

**UNIVERSITY**

**KABARAK**

**UNIVERSITY EXAMINATIONS**

**MAIN CAMPUS**

**SECOND SEMESTER, 2017/2018 ACADEMIC YEAR**

**EXAMINATION FOR BACHELOR OF SCIENCE IN COMPUTER SCIENCE**

**BACHELOR OF INFORMATION TECHNOLOGY**

**COMP 320/INTE 325: OBJECT ORIENTED ANALYSIS AND DESIGN**

**STREAM: BSC CS Y3S2 TIME:** 2 HRS

**EXAMINATION SESSION: APRIL YEAR:** 2018

**INSTRUCTIONS**

1. **Question One is COMPULSORY.**
2. **Attempt any other TWO Questions from the remaining section.**
3. **Do not write on the question paper**
4. **Show your working clearly**

**QUESTION ONE (30 MARKS)**

Towards each academic year, the syllabus committee in the department of computer science determines which modules will be available to the Fourth year (Y4) students in the following year. At the end of each academic year, the Head of Department allocates duties to members of teaching staff and part time lecturers; in particular, one person is assigned to lecture each of the modules which are to be available next year.Each lecturer updates the course outline for his or her module. The Y4 coordinator updates otherparts of the syllabus and checks the module entries produced by the lecturers.The undergraduate Teaching Officer (UTO) produces the paper version of the course outlines and the Y4 coordinator produces the HTML version. The UTO keeps the master list of Y4 students and updates the mailing list of the students taking Y4 modules.The Dean of Students advises each student. Each student registers for the modules by filling inpaper form and hand them to the UTO. The UTO produces lists for the lecturers of the studenttaking their module.

1. Do you think the department’s expectations are reasonable? Explain. (2 Marks)
2. Do you think that an object oriented approach is sensible here? Give a reason for your answer. (3 Marks)
3. What possible queries might be required? (3 Marks)
4. Draw the Use Case Model for the analysis? (4Marks)
5. Draw a conceptual level Class model (5Marks)
6. Develop the CRC card for the Use Cases and identify the operation associated with these classes. (3Marks)
7. Construct the Activity diagram for the course outline preparation. (6 Marks)

b. Unified Modeling Language (UML) employs the use of State Diagrams when it comes to design of systems. Draw a battery charger state chart diagram and it should have the following three states: idle, charging and fully charged. (4 Marks)

**QUESTION TWO (20 MARKS)**

1. Consider the Hospital Management System application with the following requirements:  
    - System should handle the in-patient, out-patient information through receptionist.  
    - Doctors are allowed to view the patient history and give their prescription.  
    - There should be an information system to provide the required information.

Give the USE CASE diagram of the Hospital Management System and explain your findings (8 Marks)

1. What is meant by prototype? What is its use in application prototyping (4 Marks)
2. With the help of diagrams, show the difference between
   * 1. Deployment diagrams (2Marks)
     2. Component diagrams (2Marks)
3. What is the difference between system analysis and system design. How does the focus of information system analysis differ from information system design? (4 Marks)

**QUESTION THREE (20 MARKS)**

* 1. Define the following types of maintenance. Give examples for each?
     1. Corrective maintenance (3 Marks)
     2. Adaptive maintenance (3 Marks)
     3. Perfective maintenance (2 Marks)
     4. Preventive maintenance (2 Marks)
  2. Describe how you would expect documentation to help analyst and designers? (5 Marks)
  3. A sequence diagram has two dimensions: the vertical dimension represents time; the horizontal dimension represents different objects. Explain the sequence diagram using an ATM withdrawal of cash. (5Marks)

**QUESTION FOUR (20 MARKS)**

a.As part of a curriculum fulfillment, you are required to develop and implement an online portal for flight management (reservation, cancellation, confirmation of tickets,). With the aid of relevant illustrations explain how the following notations are important in your system.

1. Activity (4 Marks)
2. Deployment (3 Marks)
3. Sequence (3 Marks)

b. You have been asked to develop a Library Management System. Explain the metrics you would use to measure the quality of the abstractions you would use in building that system. (5 Marks)

c. Discuss the classification of high-order programming languages in generations arranged according to the language features they first introduced. (5 Marks)

**QUESTION FIVE (20 MARKS)**

a. Differentiate between OOA, OOP and OOD. (3 Marks)

b. Write a note on the following concepts

1. Copying (2 Marks)
2. Assignment (2 Marks)
3. Equality (2 Marks)
4. Visibility (2 Marks)
5. Synchronization (2 Marks)

c. Discuss the four major elements of the Object Model. (4 Marks)

d. In Object modeling why do we say an Object can be a Class but a Class cannot be an Object? (2 Marks)

e. Differentiate between the Interface and Implementation of a Class. (1 Mark)