



TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

UNIVERSITY EXAMINATION FOR:
BACHELOR OF TECHNOLOGY IN INFORMATION COMMUNICATION
TECHNOLOGY
(BTIT 12S – Y2 S2)

BIT 2214: OBJECT ORIENTED SYSTEMS & DESIGN

END OF SEMESTER EXAMINATION

SERIES: APRIL 2014

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions.

Attempt question **ONE (COMPULSORY)** and any other **TWO** questions

Maximum marks for each part of a question are as shown

This paper consists of **THREE** printed pages

Question One (Compulsory)

JKUAT Mombasa requires a computerized telephone book that should contain entries for each persons in the University community-student, professor, and staff member. Users of the directory can look up entries. In addition, the administration of the telephone book can after supplying a password, insert a new entries, delete existing entries, modify existing entries print telephone book and a listing of all students of all faculties.

- a) Identify THREE candidate classes (3 marks)
- b) Identify THREE candidate operations (3 marks)
- c) Associate the operations with the appropriate classes (3 marks)
- d) Describe the outputs of the object oriented design phase (3 marks)

- e) Identify TWO features of object oriented designs (3 marks)
- f) Differentiate between object orientation and object oriented programming. (4 marks)
- g) Explain the following object oriented design principles. (6 marks)
 - (i) Abstraction
 - (ii) Encapsulation
 - (iii) Modularity
 - (iv) Hierarchy
- h) Identify THREE attributes and TWO behaviours of an object called a printer. (5 marks)

Question Two

- a) Differentiate between object and a class. (2 marks)
- b) Draw a sequence diagram for a system that sends an email. (5 marks)
- c) Differentiate between object oriented analysis and object oriented design. Use examples. (5 marks)
- d) Identify FIVE benefits of object oriented analysis and design. (5 marks)
- e) Name FIVE key steps in the OOP process. (5 marks)

Question Three

- a) Explain why it is important to model a computer system. (2 ½ marks)
- b) List THREE building blocks for UML. (3 marks)
- c) State THREE benefits of using UML (3 marks)
- d) Define the following UML components: (7 ½ marks)
 - (i) Interface
 - (ii) Collaboration
 - (iii) Use case
 - (iv) Component
 - (v) Node
- e) Describe the FOUR types of relationship used with UML (4 marks)

Question Four

- a) List FOUR aspects of an interface. (4 marks)
- b) Define the following object oriented design terms/phrases. (6 marks)
 - (i) A service-view
 - (ii) Behavior
 - (iii) State
- c) Outline FOUR characteristics of an object diagram. (4 marks)
- d) Use a class diagram to illustrate the relationship between four classes namely persons, student, lecturer and address. List TWO attributes and two operations for each class. (6 marks)

Question Five

A school has contracted you to design and develop for them a web based Student Management Information System. Describe how you would use object oriented analysis and design to solve the problem. **(20 marks)**