

KABARAK



UNIVERSITY

**UNIVERSITY EXAMINATIONS
2010/2011 ACADEMIC YEAR
FOR THE DEGREE OF BACHELOR OF BUSINESS
MANAGEMENT
& INFORMATION TECHNOLOGY**

COURSE CODE: BMIT 317

COURSE TITLE: OBJECT ORIENTED ANALYSIS & DESIGN

STREAM: Y3S1

DAY: WEDNESDAY

TIME: 9.00 – 12.00 P.M

DATE: 15/12/2010

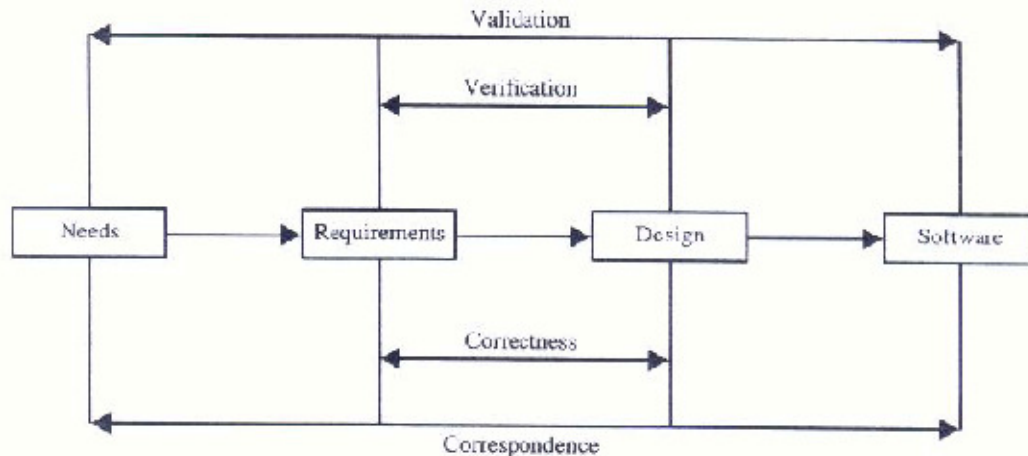
INSTRUCTIONS:

1. Answer **ALL** questions in section **A** (**40 marks**)
2. Answer any **TWO** questions in section **B** each carrying **30 marks**

PLEASE TURN OVER

SECTION A (40MARKS)
QUESTION ONE

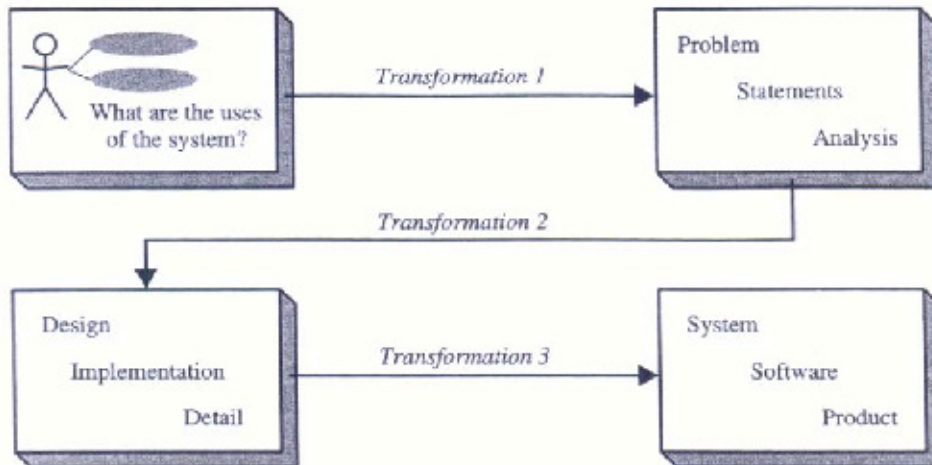
- a) The software process transforms the users' needs via the application domain to a software solution that satisfies those needs. Examine the following diagram and describe the idea of building high quality software. **(5marks)**



- b) Computer-Aided software Engineering (CASE) tools support the analysis and development of information systems. Outline the contents of CASE. **(5marks)**
- c) The following object, in combination with its corresponding extraction operator performs output in C++. Explain it briefly **(2marks)**

`Cout << i_number`

- d) **System:**A collection of components that work together to realize some objective forms a system. Basically there are three major components in every system, namely input, processing and output. Describe the characteristics of the system **(5marks)**
- e) Explain the concept of multiple inheritances as it is used in C++. **(5marks)**
- f) Discuss basic Object-Oriented concepts such as:
- i. Objects **(2marks)**
 - ii. Classes **(2marks)**
 - iii. Properties **(2marks)**
 - iv. Methods **(2marks)**
- g) Object oriented design is an approach used to specify the software solution in terms of collaborating objects, their attributes and their methods explain the attempt that the fundamental approaches attempt to perform. **(5marks)**
- h) System development can be viewed as a process. Explain the transformations represented in the diagram below. **(5marks)**



SECTION B:

QUESTION TWO

- a) The flow of a program can be controlled using different constructs. If...else is one of the constructs. Using the syntax explain the if else (5marks)
- b) In most of the programming languages there are some characters that are useful but can't be printed or execute like, `\`, `\b`, `\t`, `\n`, `\'`. What is the name given to the characters in bold and what is the purpose of each one of them? (5marks)
- c) Explain the following terminologies as they are used in object- oriented analysis and design. Using a suitable diagram. **Inheritance** and **polymorphism**. (6marks)
- d) Describe four reasons why object orientation is important. (5marks)
- e) Study the program below and correct the mistakes in the coding. Also explain what the intention of the program and the output. (6marks)

```

#include <iostream>
Using namespace std;
Int main()
{
    float number1, number2,
        sum, average;
    cin >> number1;           // read numbers
    cin >> number2;           // from keyboard
    sum = number1 +number2;
    average = sum/2;
    cout << "sum = " << sum << "\n";
    cout << "average = " << average << "\n ";
    return 0 ;
}
  
```

- f) Explain the following three terms as they are used in C++ programming, **Keyword**, **Identifier**, **Constant**, giving an example in each case.

(3marks)

QUESTION THREE

- a) The primary objective of the design. Of course, is to deliver the requirements as specified in the feasibility report. Explain the general objectives of design in object oriented analysis and design. (5marks)
- b) This is a traditional method where by the system Analyst has to draw on paper the layout of out puts, input and database and the flow of the whole system in a paper. This is time consuming process and is also prone to errors and emissions hence it is inaccurate. Explain prototyping and state its merits and demerits. (5marks)
- c) Use cases are scenarios for understanding system requirements. A use case is an interaction between users and a system. Using a library diagram explain the use case. (5marks)
- d) A sequence diagram has two dimensions: the vertical dimension represents time; the horizontal dimension represents different objects. Explain the sequence diagram using the telephone call. (5marks)
- e) A major benefit of object-oriented system development is reusability, and this is the most difficult promise to deliver on. Describe **reusability** and the strategies that can be based on. (5marks)
- f) The *software components* are the functional units of a program, building blocks offering a collection of reusable services. What is **RAD**? Explain. (5marks)

QUESTION FOUR

a) Object oriented programming offers several benefits to both the program designers and the user. Object-orientation contributes to the solution of many problems associated with the development and quality of software products. What are the principal advantages it offers? **(6marks)**

b) The structure below represents the simple structure of C++. Describe the structure. **(4marks)**

```
#include <iostream.h>
int main (void)
{
cout << "Hello World\n";
}
```

c) An expression is a combination of operators, constants and variables arranged as per the rules of the language. It may include functions calls which return values. It may also consist of one or more operands, and zero or more operators to produce a value. State and explain the following expressions given examples in each case.

i. Constant expression. **(2marks)**

ii. Integral expression **(2marks)**

iii. Float expression. **(2marks)**

iv. Relational expression. **(2marks)**

v. Logical expression. **(2marks)**

d) Object-oriented analysis (OOA) deals with developing software engineering requirements and specifications that expressed as a system's object model. Why do we have analysis and what are the benefits of OOA? **(5marks)**

e) The loops can be use in C++ programming. Examine the loop and then explain the for loop and the while loop. **(5marks)**

QUESTION FIVE

- a) In systems development the system has to be tested and maintained so that to see if the objective are met. Discuss
- i. Quality control. **(2marks)**
 - ii. Quality assurance. **(2marks)**
 - iii. Testing services. **(2marks)**
 - iv. Quality management system. **(2marks)**
- b) Facts are gathered to enable the analyst understand the system better. Explain what a fact is. **(2marks)**
- c) Differentiate the testing approaches involving the white box testing and the black box testing, clearly bringing out the difference in them. **(5marks)**
- d) Before developing a system it is important to do the feasibility study. Explain what is feasibility and its types. **(6marks)**
- e) The Unified Modeling Language (UML) is a standard language for specifying, visualizing, constructing, and documenting the artifacts of software systems, as well as for business modeling and other non-software systems. What are its primary goals and state its types of diagrams. **(6marks)**
- f) What are the major aims of system study? **(3marks)**