General Instructions to Candidates:
- There is a ‘Cool-off time’ of 15 minutes in addition to the writing time of 2 hrs.
- You are not allowed to write your answers nor to discuss anything with others during the ‘Cool-off time’.
- Use the ‘Cool-off time’ to get familiar with questions and to plan your answers.
- Read questions carefully before answering.
- All questions are compulsory and only internal choice is allowed.
- When you select a question, all the sub-questions must be answered from the same question itself.
- 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.

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1. A label in C++ is
   (a) Keyword
   (b) Identifier
   (c) Operator
   (d) Function

2. Write a statement that declares an
   enumerated data type called players
   with the values: AA, AB, BA, BB,
   CA, CB, DD.

3. Which gates are universal gates?

4. The ability for a message or data to
   be processed in more than one form
   is called __________
   (a) Polymorphism
   (b) Encapsulation
   (c) Data hiding
   (d) Inheritance

5. Analyze the following real life
   situation and correlate with any of
   the Object Oriented Programming
   concepts:

   A water tap in a kitchen gives cold
   water when it is turned left and hot
   water when it is turned right.
6. Differentiate between SQL commands DROP TABLE and DROP VIEW.

7. Rewrite the following code by using switch statement:

```cpp
#include <iostream.h>
#include <conio.h>

void main()
{
    int n;
    clrscr();
    ter a number: ";
    cin >>n;
    if (n == 1)
        cout << "Sunday" << endl;
    else if (n == 2)
        cout << "Monday" << endl;
    else if (n == 3)
        cout << "Tuesday" << endl;
    else if (n == 4)
        cout << "Wednesday" << endl;
    else if (n == 5)
        cout << "Thursday" << endl;
    else if (n == 6)
        cout << "Friday" << endl;
    else if (n == 7)
        cout << "Saturday" << endl;
    else
        cout << "Invalid option" ;
    getch();
}
```

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6. SQL-ൽ DROP TABLE, DROP VIEW അടയാളം command-ൽ മാറ്റാൻ വേണ്ടിയാണ്. 

7. പ്രോഗ്രാമിലെ പ്രധാന program code-ൽ switch statement മാറ്റാൻ ഉപയോഗിക്കുന്നു:

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#include <iostream.h>
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void main()
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        cout << "Friday" << endl;
    else if (n == 7)
        cout << "Saturday" << endl;
    else
        cout << "Invalid option" ;
    getch();
}
```

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P.T.O.
8. (a) We can pass an object only by reference not by value to a copy constructor. Why?

OR

(b) Consider the following code:

```java
Class AA
{
    AA a;
    BB b;
}
Class BB
{
    AA a;
    BB b;
}
Class CC
{
    AA a;
    BB b;
}
Void main ()
{
    CC ox;
}
```  

Write the order of constructor invoking when the object of CC class is created. Why?
9. Describe the importance of destructors.

10. Write a structure definition for structures containing the following details:
    (i) Regno, name, total-mark
    (ii) empno, name, designation, basic-pay of 10 employees.

11. Explain self-referential structure with example.

12. State two reasons for which you may like to have a network of computers instead of having stand-alone computer.

13. What is operator overloading? Explain with suitable example.

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P.T.O.

15. Match the following:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) Graphical representation of data movement, process and files.</td>
<td>(a) data dictionary</td>
</tr>
<tr>
<td>(2) Chart listing all logical conditions and actions.</td>
<td>(b) Decision tree conditions- đो लॅस-मादुकारां वां अंतर-मादुकारां वां अंतर-मादुकारां वां अंतर-मादुकारां वां प्रयोग किए किए किए किए किए</td>
</tr>
<tr>
<td>(3) Graphical representation of conditions and actions similar to branches of a tree.</td>
<td>(c) Pseudo code</td>
</tr>
<tr>
<td>(4) Name of all data items used together with exact definition.</td>
<td>(d) Data Flow Diagram</td>
</tr>
</tbody>
</table>

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16. In an ATM machine the user will be given options to access their account details, withdraw money, and deposit money etc. only. The background details are not shown to the user.

(a) Name the OOPS feature that we can correlate with this situation.

(b) Briefly explain about the OOPS feature.

17. Match the following:

(1) Arrow operator  (a) This pointer
(2) Deallocation   (b) new operator
(3) Null          (c) Object pointer
(4) Starting address  (d) Heap of a memory location
(5) An operator used for Dynamic allocation of memory
(6) Stores the (f) Zero pointer address of the object in action

(g) Base address

16. တုတ် ATM machine-တွင် အားလုံးအခြေအနေအတွက်, အင်အားထိုးမှုများ, အင်အား ဆိုလိုပွဲပီးစီမံချိန်များ ဖော်ပြထားပါသည်။ ပြုလုပ်ရာ လိုအပ်သောအချက်အလက်များ အကောင်းပါသည်။

(a) မြန်မာသို့ ပြောင်းပြည့်နေသည် အခြေအနေ အပေါ် OOPS feature ဖော်ပြထားပါသည်။

(b) ထို OOPS feature-အသ REMARK

17. များအတွက် သတ်မှတ်မှု:

(1) Arrow operator  (a) This pointer
(2) Deallocation   (b) new operator
(3) Null          (c) Object pointer
(4) Starting address  (d) Heap of a memory location
(5) An operator used for Dynamic allocation of memory
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(g) Base address

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P.T.O.
18. What is a stream? Name the streams generally used for file I/O.

19. (a) Draw the logic circuit for the Boolean expression:
\[ f = xyz + xy'z + xyz' \]

OR

(b) P.T x. \((x + y) = x\) by algebraic method.

20. What is a communication channel? What choices do you have while choosing a communication channel for the network?

21. What are the three aspects of feasibility study?

22. Write a C++ program to output the message “Welcome to the world of C++” to a file “message.txt”.

23. Write note on different Data Models.

22. “message.txt” មេរៀប ឱ្យលេខូរកាំណត់ “Welcome to the world of C++” មេរៀប តាមដង អោយបញ្ចូលទៅ C++ program អោយខ្ញុំ។

23. អង្ការសឹង Data Model-សឹងសាល- 
អោយី រីី អោយខ្ញុំ។
24. (a) Create a class CUSTOMER to represent a bank account with the following details:

(i) Data members:
1. Accno to store account number
2. Name to store customer name
3. Acctype to store the type of account
4. Balance to store the balance amount

(ii) Member functions:
1. To assign initial values
2. To deposit an amount - which accepts an amount as an argument and updates the balance amount.
3. To withdraw an amount after checking the balance - which accepts an amount as an argument and updates the balance amount.
4. To display the details - which displays Accno, Name and balance.

OR

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P.T.O.
(b) (i) Class employee
{
    int empno;
    char name [15];
    float basic,hra,da,net;

    public:
    void getdata( );
    void calculate( );
    void display( );
}

employee Em[10];

Considering the above code, answer the following:

(1) How many copies of member function of employee class are created in memory? Justify.

(2) How many copies of data members are created in memory? Justify.

(ii) What is the significance of access labels in a class?
25. Write SQL commands for (i) to (v) on the basis of the following table

<table>
<thead>
<tr>
<th>No.</th>
<th>Name</th>
<th>Stipend</th>
<th>Stream</th>
<th>Avg Mark</th>
<th>Grade</th>
<th>Class</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ram</td>
<td>400.00</td>
<td>Medical</td>
<td>75.5</td>
<td>B</td>
<td>12A</td>
</tr>
<tr>
<td>2</td>
<td>Lal</td>
<td>450.00</td>
<td>Commerce</td>
<td>67.75</td>
<td>C</td>
<td>11B</td>
</tr>
<tr>
<td>3</td>
<td>Lali</td>
<td>300.00</td>
<td>Non-medical</td>
<td>78.3</td>
<td>B</td>
<td>12C</td>
</tr>
<tr>
<td>4</td>
<td>Mohan</td>
<td>350.00</td>
<td>Humanities</td>
<td>87</td>
<td>A</td>
<td>12A</td>
</tr>
<tr>
<td>5</td>
<td>Reghu</td>
<td>400.00</td>
<td>Commerce</td>
<td>93.2</td>
<td>A</td>
<td>11C</td>
</tr>
<tr>
<td>6</td>
<td>Geetha</td>
<td>500.00</td>
<td>Medical</td>
<td>90.5</td>
<td>A</td>
<td>12A</td>
</tr>
<tr>
<td>7</td>
<td>Subha</td>
<td>425.00</td>
<td>Commerce</td>
<td>78.3</td>
<td>B</td>
<td>12B</td>
</tr>
<tr>
<td>8</td>
<td>Sobha</td>
<td>550.00</td>
<td>Medical</td>
<td>87.5</td>
<td>A</td>
<td>12C</td>
</tr>
<tr>
<td>9</td>
<td>Seena</td>
<td>400.00</td>
<td>Non-medical</td>
<td>77.2</td>
<td>B</td>
<td>11A</td>
</tr>
<tr>
<td>10</td>
<td>Reshma</td>
<td>300.00</td>
<td>Humanities</td>
<td>90</td>
<td>A</td>
<td>12B</td>
</tr>
</tbody>
</table>

(i) Select all the Non-medical stream students from STUDENT.

(ii) List the names of those students who are in class 12 sorted by Stipend.

(iii) List all students sorted by AvgMark in descending order.

(iv) Display a report, listing name, stipend, stream and amount of stipend received in a year assuming that the stipend is paid every month.

(v) To insert a new student in STUDENT table and fill the entire column with some value.