

CHUKA



UNIVERSITY

**UNIVERSITY EXAMINATIONS**

**EXAMINATION FOR THE AWARD OF DEGREE OF BACHELOR OF  
SCIENCE IN APPLIED COMPUTER SCIENCE**

**ACSC 223: OBJECT ORIENTED PROGRAMMING 1 (JAVA)**

**STREAMS: BSC (APPLIED COMPUTER SCIENCE) Y1S2      TIME: 2 HOURS**

**DAY/DATE: THURSDAY 13/12/2018**

**11.30 A.M. – 1.30 P.M.**

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**INSTRUCTIONS:**

- Answer Question **ONE** and any other **TWO** questions.
- Do not write on the question paper
- This is a **closed book exam**, No reference materials are allowed in the examination room

**SECTION A: COMPULSORY**

**Question one [Compulsory]: 30 Marks**

- Outline the basic structure of a java program [4 marks]
- Explain the purpose of a method parameters and arguments [4 marks]
- Which method begins the execution of java applications? Give its full declarations [4 marks]
- Differentiate between method overloading and method overriding? [4 marks]
- What are constructors? Giving an example, show why they are useful in java programming [4 marks]
- Accessors and mutators provide java programmers with control on how codes access class data. Demonstrate how they are implemented. [6 marks]
- Suppose we have an array declared by  
`int [] intArr = {2,4,6,8,10};`  
What value is stored in `intArr[1]` ? [4 marks]

**SECTION B: [Answer any two questions from this section]****QUESTION TWO:**

- (a) Analyze the code below and state its output. [10 marks]

```

for (int row = 1; row <= 3; row ++)
{
    for (int count = 1; count <= (4 - row); count ++)
    {
        System.out.print("*");
    }
    System.out.println();
}

```

- (b) Object oriented programming helps one to solve problems which are the main purpose of writing computer programs. Discuss five problem solving steps in computer programming. [10 marks]

**QUESTION THREE [20 MARKS]**

- (a) Discuss object oriented software principles [10 marks]  
 (b) Explain the following terms in object oriented programming [6 marks]  
 (i) Inheritance  
 (ii) Polymorphism  
 (iii) Encapsulation  
 (c) An object has unique identity, state and behavior. Discuss [4 marks]

**QUESTION FOUR 20 MARKS**

- a. Discuss java language specifications, API, JDK and IDE [8 marks]  
 b. Discuss the steps of creating, compiling and executing java programs. [8 marks]  
 c. Every programming language has its own syntax and semantics. Discuss. [4 marks]

**QUESTION 5 [20 MARKS]**

- a. Explain what you understand by the following concepts [10 marks]  
 (i) Object  
 (ii) Class  
 (iii) Package  
 (iv) Interface  
 (v) Method
- b. (i). Demonstrate how you would create classes for the following real-world objects: Person, Bicycle, and Animal. Instantiate each class to create at least one object of the type as class given. [5 marks]
- (ii) For each new class that you've created above, create an interface that defines its behavior, and then require your class to implement it. [5 marks]
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