GOVERNMENT OF KARNATAKA
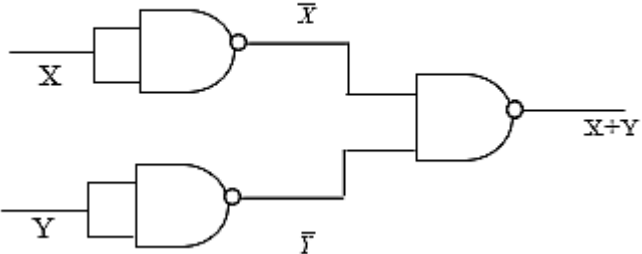## KARNATAKA SCHOOL EXAMINATION AND ASSESSMENT BOARD
II PUC EXAMINATION - 1 MARCH - 2025

SCHEME OF VALUATION

SUBJECT : COMPUTER SCIENCE **SUBJECT CODE: 41**

QNo.	PART – A	MARKS
Instructions : 1. The question paper has four parts namely A, B, C, D 2. For Part – A questions, only the first written answers will be considered for evaluation.		
I	**Select the correct answer from the choices given**	
1.	b) Motherboard	1m
2.	c) Involution law	1m
3.	d) Both a) and b)	1m
4.	c) A is false, R is true	1m
5.	a) regno, name, marks	1m
6.	b) friend function	1m
7.	c) no return type	1m
8.	a) Base class	1m
9.	b) ptr = &n;	1m
10.	c) Domain	1m
11.	b) Drop.	1m
12.	a) Hyper Text Transfer Protocol	1m
13.	d) Gateway	1m
14.	a) FSF	1m
15.	b) Dedicated hosting	1m
II	**Fill in the blanks choosing the appropriate word/words from those given in the bracket.** **(Data independence, Data integrity, Sequential, Foreign, Datawarehouse, Serial)**	
16.	Data integrity	1m
17.	Data independence	1m
18.	Sequential	1m
19.	Foreign	1m
20.	Data warehouse	1m

III	PART – B	
21.	**Write the dual form of :** **a) 1 + 0 = 1** → 0 . 1 = 0 **b) X . 1 = X** → X + 0 = X	1m 1m
22.	**Realize OR gate using only NAND gate** 	2m
23.	**Write any two features of parameterized constructor.** • The parameterized constructors can be overloaded. • For an object created with one argument, constructor with only one argument is invoked and executed. • The parameterized constructor can have default arguments and default values. • It is possible to initialize different objects with different initial values. **(Any two features)**	2m
24.	**List the member functions of "ofstream".** put( ), write( ), seekp( ), tellp( ) **(Any two functions)**	2m
25.	**Define data model. Mention any one data model.** A Data Model is an abstract model that describes how the data is represented and used. Types: Relational model, Network model, Hierarchical model. **(Any one)**	1m 1m
26.	**Mention any two logical operators in SQL.** ALL, AND, ANY, BETWEEN, EXISTS, IN, LIKE, NOT, OR, IS NULL, UNIQUE **(Any two operators)**	2m

27.	**What is "order by" clause in SQL? Write its syntax.**
	ORDER BY clause is used to sort the data in ascending or descending order, based on one or more columns.
	Syntax :
	      SELECT column_list FROM table_name [WHERE condition]
	      ORDER BY column_list [ASC / DESC];
		1m
		
		1m

IV	PART - C	
28.	**Write a note on UPS and it types.** **Uninterrupted Power Supply .** It is a power supply that includes a battery to maintain power in the event of power failure.	1m
	Types of UPS : Online UPS : It supplies power from its own inverter even when the power line is functioning properly.	1m
	Offline or standby UPS : It monitors the power line and switches to battery power as soon as it detects a problem	1m
	Or any suitable definition/points. Each carries 1 mark.	
29.	**Explain the different types of linked list.** i) Singly linked list : Singly linked list contains two parts - data part and link part. Data part contains data and link part contains address of next node.	1m
	ii) Circular linked list : In circular linked list, the link field of the last node contains the address of the first node.	1m
	iii) Doubly linked list : Doubly linked list contains three parts – forward, backward, and data. Each node contains both next and previous node address.	1m
	Or any suitable definition or diagram. Each carries 1 mark.	
30.	**Define:** **a) Free store:** Free store is a pool of unallocated memory heap used by the program for dynamic allocation.	1m
	b) this pointer: Every object has access to its own address through an important pointer called this pointer.	1m
	c) Self referential structure: The self-referential structure are structures that include an element that is a pointer to another structure of same type.	1m
	Or any suitable definition. Each carries 1 mark.	
31.	**What is a file? Compare text file and binary file.** The information/data stored under a specific name on a storage device is called file.	1m
	Text File : It stores information in ASCII characters and each line of text is terminated with special character known as EOL and requires internal translation.	1m
	Binary File : It stores information in the same format as it is held in the memory. No delimiters are used and no translation occurs.	1m
	Or any suitable definition. Each carries 1 mark.	

32.	**Describe the different levels of RDBMS.**	
	Internal level:	
	It is the lowest level of data abstraction that deals with the physical representation of the database. It is also known as physical level.	1m
	Conceptual Level:	
	It is the next higher level of abstraction that deals with the logical structure of the entire database. It is also known as logical level.	1m
	External level:	
	It is the highest level of abstraction that deals with the user's view of the database. It is also known as view level.	1m
	Or any suitable definition. Each carries 1 mark.	
33.	**Identify the type of e-commerce in the following cases:**	
	a) **Buying of used cars from the owner :** C2C	
	b) **Buying of goods by distributor from manufacturer :** B2B	3m
	c) **Buying of goods from Amazon website :** B2C	
34.	**Briefly explain the basic structure of HTML.**	
	```<HTML>```	
	``` <HEAD>```	
	``` <TITLE> ----------------</TITLE>```	
	``` </HEAD>```	
	``` <BODY>```	
	``` ----------```	
	``` </BODY>```	1m
	```</HTML>```	
	<HTML> tag marks the beginning of the HTML and </HTML> tag marks the end of HTML document.	
	<HEAD> tag begins the head section of the HTML document and </HEAD> tag defines the end of the heading.	
	<TITLE> tag gives title to HTML document that appears on browser title bar.	
	<BODY> tag defines the body of HTML document.	2m

| V	PART – D	
35.	**What is primitive data structure? Explain the different operations performed on primitive data structure.** Data structures that are directly operated upon by machine level instructions are known as primitive data structure. **i) Create:** Create operations is used to create a new data structure. Ex: int x; **ii) Destroy:** Destroy operation is used to destroy or remove the data structure from the memory space. **iii) Select:** Select operation is used by programmers to access the data within the data structure. **iv) Update:** Update operation is used to change the data of data structures.	1m 4m

36.	**Write an algorithm to insert an element into the Queue.**
	 Step 1: IF REAR = N-1 then
	         PRINT "QUEUE IS FULL" 1m
	         EXIT
	     [End of if]
	 Step 2: IF FRONT = NULL then
	         FRONT = 0
	         REAR = 0 3m
	     ELSE
	         REAR = REAR + 1
	     [End of if]
	 Step 3: QUEUE[REAR] = ITEM 1m
	 Step 4: RETURN
		5m

37.	**Explain any five characteristics of OOP.** **Object:** An object is a collection of data members and associated member functions. **Class:** A class is a way of grouping objects having similar characteristics. A class is a template from which objects are created. **Data Abstraction:** Abstraction is the process of representing essential features without including background details. **Data Encapsulation:** Wrapping up of data and functions into a single unit (class) is data encapsulation. **Inheritance:** The objects of one class acquires the properties of another class through inheritance. **Overloading:** Overloading allows objects to have different meaning depending upon context. Operator overloading and Function overloading. **Polymorphism:** The ability of an operator and function to take multiple forms is known as polymorphism. **Dynamic Binding:** Dynamic binding is a process of linking procedure call to function at runtime. **Message passing:** In OOP, Object may communicate with each other through message passing **Or any suitable definition. Each carries 1 mark - Any five characteristics**	5m

38.	**Define inline function. Write the situations where inline function may not work.**	
	The inline function is a short function. Compiler replaces a function call with the body of the function. It uses the keyword called 'inline'.	1m
	The situations where inline function may not work :	
	1. The inline function definition is too long or too complicated.	
	2. The inline function is recursive.	
	3. The inline function has looping constructs.	
	4. The inline function has a switch or goto.	4m
39.	**Explain default constructor with syntax and suitable programming example.**	
	A constructor which does not take any argument is called a default constructor.	1m
	Syntax:	

```
        class  classname
        {
        public:
           classname( )
           {
           body of the constructor
           }
        };
```

1m

Example :

```
#include<iostream.h>
#include<conio.h>
class  X
{
   private : int a,b;
   public :
            X ()    //default constructor
            {
                a = 10;
                b = 20;
            }
            void display ( )
            {
                cout<<"a=" <<a<<setw(5)<<"b="<<b<<endl;
            }
};
void main( )
{
   X   obj1,obj2;
   obj1. display ( );
   obj2. display ( );
}
```

3m

(Definition – 1m, Syntax – 1m, Programming example- 3m)

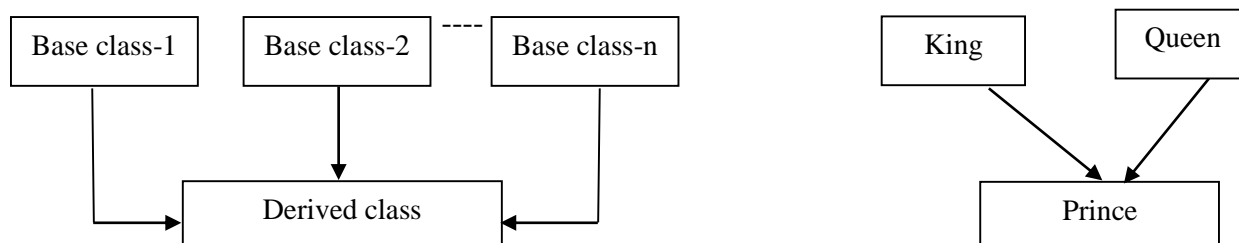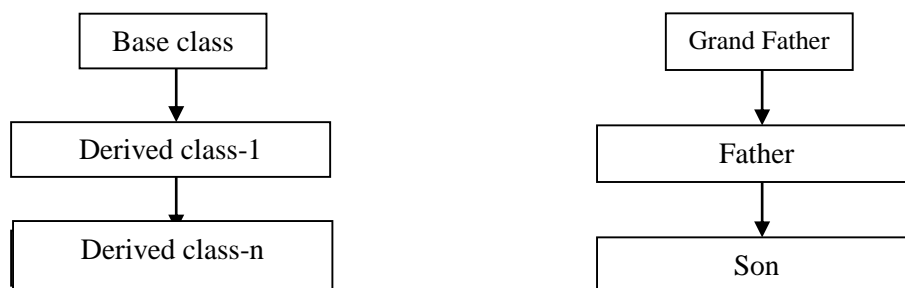| 40.	**With a neat diagram explain the different types of inheritance.**	
	Single inheritance: If a class is derived from a single base class, it is called as single inheritance.	
		1m

Single inheritance:

If a class is derived from a single base class, it is called as single inheritance.

```
Base class              Father
    │                     │
    ▼                     ▼
Derived class            Son
```
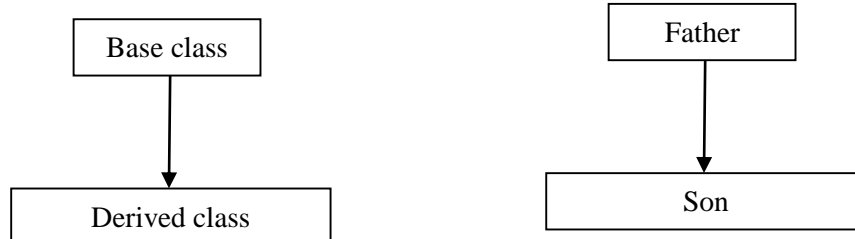
1m

Multiple inheritance:

If a class is derived from more than one base class, it is known as multiple inheritance.

```
Base class-1   Base class-2  ----  Base class-n      King      Queen
     │              │                  │               \        /
     └──────► Derived class ◄──────────┘                ▼      ▼
                                                         Prince
```

1m

Multilevel inheritance:
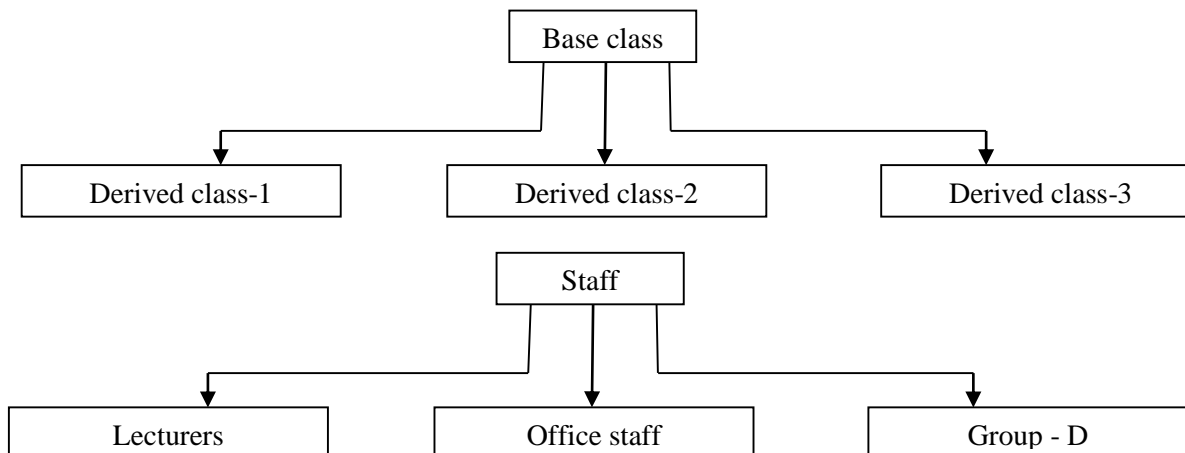
The classes can also be derived from the classes that are already derived. This type of inheritance is called multilevel inheritance.

```
Base class                Grand Father
    │                          │
    ▼                          ▼
Derived class-1             Father
    │                          │
    ▼                          ▼
Derived class-n              Son
```

1m

Hierarchical inheritance:

If a number of classes are derived from a single base class, it is called as hierarchical inheritance

```
                    Base class
          ┌─────────────┼─────────────┐
          ▼             ▼             ▼
   Derived class-1  Derived class-2  Derived class-3

                      Staff
          ┌─────────────┼─────────────┐
          ▼             ▼             ▼
      Lecturers     Office staff    Group - D
```

1m

Hybrid inheritance:
Hybrid inheritance is combination of Hierarchical and multilevel inheritance.
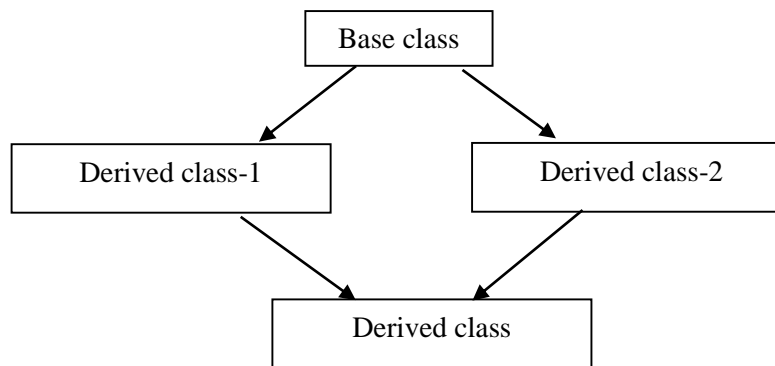

1m

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41. **Give the measures for preventing virus.**
   i. Never use a "foreign" disk or CD without scanning it for viruses.
  ii. Always scan files downloaded from the internet or other sources.
 iii. Never boot your PC from external disk or pendrive unless it is virus free.
 iv. Use the licensed software.
  v. Install the antivirus software.
 vi. Password protect your PC.
vii. Keep antivirus software up to date.

Or any suitable measures. Each carries 1 mark – Any five

5m

VI

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42. **Given the Boolean function F(A,B,C,D) = $\sum$(5,6,7,10,14,15). Simplify it using K-map.**
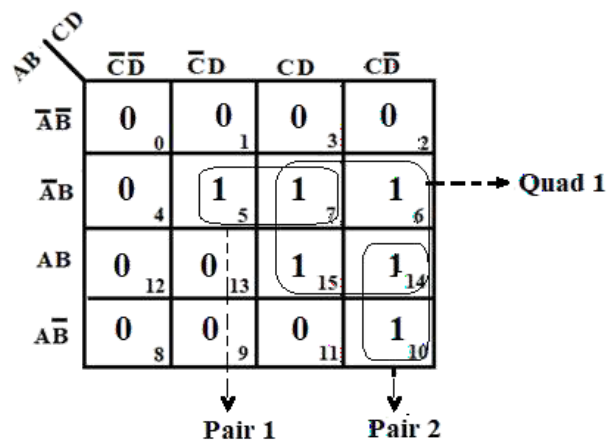
Quad 1 = B C
Pair 1 = $\overline{A}$ B D
Pair 2 = A C $\overline{D}$
Final SOP = B C + $\overline{A}$ B D + A C $\overline{D}$

K-Map Construction - 1 mark
Mapping and reduction - 3 marks
Final SOP - 1 mark

5m

43.	**Define a class employee with data members empno, empname and member functions getdata() and putdata().Define the member functions outside the class.**	
| | ```cpp
#include <iostream>
#include<conio.h>
class employee
{
  private:
    int    empno;
    char   empname[20];
   public:
        void getdata( );
        void putdata( );
};
```  2m | |
| | ```cpp
void employee :: getdata( )
{
cout << "Enter Employee Number: ";
cin >> empno;
cout << "Enter Employee Name: ";
cin>> empname;
}
void employee :: putdata( )
{
cout << "Employee Number: " << empno << endl;
cout << "Employee Name: " << empname << endl;
}
```  3m | 5m |
| | ```cpp
void main( )
{
employee   e;
clrscr( );
e.getdata( );
e.putdata ();
getch( );
}
``` | |
| | **(Defining class – 2 marks, Defining member functions outside the class – 3 m)** | |
| | **(Note : main ( ) function is optional)** | |

44.	With reference to the table given below, write the SQL query to perform the following operations:	

Table Name : Book

Book - Code	Book - Name	Book - Qty	Book - Price
101	C	5	200
102	Java	10	250
103	Python	20	350
104	HTML	15	150
105	SQL	25	230

a) Display all the records from "Book" table.

SELECT * FROM Book;

1m

b) Add a new field "Total - Cost" to the table book.

ALTER TABLE Book ADD (Total_Cost NUMBER(8,2));

1m

c) Calculate the Total - Cost.

UPDATE Book SET Total_Cost = Book_Qty * Book_Price;

1m

d) Find the highest Total - Cost.

SELECT MAX(Total_Cost) FROM Book;

1m

e) Delete the record whose Book - Code is 102

DELETE FROM Book WHERE Book_Code=102;

1m

* * * * * * * * *