GANDA INSTITUTE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY
PROGRESSIVE ASSESSMENT EXAMINATIONS
ACADEMIC YEAR 2025/2026

PROGRAMME(S): DIPLOMA IN COMPUTER SCICENCE (DCS)

YEAR OF STUDY: ONE SEMESTER TWO

COURSE: STRUCTURED SOFTWARE DEVELOPMENT

COURSE CODE : CSC 122

DATE : THURSDAY, 26th/JUNE/2026

TIME : 9:00 AM – 12:00PM

DURATION : 3 HOURS

VENUE: RM 2.5, RM 2.6, RM 2.8, RM 2.9, RM 2.10

INSTRUCTIONS:

i) Section A is compulsory
ii) Attempt Any three (3) questions in section B
iii) All questions carry equal marks
iv) Credit will be given for use of relevant examples
v) Begin each section b number on a new page of the answer sheet

SECTION A

Part I (Each carries 1 Mark)

1. Which header file is required for input and output in C?
   A. stdlib.h
   B. conio.h
   C. stdio.h
   D. string.h

2. What is the correct symbol for assignment in C?
   A. ==
   B. =
   C. :=
   D. =>

3. Which loop is guaranteed to execute at least once?
   A. for
   B. while
   C. do...while
   D. switch

4. What will be the output of: printf("%d", 5 + 3 * 2);
   A. 16
   B. 11
   C. 13
   D. 10

5. Which keyword is used to exit a loop immediately?
   A. stop
   B. exit
   C. break
   D. return

6. In a structure, data members are accessed using:
   A. . operator
   B. -> operator only
   C. # operator
   D. & operator

7. What is the index of the first element in an array?
   A. 1
   B. -1
   C. 0
   D. 2

8. Which statement is used to make decisions in C?
   A. loop
   B. switch
   C. if
   D. scanf

9. What does scanf() function do?
   A. Displays output
   B. Reads input
   C. Declares variables
   D. Ends program

10. Which operator is used for logical AND?
    A. &
    B. &&
    C. ||
    D. !

PART II: **(30 MARKS)**

Answer ALL questions. Each question carries 3 marks. Write only the output produced by each program.

11.
```
#include <stdio.h>
int main()
{
    int x = 10;
    if(x > 5)
        printf("YES");
    else
        printf("NO");

    return 0;
}
```

12.
```
#include <stdio.h>
int main()
{
    int i = 1;
    while(i <= 3)
    {
        printf("%d ", i);
        i++;
    }
    return 0;
}
```

13.
```
#include <stdio.h>
int main()
{
    int n = 4;
    switch(n)
    {
        case 1: printf("One"); break;
        case 2: printf("Two"); break;
        default: printf("Other");
    }

    return 0;
}
```

14.
```
#include <stdio.h>
int main()
{
    int marks[3] = {10, 20, 30};
```

```
    printf("%d", marks[0]);
    return 0;
}
```

15.
```
#include <stdio.h>
int Multiply(int a, int b)
{
    return a + b;
}
int main()
{
    printf("%d", Multiply(2, 3));

    return 0;
}
```

16.
```
#include <stdio.h>
int main()
{
    int sum = 0, i;
    for(i = 1; i <= 3; i++)
    {
        sum += i;
    }
    printf("%d", sum);

    return 0;
}
```

17.
```
#include <stdio.h>
int main()
{
    int sum = 0, i;
    for(i = 1; i <= 6; i+=1)
    {
        sum += i;
    }
    printf("%d", sum);
    return 0;
}
```

18.
```
#include <stdio.h>

int main()
{
    int marks[3] = {10, 20, 30};

    printf("%d", marks[3]);

    return 0;
}
```

19.
```
#include <stdio.h>

int main()
{
    int x = 5;
    printf("%d", x/3);
    return 0;
}
```

20.
```
#include <stdio.h>
int main()
{
    int a = 4, b = 3;
    printf("%d", a + b);
    return 0;
}
```

SECTION B (60 MARKS)

Attempt any 3 questions

Question 21

A student developed the following program using a switch...case statement to determine a learner's performance:

```
#include <stdio.h>
int main()
{
    int marks;
    char grade;
    printf("Enter marks: ");
    scanf("%d", &marks);
    if (marks >= 80)
        grade = 'A';
    else if (marks >= 50)
        grade = 'B';
    else
        grade = 'C';

    switch (grade)
    {
        case 'A':
            printf("Distinction");
            break;
        case 'B':
            printf("Pass");
            break;
        case 'C':
            printf("Fail");
            break;
        default:
            printf("Invalid marks");
    }
    return 0;
}
```

a) State the purpose of each of the following statements: (6 marks)

i. scanf("%d", &marks);

ii. grade = 'A';
iii. switch (grade)

b) Trace the program and determine the output when the user enters: (6 marks)
i. 90
ii. 55
iii. 35

c) Convert the switch...case section of the program into an equivalent if...else if...else statement. (4 marks)

d) Modify your new if...else solution to include a new grade: (4 marks)
Marks below 40 should display **"Poor Performance"** Write only the modified if...else section.

Question 22

A school is developing a system to store student records using **C structures**.

a) Write a C structure named Student that contains the following members: (5 marks)

- name (string)
- age (integer)
- marks (float)

b) Using the structure in (a), declare a variable **s1** and write C code to input the student's details from the keyboard. (6 marks)

c) Write C statements to display the student's details in the following format: (5 marks)

Name: ...
Age: ...
Marks: ...

d) Modify your program to store **two students using the same structure** and input their details. Write only the declaration and input section. (4 marks)

Question 23

A school intends to develop a simple C program that processes learners' marks using **arrays**.

a) Write C statements to declare an array capable of storing **10 integer marks** (2 marks)

b) Write C code that uses a loop to accept **10 marks from the user** and stores them in the array. 6 marks

c) Write C statements to compute: (6 marks)

- the **sum** of all marks in the array
- the **average** mark

d) Write C code to identify and display the **highest mark** stored in the array. (6 marks)

Question 24

A mobile money agent uses a C program to process daily transactions. The program calculates commission based on the number of transactions and total money handled.

a) Write C statements to declare the following variables: (4 marks)

- transactions (number of transactions)
- amount (amount per transaction)
- commission (could have decimal places)
- finalPay

b) Write a C program section that: (4 marks)

- uses a loop to input **5 transaction amounts**
- calculates the **total amount transacted**

c) Using **if...else**, apply the commission rules: (8 marks)

- If totalAmount ≥ 500,000 → commission = 8% of totalAmount
- If totalAmount ≥ 200,000 and < 500,000 → commission = 5%
- Otherwise → commission = 3%

d) Write C code to: (6 marks)

- calculate finalPay = commission - 2% deduction
- determine and display:

  "HIGH PERFORMANCE" if finalPay ≥ 30,000

  "AVERAGE PERFORMANCE" if finalPay between 10,000 and 29,999

  "LOW PERFORMANCE" if finalPay < 10,000

Question 25

A company is developing a simple C program to calculate employee salaries. Each employee works a number of hours per day for 5 days. The program calculates total pay and overtime pay.

Overtime is paid for any hours above 40 in total per week at 1.5 times the normal hourly rate.

a) Write a function prototype for calculateTotalHours() that accepts an integer array containing 5 daily working hours and returns the total hours worked. (4 marks)

b) Write a function definition for calculateTotalHours() that: (6 marks)

- has an array as a parameter
- uses a loop to sum the 5 daily working hours from the array
- returns the total hours worked in a week

c) In the main() function: (10 marks)

- input 5 daily working hours using a loop into an integer array
- call the calculateTotalHours() function
- calculate:

  overtimeHours = totalHours - 40 (if greater than 40)

  overtimePay = overtimeHours * hourlyRate * 1.5

  - totalPay = (40 * hourlyRate) + overtimePay

END