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KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2022/2023 ACADEMIC YEAR
FIRST YEAR, FIRST SEMESTER EXAMINATION
FOR THE DIPLOMA IN INFORMATION COMMUNICATION TECHNOLOGY
DIT 1002 – STRUCTURED PROGRAMMING

Date: 13TH DECEMBER 2022
Time: 8:30AM – 10:30 AM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS

QUESTION ONE (30 MARKS)

a) Briefly explain the term **Structured programming.** Outline two circumstances that would make a programmer to use structured programming language when writing a program. (4 Marks)

b) State one advantage of machine languages over other languages. (2 Marks)

c) Differentiate between low- level and high-level programming languages. (4 Marks)

d) What the acronym IDE stands for? State it's role in Programing. (2 Marks)

e) Outline the function of each of the following syntactic symbols as used in C programming language. (5 Marks)

i) {}
ii) []
iii) ;
iv) #include <stdio.h>
v) printf()

f) An ICT company intends to develop a new program. The team leader is faced with a challenge over which programming language to use. State three factors that the leader should consider when making a decision. (3 Marks)

g) Briefly describe each of the following variables as used in programming.

i) Global variable (2 Marks)
ii) Local variable (2Marks)

h) Define the term data structure and algorithm. Outline two benefits of data structures and algorithms to software developers. (3 Marks)

i) State and briefly explain three methods of testing the program for errors. (3 Marks)

QUESTION TWO (20 MARKS)

a) Discuss at least **eight stage**s of program development and design in their respective order. (14 Marks)

b) Briefly explain two challenges of emerging trends in programming language. (4 Marks)

c) Outline Four Qualities of good algorithm. (2 Marks)

QUESTION THREE (20 MARKS)

a) The gross salary of employees in Kiriri women's University books Enterprise is based on basic salary and additional benefit as follow:

i). Employees who have worked for company for more than 10years receive an additional pay of 10% to their basic salary

ii). Monthly salary bonus based on monthly sales of books as follows

Monthly sales	Bonus Rate (%)
Above 500000	15
Between 250,000 and 500,000	10
Below 250,000	5

a) Draw a flowchart for a program that would be used to calculate the gross salary then output employees' basic salary, gross salary and all benefits. (10 Marks)

b) Differentiate between flowchart and Pseudocodes. Outline three circumstances that would lead to the use of flowchart and Pseudocodes. (6 Marks)

c) Outline **four** reasons why program documentation should be done during program development . (4 Marks)

QUESTION FOUR (20 MARKS)

a) In the following C program, there are total of 10 errors in different lines. In the provided table, indicate the line numbers which error occurred and write your correction in front. (10 Marks)

```
1:  #include (stdio.h)
2:  #Define PI 3.14
3:  int main
4:  {
5:  Int rad, base, height;
6:  Float area, ci;
7:
8:  Prinf("\nEnter radius of circle :");
9:  Scanf("%d",rad);
10:
11: Area =PI*rad*rad;
12: Printf ("\nArea of circle:%d", area);
13:
14: Ci=2*PI*rad;
15: Printf ("\nCircuference: %f ", ci)
16:
17: printf("\nEnter the base of Right Angle Triangle :
18: "); scanf("%d", &base);
19:
20:  printf("\nEnter the height of Right Angle Triangle :
21: "); scanf("%d", &height);
22:
23: area = 0.5 * base * height;
24: printf("\nArea of Right Angle Triangle : %f", area);
25: Return 0;
26:
```

b) Describe each of the following data structure as used in programming. (4 Marks)

i) Linked list;

ii) Array

c) Outline two rules to be observed when choosing variable names. (2 Marks)

d) Differentiate between declared constants and defined constants as used in C programming.

(2 Marks)

e) Explain **one** circumstances under which top-down program design would be recommend in program development. (2 Marks)

QUESTION FIVE (20 MARKS)

a) State three types of control structures used in programming. (3 Marks)
b) List four selection controls used in writing a program. (4 Marks)
c) Differentiate between looping and selection. (4 Marks)
d) Draw a flowchart showing the general flow of the following: (9 Marks)
   i) the nested If selection
   ii) The FOR loop
   iii) REPEAT…..UNTIL Loop