Class No. : .....

FY 30

Name : .....

FIRST YEAR HIGHER SECONDARY SECOND TERMINAL EXAMINATION, DECEMBER 2023

Part – III

COMPUTER SCIENCE

Maximum : 60 Scores

Time : 2 Hours

Cool-off Time : 15 Minutes

General Instructions to Candidates :

- *There is a 'Cool off time' of 15 minutes in addition to the writing time.*
- *Use 'cool off time' to get familiar with questions and to plan your answers.*
- *Read questions carefully before answering.*
- *Read the instructions carefully.*
- *Calculations, figures and graphs should be shown in the answer sheet itself.*
- *Malayalam version of the questions is also provided.*
- *Give equations wherever necessary.*
- *Electronic devices except non programmable calculators are not allowed in the Examination Hall.*

വിദ്യാർത്ഥികൾക്കുള്ള പൊതുനിർദ്ദേശങ്ങൾ :

- നിർദ്ദിഷ്ട സമയത്തിന് പുറമെ 15 മിനിട്ട് 'കൂൾ ഓഫ് ടൈം' ഉണ്ടായിരിക്കും.
- 'കൂൾ ഓഫ് ടൈം' ചോദ്യങ്ങൾ പരിചയപ്പെടാനും ഉത്തരങ്ങൾ ആസൂത്രണം ചെയ്യാനും ഉപയോഗിക്കുക.
- ഉത്തരങ്ങൾ എഴുതുന്നതിന് മുമ്പ് ചോദ്യങ്ങൾ ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- നിർദ്ദേശങ്ങൾ ശ്രദ്ധാപൂർവ്വം വായിക്കണം.
- കണക്ക് കൂട്ടലുകൾ, ചിത്രങ്ങൾ, ഗ്രാഫുകൾ, എന്നിവ ഉത്തരപേപ്പറിൽ തന്നെ ഉണ്ടായിരിക്കണം.
- ചോദ്യങ്ങൾ മലയാളത്തിലും നൽകിയിട്ടുണ്ട്.
- ആവശ്യമുള്ള സ്ഥലത്ത് സമവാക്യങ്ങൾ കൊടുക്കണം.
- പ്രോഗ്രാമുകൾ ചെയ്യാനാകാത്ത കാൽക്കുലേറ്ററുകൾ ഒഴികെയുള്ള ഒരു ഇലക്ട്രോണിക് ഉപകരണവും പരീക്ഷാഹാളിൽ ഉപയോഗിക്കുവാൻ പാടില്ല.

Score

Answer any five questions from 1 to 6. Each carries 1 score. **(5×1=5)**

1. The Sumerian or Babylonian number system used _____ as its base.

2. A NAND A = _____.

3. The fastest memory in a computer is _____.

4. The _____ keyword is used to create symbolic constants in C++ whose value never change during the program execution.

5. The _____ built-in function is used to terminate the execution of a C++ program.

6. Write C++ statement to declare a two dimensional array to store the elements of a 3 × 2 matrix.

Answer any nine questions from 7 to 18. Each carries 2 scores. **(9×2=18)**

7. Write short note about abacus.

8. Find the dual of the following Boolean expression :

   a) (X . 1) + (X + 0 + X)

   b) 0 + 0 = 0

9. Find the 2's complement of –35.

10. Write the functions of an operating system.

11. Write short note about any two components of CPU.

Score

12. Differentiate between syntax error and logical error.

13. Distinguish between top down design and bottom up design in problem solving.

14. Differentiate between character and string literal.

15. What are the data type modifiers used in C++ ?

16. Consider the following C++ statements and find out the errors and give reason for that. Consider that a and b are of integer data type.

```
switch(a + b)
{
        case 9:
                cout<<"Nine";
                break;
        case 7.5 ;
                cout<<"Seven";
                break;
        case a>200 :
                cout<<"a is greater";
                break;
        default :
                cout<<"wrong output";
}
```

17. Differentiate between linear and binary search methods.

18. Consider the following C++ statement.
    char mission ="Chandrayaan-3";
    Illustrate the memory allocation for the variable mission.

Score

Answer any nine questions from 19 to 29. Each carries 3 scores. **(9×3=27)**

19. Compare third and fourth generation computers.

20. Find the sum using binary addition $(5A3)_{16} + (437)_8 = (\_\_\_\_\_)_2$.

21. Draw the gate logic circuit diagram for the Boolean expression (X . Y) + (A + B).

22. What is e-Waste ? What are the chemicals found in e-Waste ?

23. Draw a flow chart to print the numbers from 1 to 50.

24. What are the characteristics of the steps in an algorithm ?

25. Choose the invalid identifiers from the following and give reason for that :

A-b, student, x2345, float, roll_no, 4f, x, keralam

26. Write the characteristics of following C++ data types.

a) int

b) float

c) char

27. Write the symbols for the following C++ operators.

a) conditional operator

b) modulus operator

c) logical and

Score

28. Consider the following C++ program.

```
#include<iostream>
using namespace std;
int main()
{
        int i=1;
        for(i=1;i<=5;i++)
        {
                if(i==3)
                        continue;
                cout<<i<<"\t";
        }
return 0;
}
```

a) What will be the output of the above program ? **(1½)**

b) Briefly explain about the working of while loop in the above program if continue is replaced by break statement. **(1½)**

29. Write the steps to sort the following numbers using the bubble sort algorithm.

51, 9, 7, 15, 2

Answer any two questions from 30 to 32. Each carries 5 scores. **(2×5=10)**

30. Answer the following :

a) $45.125 = (\_\_\_\_\_)_2$. **(2)**

b) State and prove De Morgan's first law. **(3)**

Score

31. a) Differentiate between RAM and ROM. **(3)**

b) Briefly explain about open source software with an example. **(2)**

32. a) Write an exit controlled ~~iteration statement or looping~~ statement used in C++. **(1)**

b) Explain the working of a 'for' loop in C++ using an example that demonstrates how to print your name 10 times. **(3)**

c) Mention a difference between 'switch' and 'if – else' statements in C++. **(1)**
