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University Examinations 2020/2021

FIRST YEAR SECOND SEMESTER EXAMINATIONS FOR BACHELOR OF EDUCATION TECHNOLOGY ELECTRICAL, BACHELOR OF EDUCATION TECHNOLOGY CIVIL ENG., BACHELOR OF EDUCATION IN TECHNOLOGY MECHANICAL/BACHELOR OF TECHNOLOGY IN ELECTRICAL, BACHELOR OF TECHNOLOGY IN CIVIL ENG., BACHELOR OF EDUCATION IN TECHNOLOGY (ELECTRICAL ENGINEERING), BACHELOR OF EDUCATION IN TECHNOLOGY (MECHANICAL ENGINEERING) AND BACHELOR OF SCIENCE IN PHYSICS

AND

SECOND YEAR SECOND SEMESTER EXAMINATIONS FOR BACHELOR OF SCIENCE IN INFORMATION SCIENCE AND BACHELOR OF SCIENCE IN PHYSICS AND CHEMISTRY

CIT 3112/CIT 3102: INTRODUCTION TO COMPUTER PROGRAMMING/ FUNDAMENTALS OF COMPUTER PROGRAMMING

DATE: JULY 2021 **TIME: 2 HOURS**

INSTRUCTIONS: Answer Question ONE and any other Two questions.

QUESTION ONE [30 MARKS]

a) State and explain the two problem solving strategies used in Computer programming [4 Marks]

b) Write the syntax for declaring a two-dimensional array and give an example [4 Marks]

c) Using an example in each case, state TWO ways of declaring constants [4 Marks]

d) The formula for calculating simple Interest is given below, use it to write a C program to determine the Principle when the rate, time and Interest is given [5 Marks]

$$Interest = \frac{Principle * Rate * Time}{100}$$

e) Draw a flow chart that will accept an input from the user and answer to the following question. Is it raining? If the answer is "yes" tell the user to get an umbrella and also bring a jacket. Otherwise tell the user it is sunny. [5 Marks]

f) Explain two Modern Methods for determining system requirements [4 Marks]

g) Scrutinize the code given below then write the exact output when the program runs [4 Marks]

```
#include <stdio.h>
int main()
{
      int rows = 4,i, j, number = 1;
      for(i= 1;i<= rows;i++)
      {
            for(j = 1; j <=i;++j)
            {
                  printf("%d ", number);
                  ++number;
            }
            printf("\n");
      }
      return 0;
}
```

QUESTION TWO [20 MARKS]

a) The process of program development can be broken down into stages. An output (deliverable) from a stage signifies the end of that stage. State the deliverables in the following system development stages [5 Marks]

i. Feasibility study
ii. Project planning and management
iii. System Analysis
iv. System Design
v. Development

b) Project management is a very important stage during program development state three undesirable effects that may result due to lack of proper resource management [3 Marks]

c) Using appropriate examples explain three types of programming errors [6 Marks]

d) Using an array data structure in your response, write a C program that reads in five integer values, calculates the average then displays the average [6 Marks]

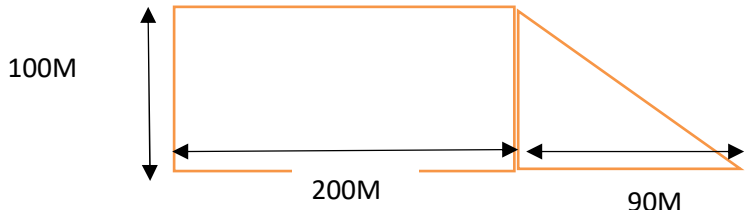
QUESTION THREE [20 MARKS]

a) Differentiate between the following terms as used in computer programming [6 Marks]

i. Testing and Debugging
ii. Local variable and Global variable
iii. Compiler and Interpreter

b) An organization has decided to develop a system to facilitate the invoicing of its sales to clients. It expects the invoices to be generated from the purchase orders of customers after the goods have been confirmed to be available. The sales manager considers this system to be crucial for its future success because it deals directly with customers and is anxious to ensure that it works well. Identify and explain four areas of testing for the information system that will be necessary to facilitate a good system. [8 Marks]

c) The figure below shows the playground of a certain institution. Using a function for each of the parts labeled A and B. Write a C program to calculate the total area covered by the playground [6 Marks]



QUESTION FOUR [20 MARKS]

a) Define the following terms as used in C programming language [3 Marks]

i. Feasibility
ii. Variable
iii. Syntax

b) Most programs come with user documentation. Explain two advantages of proper documentation in a program [4 Marks]

Develop a pseudo code to print the largest number among three numbers entered by the user [5 Marks]

c) Write a C program that declares two integer variables represented by x and y. The program should prompt the user to enter values for x and y. If the value assigned to x is equal to zero or greater than zero and the value assigned to y is less than five or equal to five, the program should add the two values and display the resultant value through variable z. Otherwise the program should display the words “Criteria not met”. [8Marks]

QUESTION FIVE [20 MARKS]

a) A small tutorial college would like to computerize its records and Payroll Processing Application. A consultant has been hired to oversee the implementation of the project. He suggests that the college needs to perform a feasibility study which will cover hardware and software, staffing and operating costs, impact of the new system on employment and the level of skills required for this new system. Identify four broad types of feasibility assessment covered in the above study. [4 Marks]

b) Identify errors, if any in the following C program, then correct the error by writing the correct format [6 Marks]

```
#include<stadi.h>
Main ()
{
      int A; B; C;
      product = a * b * c,
      print("the product is;", product)
}
```

c) Write a C program that reverses a two-digit number. For instance, when a user enters 25 it should display 52 [4 Marks]

d) Using switch structure, write a C program to accept a user's choice representing the various data offers and display the corresponding bundle, and assign the associated cost to a variable named charges, based on the choice entered. The applicable choices and corresponding data bundle offers are summarized below. [6 Marks]

Choice	Bundle Type	
1	Ksh. 99	500MB
2	Ksh. 50	150MB
3	Ksh. 20	50MB
4	Ksh. 10	15MB
5	Ksh 5	7MB
0	Exit Application	