

KABARAK



UNIVERSITY

UNIVERSITY EXAMINATIONS

2010/2011 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF COMPUTER SCIENCE

COURSE CODE: COMP 320

**COURSE TITLE: OBJECT ORIENTED ANALYSIS AND
DESIGN**

STREAM: Y3S2

DAY: FRIDAY

TIME: 2.00 – 4.00 P.M.

DATE: 18/03/2011

INSTRUCTIONS:

- Answer question ONE (compulsory) and Any other TWO questions

PLEASE TURN OVER

QUESTION ONE (COMPULSORY)**[30mks]**

- a. What is data encapsulation and why is important in object oriented analysis and design [2mks]
- b. Explain in detail the topology of the object based and the object oriented programming languages. [3mks]
- c. In the context of object oriented architecture, testing must encompass at least three dimensions. Briefly explain the three dimensions listed below
- i. Unit testing
 - ii. Subsystem testing
 - iii. System testing [6mks]
- d. What are the aims of modeling systems during the development of software systems? [6mks]
- e. The two basic associations possible between classes are a dependency and a generalization. Explain each of the above mentioned terms in relation to the relationship between classes in a Class diagram. [4mks]
- f. There are a number of proven approaches for analysis that are relevant to object oriented systems. Briefly explain the two approaches listed below.
- i. Informal English description
 - ii. CRC [4mks]
- g. What is software reusability? [1mk]
- h. Discuss three object oriented programming languages [4mks]

QUESTION TWO**[20mks]**

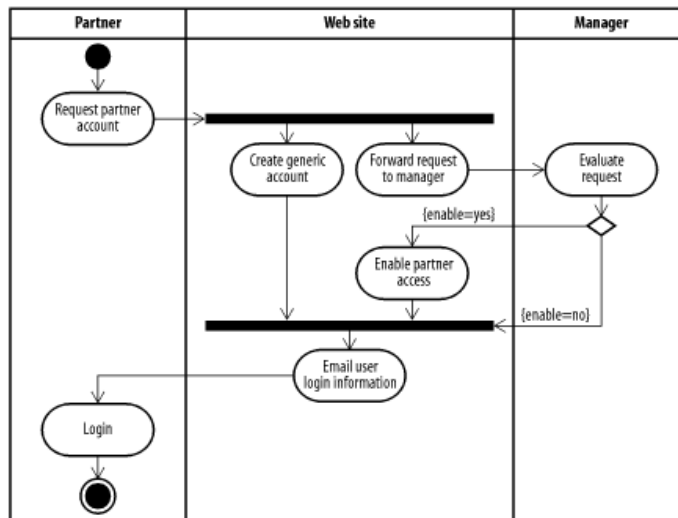
- a. We establish relationships between classes for some sort of sharing or some semantic connections. Most object oriented languages provide direct support for combination of various relationships. Name some of the types of relationships among classes? [5mks]
- b. Consider the following attributes:

P = principle, R = rate of interest, N = number of years, SI = simple interest, A= amount
Design a UML class called deposit with the above 5 attributes. In the constructor calculate SI and amount. Implement the above specification using the java programming language. [5mks]

- c. List some of the applications of the object model? [5mks]
- d. Programming languages have evolved over time and now we have different programming styles compared to the one that were used previously. Explain why there is a need of a new programming paradigm? [5mks]

QUESTION THREE**[20mks]**

- a. What are the main principles of modeling of systems in UML [4mks]
- 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. [5mks]
- c. Answer the questions that follow the UML diagram below



- i. What type of diagram is represented in the figure above? [1mk]
- ii. How does the above diagram represent parallel programming? [1mk]
- iii. Explain in detail the individual component parts that make up the above diagram? [3mks]
- d. With the help of diagrams, show the difference between
- Deployment diagrams [2mks]
 - Component diagrams [2mks]
- e. Why do we go for object oriented systems development? [2mks]

QUESTION FOUR**[20mks]**

- a. Using the concept of classes in JAVA programming language, write a program that will convert 69F (Fahrenheit) into equivalent centigrade temperature type. [6mks]
- b. Explain in detail the history of the unified modelling language? [4mks]
- c. Object oriented programming is in mainstream programming, what are some of the advantages of inheritance in object oriented analysis and design? [6mks]

- d. Use the use-case diagram to show how the actors will interact with the users in a situation having the following use cases: Request Account, Define Partners, Approve Account, and Create Account. [4mks]