its applicable area. (5marks)
- (b). Differentiate between the following:
 - (i) a constructor and a method (3marks)
 - (ii) a no argument constructor and an argument constructor (2marks)
- (c). Describe two functionality of a downcasting and state its syntax (5marks)
- (d). (i) what do you understand by Operator overloading (2marks)
 - (ii) Identify two reasons why Java does not support operator overload (3marks)
- (e). Write the syntax for overloading the true and false operators (5marks)

Question 2

- (a) (i) What does it mean to say that a subclass “overrides a method” (2marks)
 - (ii) Identify the various ways a subclass specializes its behaviour with respect to its superclass (3marks)
- (b). Describe abstract class in Java (5marks)
- (c). Write the syntax for an abstract class in Java (5marks)

Question 3

- (a). Briefly summarize any four properties of an implicit cast (4marks)
- (b). Identify the three (3) key restrictions to overloading a conversion operator (6marks)
- (c). Describe using appropriate accessor declaration, a one-dimensional indexer (5marks)

Question 4

Create a class Invoice that implements the Payment interface using the following guide:

- (a) This class should show the product number and description, (5marks)
- (b) it should also show the product quantity and the price of product. (5marks)
- (c) Method getPaymentAmount should be implemented in this class to calculate the amount on the invoice. (5marks)

Question 5

- (a). Identify any six properties of Interface in OOP (6marks)
- (b). Outline the properties of an Abstract Data Type (ADT) (4marks)
- (c). Enumerate on the features of Encapsulation attribute in OOP (5marks)