



MOI UNIVERSITY

**OFFICE OF THE DEPUTY VICE CHANCELLOR, ACADEMIC
AFFAIRS, RESEARCH & EXTENSION**

**UNIVERSITY EXAMINATIONS
2014/2015 ACADEMIC YEAR**

SECOND YEAR END OF SEMESTER EXAMINATIONS

**FOR THE DEGREE OF
BACHELOR OF BUSINESS MANAGEMENT**

EXAM CODE:- BBM 210

COURSE TITLE:- COMPUTER PROGRAMMING

DATE:- 2ND DECEMBER, 2015

TIME:- 2.00P.M. – 5.00P.M.

INSTRUCTION TO CANDIDATES

➤ SEE INSIDE.

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Answer questions one and any other three

Question One (25 Marks) Compulsory

- a. Explain the role of programming languages in the design and development of programs and software. [3 marks]
- b. Programs developed and implemented are not able to meet the demands of the users. Discuss the reasons that cause this software crisis. [6 marks]
- c. Planning the solution process of problems is an important task to every programmer. Explain the potential benefits realized by maximizing the planning process. [7 marks]
- d. With the help of a flowchart, algorithm, write a corresponding program to compute the sum of digits of any input integer number. [9 marks]

Question Two (15 Marks) ✕

- a. Identify the type of error and correction in the following statement.
`double 4th3;` [2 marks]
- b. What is the value of variable x after the following code has executed?
`int x;
for(x = 16; x < 30; x++) x = x + 6;` [2 marks]
- c. What is the value in variable x after the following code has executed? Explain the reasons to justify the solution. [2 marks]
`float z, y;
int x;
z = 3.14;
y = 4.302;
x = 2 + z < y - 3;`
- d. Explain the reasons that justify the declaration of user defined data types in a program. [2 marks]
- e. The straight-line method of computing the yearly depreciation of the value of an item is given by the following formula:

$$\text{Depreciation} = (\text{Purchase Price} - \text{Salvage Value}) / \text{Years of Service}$$

Draw a flowchart and write a corresponding program to determine the salvage value of an item when the purchase price, years of service, and the annual depreciation are input through the keyboard at run time. [7 marks]

Question Three (15 Marks)

- a. Express the following statements in C language: [4 marks]
 - i. (a and b) or c;
 - ii. a is equivalent to b;
 - iii. a is greater than or equal to b
 - iv. a is incremented by a standard value.
- b. Explain the following programming terms:
 - i. Data type
 - ii. Recursion
 - iii. constant [3 marks]
- c. Write a program to read the name and the age of a student and to display them. [4 marks]
- d. Using examples explain any four types of operators available in a programming language. [4 marks]

Question Four (15 Marks)

- a. With the help of syntax and a flowchart, explain the following control structures:
 - i. *break* control structure
 - ii. *if else* control structure [4 marks]
- b. Write a program to read the age of 100 persons and count the number of persons in the age group between 50 and 60. Use *for* loop and *continue* control structures. [6 marks]
- c. Examine the following program. Identify FIVE lines with errors and correct them. Write the correct program. [5 marks]

```
#include<stdio.h>
#include<conio.h>

circarea(float rad);

int main()
{
    float radius area;
    printf("\nEnter the radius of the circle\n");
    scanf("\n%d",&radius);
    area = circarea();
    printf("\narea of the circle = %f\n",area);
}

float circarea(float r)
{
    (3.1416*r*r);
}
```

✓
Question Five (15 Marks)

- Discuss how pointers are declared and used in a program. [3 marks]
- With the help of syntax, explain the benefits of arrays in a program. [3 marks]
- Discuss the role of testing in program development. [4 marks]
- Using the concept of arrays, write a program to sort elements of the array in descending order. [5 marks]

Question Six (15 Marks)

Net salaries of employees are paid after the calculation of their deductions and allowances. The following rates are used for calculating these allowances and deductions:

Allowances

Deductions

HRA 15% of Basic
DA 10% of Basic
EA 5% of Basic
TA 12% of Basic

SS 7% of Basic
Levy 1% of Basic

In order to calculate the gross salary the following formulas are used:

Gross Salary = Basic Salary + Allowances

Net Salary = Gross Salary - Deductions

Draw a flowchart, write an algorithm, and a code a corresponding program that prompts the user to enter the name and basic salary of an employee and output their names, basic salary, allowances, deductions, gross salary and net salary with their appropriate labels/headings.