



(KNOWLEDGE FOR DEVELOPMENT)

KIBABII UNIVERSITY
(KIBU)

UNIVERSITY EXAMINATIONS
2018/2019 ACADEMIC YEAR

END OF SEMESTER EXAMINATIONS
SECOND YEAR FIRST SEMESTER

FOR THE DEGREE IN

(INFORMATION TECHNOLOGY)

COURSE CODE: BIT 21 i

**COURSE TITLE: OBJECT ORIENTED
PROGRAMMING II**

DATE: 30/01/2019 TIME: 2.00P.M. – 4.00P.M.

INSTRUCTIONS

ANSWER QUESTIONS ONE AND ANY OTHER TWO.

QUESTION ONE [30 MARKS]

- a. Explain briefly the following concepts as used in Object Oriented Programming II [3 marks]
- i. Hiding the implementation
 - ii. Data abstraction
 - iii. Exception
- b. Explain the three general principle underlying object oriented technologies. [6 marks]
- c. Using relevant signatures, differentiate between an abstract class and an interface as used in java programming. [4 marks]
- d. You are given the following elements

45	56	76	66	87
51	89	65	90	43
37	72	63	43	80

- Using a relevant array name, write a java code that will create and initialize the above array elements. [3 marks]
- e. Using relevant signatures discuss the three general methods used in java programming. [4 marks]
- f. i. Define a class Car with the following attributes and capabilities. [6 marks]

Car
-speed :int
-model: String
-color: String
+Car(int s, String m, String c)
+setSpeed(int s)
+setModel(String m)
+getSpeed():int
+getModel(): String

- ii. Create a sub class of Car class and name it as Truck. The Truck class has the following fields and methods. Weight: int; getSalePrice():double; [4 marks]

QUESTION TWO [20 MARKS]

Students computing company are specialist in producing production for any type of product ranging from a simple packaging system to a variety of electronic devices. The company has been asked to create a production line for multimedia devices which include music and movie players. They wish to employ you to design a template in Java for creating and recording all future production line **Items**. For this particular production facility you will only implement a concrete class for music and movie players. Your task is to create a flexible structure that could be used in any production line. This structure would then allow easy modification to handle different **Items**.

- a. Write a java code that will create an interface called **Item** that will force all classes to implement the following functions: A constant called manufacturer that would be set to “**SCAF**”, a method setProductionNumber that would have one integer parameter, a method setName that would have one String parameter, a method getName that would return a String, a method getManufactureDate that would return a Date and a method getSerialNumber that would return an int. [6 marks]
- b. Define an abstract class called **Product** that will implement the **Item** interface. Product will implement the basic functionality that all items on a production line should have. Add the following fields to Product: int serialNumber, String manufacturer, Date manufacturedOn and String name. [6 marks]
- c. All of the items on this production line will have basic media controls. Create an interface called MultimediaControl that will define the following methods: public void play(); public void stop(); public void previous(); and public void next(); . [4 marks]
- d. Create a class called MoviePlayer that extends Product and implements MultimediaControl. Add 2 fields to this class called screen and monitor type and assign appropriate types to them. [4 marks]

QUESTION THREE [20 MARKS]

- ✓ a.
 - i. What is a generic class? [2 marks]
 - ii. What will motivate a programmer to use generic classes rather than normal class definition? [2 marks]
 - iii. Define a generic class called students that will take two variables name and regno both of generic type. Include a parameterized constructor that will initialize the variables, setters and getter to set and return the variable as necessary. [6 marks]
 - iv. If you were to test the capability of the class defined in (iii) above, you will define a driver class. Give the signature that you will use to create and initialize two objects of the type Student in which the first object will take all the two variables as String and the second object taking name as String and regno as int. [4 marks]
- b.
 - i. Differentiate between an error and an Exception. [2 marks]

ii Programmers have the best ways of prevent and terminate a program using the appropriate exception handler that is associated with it. Explain how Try and catch blocks works. [4 marks]

✓ **QUESTION FOUR [20 MARKS]**

- a. Explain the differences between *is-a* relationship and *has-a* relationship in each provide a scenario that can be applicable. [4 marks]
- b. An organization has two types of employees: regular employee and ad_hoc employee. Regular employee get a salary which is basic salary + travelling allowance + house allowance. Travelling allowance is 10% of the basic salary and house allowance is 30% of the basic salary. An ad_hoc employee are daily wages who get a salary which is equal to the number of days * wage. Given that all employee have a name and an empl_number:
- i. Draw a well-structured diagram to represent the scenario. [4 marks]
- ii. Define java classes that will be used to implement the scenario. Remember to include necessary methods and constructors to perform usual functions. [12 marks]

QUESTION FIVE [20 MARKS]

- a. How does java achieve, encapsulation, overloading and overriding. [6 marks]
- b. i. Write a Java statement to create a frame with the title ("Programmes"). [2 mark]
- ii. Write Java statements to add a label named "*Programme Offered*", add a combo box that will provide the following options "*Bachelors of Information Technology*", "*Bachelors of Computer Science*", "*Bachelors of Information Science*" and "*Masters in Information Technology*". [6 marks]
- c. Discuss the circumstance under which *swing* ^{pack}class will be preferred over the *AWT* ^{pack}class and vice vise. [6 marks]