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University Examinations 2021/2022

FOURTH YEAR THIRD TRI- SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF EDUCATION TECHNOLOGY IN CIVIL ENGINEERING

CIT 3102: FUNDAMENTALS OF COMPUTER PROGRAMMING

DATE: OCTOBER 2022 **TIME: 2 HOURS**

INSTRUCTIONS: *Answer question **one** and any other **two** questions*

QUESTION ONE (30 MARKS)

a) Define the term methodology and further differentiate between top down and bottom up methodology (3 marks)

b) Give 4 advantages of High Level Language over Machine Language (4 marks)

c) Explain 5 categories of High Level Languages (5 marks)

d) Explain why it is important to undertake feasibility study in the process of systems development (3 marks)

e) What are the rules that you should follow when declaring a variable in a C program (4 marks)?

f) List and explain the TWO types of functions used in C programming. (4 marks)

g) Explain the parts of the following programme:

(i) /*Program to compute area of a circle */ (1 mark)

(ii) #include <stdio.h> (1 mark)

(iii) int main( ) (1mark)
{

(iv) int rad; float area; const pi=3.14; //variable declaration (1 mark)

(v) printf ("Enter radius"); (1mark)

(vi) scanf ("%d",&rad); // input radius (1 mark)

```
area= pi * rad * rad;
```

(vii) `printf ("Area is %f", area);` (1 mark)

```
}
```

QUESTION TWO (20 MARKS)

a) Write a simple program that add two integers (5marks)

b) Consider this simple problem. Meru National Park is offering discount tickets to anyone who is under 18 years.

   a. find out how old the person is
   b. if the person is younger than 18 then say "You are eligible for a discount ticket."
   c. otherwise, say "You are not eligible for a discount ticket."

   In the pseudocode above, write an algorithm (7 marks)

c) Draw a flow chart for the above pseudocode (5 marks)

d) Write a syntax for switch statement (3 marks)

QUESTION THREE (20 MARKS)

a) Differentiate the following programming languages:

   a. Procedural programming and Event driven programming (2 marks)
   b. Low level programming language and high level language (2 marks)

b) Consider the grading system below:

Score	Grade
70 and Above	A
>=60 and less than 69	B
>=50 and less than 59	C
>=40 and less than 49	D
Less than 40	FAIL

   a. Using appropriate control structures, write a C program that can do the above grading (5 marks)

c) Explain the process of system development (7 marks)

d) Write the correct syntax for declaring a two dimensional array. (4 marks)

QUESTION FOUR (20 MARKS)

a) Define the term data type (2 marks)

b) Name and briefly describe any FOUR data type of the C language (4 marks)

c) Explain the following types of errors in programming:
   a. Syntax errors (2 marks)
   b. Run-time (Execution) errors (2 marks)
   c. Logical errors (2 marks)

d) Explain the concept of operator precedence using the example below:
   Z=x/(y*(s+x)) where x=18, y=6, s=1 (3 marks)

e) Explain the following elements of a function (5 marks)
   a. Function name
   b. Function return type
   c. List of parameters.
   d. Local variable declarations
   e. Function body statements
   f. A return statement

QUESTION FIVE (20 MARKS)

a. Give the three forms of IF……. THEN statement (3 marks)
b. Explain the difference between the while loop and the do white loop showing the difference in the syntax (4 marks)
c. Explain 4 advantages of using functions in programming (4 marks)
d. Write a general format of a user defined function (3 marks)
e. Explain the following escape sequence characters:
   i. \n (1 mark)
   ii. \t (1 mark)
   iii. Explain the reason for using the above characters in programming (1 mark)
f. Explain the following C program tokens: (3 marks)
   iv. Key words/ Reserved
   v. Constants
   vi. Variables