**Part – D**

**Answer any *FOUR* questions. Each question carries *FIVE* marks 05X04=20**

1. **This question from chapter 4 i.e Data structure**

* Write an algorithm for enqueue() & dequeue() operation in queue?
* Write an algorithm for delete an element from the queue?
* What is queue? Write an algorithm for insert element into queue?
* Write an algorithm to insert & delete element in array?
* Write an algorithm for insert an element into the queue?
* Write an algorithm for push() & pop() operation in stack?
* What searching? Write an algorithm to search an element in an array using linear search technique?
* Write an algorithm to search an element in an array using binary search technique?
* Write an algorithm to sort array element using insertion sort technique?

1. **This question from chapter 4 i.e Data structure**

* Explain the operation performed on linear array/ one dimensional array?
* Explain the memory representation of stack using array?
* What is linear data structure? Explain the operation performed on linear data structure?
* What are the operations performed on queue? Write an algorithm to delete element from queue?
* What is queue? Explain the different types of queue?
* What is queue? Explain the memory representation of queue?
* How many types are there to show memory representation of array? Explain any one?
* What is array? Explain the different types of array?
* What is array? Explain advantages and disadvantages of array?
* What is linked list? Explain the various types of linked list?
* What are the operations performed on stack? Write an algorithm to insert an element into stack?
* What is queue? Give the application of queue?
* What is stack? Give the application of stack?
* Explain the different terminologies of tree?
* What is binary tree? Explain the different terminologies on binary tree?
* Define the following terminologies with respect to tree

a) root node b)leaf node c)height d)depth e)internal node

* What is primitive data structure? Explain the various operation that can be performed on primitive data structure?
* What is non primitive data structure? Explain the various operation that can be performed on non primitive data structure?
* Explain the operation that can be performed on queue data structure?
* Explain the operation that can be performed on stack data structure?
* What is linked list? Explain the different operation that can be performed on linked list?

1. **This question from chapter 6 i.e OOPs concept**

* Explain the different application of OOPs?
* Differentiate OOP & POP?
* Explain the basic concept of OOPs **“OR”** explain the characteristics of OOPs? **“OR”** explain the features of OOPs?
* Write the characteristics of object oriented programming concept
* Write the advantages & disadvantages of OOPs? **“OR”**  Write the benefit & limitation of OOPs?
* What are the advantages of object oriented programming over procedure oriented programming?

1. **This question from chapter 8 i.e Function overloading**

* What is function overloading? Write the advantages/benefit of function overloading
* Write a simple program to demonstrate function overloading?
* Discuss overloaded function with example?
* Explain programming with example to overload a function with different number of arguments?
* What is inline function? List the reasons when inline function may not work? **“OR”** what is inline function? Why inline function may not work some time? Give reasons?
* What is function overloading? What is the need for function overloading?
* What is friend function ? Write the characteristics of friend function?
* What is inline function? What are the advantages of inline function?
* What is inline function? Write a simple program to demonstrate inline function?
* Briefly explain friend function with syntax and example?
* What are the advantages & disadvantages of inline function?
* When is function overloading is needed? Write any two advantages & restriction on overloaded function?
* What is friend function ? write a simple program to demonstrate friend function?

1. **This question from chapter 9 i.e Constructor & destructor**

* What is constructor? Explain with a program to demonstrate invoking parameterize constructor by explicit call?
* Explain with a program to demonstrate invoking parameterize constructor by implicit call?
* What is constructor? Write the characteristics /rules/features of constructor?
* What is parameterize constructor? Write the characteristics /rules/features of parameterize constructor?
* What is default constructor? Write the characteristics/rules/features of default constructor?
* What is default constructor? Write a syntax and program for it?
* What is destructor? Write the characteristics/rules/features of destructor?
* What is destructor? Write a syntax & simple program to demonstrate it?
* What is copy constructor? Write the syntax & characteristics/rules/features of copy constructor?
* Write a simple program to demonstrate copy constructor?
* What is constructor? Write syntax & simple program to demonstrate constructor?
* How many methods are there to invoke parameterize constructor? Explain any one with program?
* What is constructor overloading? Write a syntax & program example for it?

1. **This question from chapter 10 i.e inheritance**

* What is inheritance?Define virtual base class & abstract class in inheritance?
* Write a simple program to demonstrate single level inheritance **“OR”** Write a program to show inheritance?
* Explain the different types of inheritance?
* Mention the advantages of inheritance?
* What is inheritance write the syntax of inheritance? And also define base class/super class & derived class/sub class?
* What is inheritance? Write the advantages of inheritance in C++?
* What is inheritance? Write a syntax and program for it?
* What is inheritance? Explain briefly hierarchical & hybrid inheritance?
* What is inheritance? Explain briefly single & multilevel inheritance?
* What is inheritance? Explain any two types of inheritance?
* What is inheritance? Explain briefly multilevel & multiple inheritance?
* What is inheritance? Mention its types? Explain any two?
* What is visibility mode in inheritance? Explain its role?
* Define the following terminologies

a) super class b) derived class c) visibility mode

d) abstract class e) virtual base class

* What is single level inheritance? Write a syntax and program for it?

1. **This question from chapter 13 i.e Data base concept**

* What is data model? Explain the different types of data model?
* Write the difference between manual data processing & electronic data processing
* Explain data processing cycle?
* Explain the feature of database?
* Define the following terms

a. File b. Tuple c. Attribute d. Domain e. Database

* Explain data abstraction in detail?
* Explain the different architecture of database?
* What is data independence? Explain the types?
* What is data model? Explain the types?
* What is normalization? Explain the types?
* What is e- r model? Explain the different symbols used in e- r model?
* Define following

a. Aggregation b. Specialization c. generalization

* What are keys? Explain the different types of keys used in database?
* What is data ware house? Explain the component of data ware house?
* What is data mining? Explain the component of data mining?
* What are the application of database?

1. **This question from chapter 5 i.e Network Concept**

* Explain the terminologies

a. Nodes b. Server c. Web browser d.mac address e. NIC

* Explain briefly about guided media of data transmission?
* Explain tcp/ip model in detail?
* Explain the different types of switching technique?
* What is communication mode? Explain the types?
* Explain any 5 network devices?
* Define the following terms

a. Router b. Bridge c. Repeater d. Switch e. Hub

* Define the following terms

a. Modem b. Rj-45 c. TDMA d. GPRS e. EDGE

* Define the following terms

a. chatting b. wi-fi c. SIM d. SMS e.video conference

* Explain the application of network?
* What is computer virus? Explain the features/characteristics of computer virus?
* What is virus? How to prevent the computer virus?
* What is network security? Explain the different protection method of network security?
* What is network? Explain the goals of network?
* Explain briefly about unguided media of data transmission?
* What is network protocol? Explain any 5 network protocol?
* What is network? Explain the different types of network?
* What are network topologies? Explain the different types?

**Part – E**

**Answer any *TWO* questions. Each question carries *FIVE* marks 05X02=10**

1. **This question from chapter 2 i.e Boolean Algebra**

* Solve using K map F(A,B,C,D)=∑(0,1,3,4,5,6,7,9,10,11,13,14,15)
* Solve using K map F(W,X,Y,Z)=∑(0,1,2,3,6,10,13,14,15)
* Solve using K map F(A,B,C,D)=∑(1,3,4,5,7,9,11,12,13,14,15)
* simplify the following boolean function using K map F(P,Q,R,S)=∑(0,2,4,6,10,14)
* Solve using K map F(A,B,C,D)=∑(0,1,4,5,7,8,9,12,13,15)
* simplify the following boolean function using K map F(P,Q,R,S)=∑(1,3,5,6,7,9,13)
* Solve using K map F(A,B,C,D)=∑(1,2,5,7,9,11,12,13,15)
* given the Boolean function f(a,b,c,d)= ∑(0,1,2,3,4,8,12,13) reduce it by using K map
* given the Boolean function F(A,B,C,D)= ∑(0,4,8,9,10,11,12,13,15) reduce it by using K map
* Reduce F(A,B,C,D)= ∑(1,2,3,4,5,7,9,11,12,13,14,15) using karnaugh map
* using K map simplify the following expression in four variables F(A,B,C,D)= m1+m2+m4+m5+m9+m11+m12+m13
* Reduce F(A,B,C,D)= ∑(0,4,6,7,8,12,14,15) using karnaugh map
* simplify the Boolean expression using K map F(A,B,C,D)= ∑(0,2,5,7,8,10,13,15)
* simplify the Boolean expression using K map F(W,X,Y,Z)= ∑(1,2,3,5,7,8,9,11,13,15)
* simplify the Boolean expression using K map F(W,X,Y,Z)= ∑(0,2,4,5,6,7,8,10,12,13,14,15)
* given Boolean function f(a,b,c,d)= ∑(0,1,2,3,4,6,8,10,12,14) using K map
* given Boolean function f(a,b,c,d)= ∑(0,1,2,3,5,6,9,10,13,14) using K map
* simplify the Boolean expression using K map F(W,X,Y,Z)= ∑(1,3,5,7,9,11,12,13,14,15)
* simplify the Boolean expression using K map F(W,X,Y,Z)= ∑(1,3,5,7,9,11,12,13,15)
* simplify the Boolean expression using K map F(A,B,C,D)= ∑(1,2,3,5,7,8,9,10,11,13,15)
* given Boolean function f(a,b,c,d)= ∑(0,1,2,3,4,6,8,9,10,11) using K map
* Reduce F(A,B,C)= ∑(0,1,2,4,5,6) using karnaugh map
* simplify the Boolean expression using K map F(A,B,C,D)= ∑(1,3,4,5,6,7,9,11,12,13,14,15)
* given the Boolean function F(A,B,C,D)=m1+m2+m3+m4+m5+m7+m8+m9+m11+m12+m13+m15
* Reduce F(A,B,C,D)= ∑(7,9,10,11,12,13,14,15) using karnaugh map
* Reduce F(A,B,C,D)= ∑( 1,5,9,10,11,12,13,14) using karnaugh map
* given the Boolean function F(A,B,C,D)= ∑(0,4,8,9,10,11,12,13) using karnaugh map
* given the Boolean function
* F(A,B,C,D)=m1+m2+m3+m4+m5+m7+m8+m9+m11+m13+m14+m15
* Reduce F(A,B,C,D)= ∑(1,2,3,4,5,7,9,10,11,13,15) using karnaugh map
* given Boolean function f(a,b,c,d)= ∑(1,2,4,5,6,7,9,10,12,13,14,15) using K map
* simplify the Boolean expression using K map F(A,B,C,D)= ∑(0,1,,3,4,5,6,7,8,9,15)
* Reduce F(A,B,C,D)= ∑(0,4,6,7,8,12,14,15) using karnaugh map
* given the Boolean function F(A,B,C,D)= ∑(1,2,3,4,5,7,9,11,12,13,15) using karnaugh map
* Reduce F(A,B,C,D)= ∑(0,1,2,3,4,8,9,10,11,12) using karnaugh map
* given the Boolean function
* F(A,B,C,D)=m0+m1+m2+m3+m4+m5+m8+m9+m10+m11+m13+m15
* given Boolean function f(a,b,c,d)= ∑(0,3,4,6,8,9,10,11,12,14) using K map
* simplify the Boolean expression using K map F(A,B,C,D)= ∑(0,1,2,3,4,5,8,9,10,11,13)
* Reduce F(A,B,C,D)= ∑(1,2,3,4,5,7,9,10,11,15) using karnaugh map
* Reduce F(A,B,C,D)= ∑(1,3,5,7,9,11,12,13,14,15) using karnaugh map
* given the Boolean function F(A,B,C,D)= ∑(0,2,3,4,6,7,10,14) using karnaugh map
* Reduce F(A,B,C,D)= ∑(0,1,3,5,6,7,8,9,10,14,15) using karnaugh map
* Reduce F(A,B,C,D)= ∑(0,1,2,3,6,8,10,12,14) using karnaugh map
* Reduce using K map F(A,B,C,D)= ∑(0,1,2,3,8,9,10,11,13,15)
* given the Boolean function F(A,B,C,D)= ∑(1,2,3,4,5,6,7,9,11,12,13,14,15) using karnaugh map
* Reduce F(A,B,C,D)= ∑(0,1,2,3,6,8,10,12,14) using karnaugh map
* given the Boolean function F(A,B,C,D)= ∑(0,1,2,3,4,5,6,7,8,9,10,11) using karnaugh map
* Reduce F(A,B,C,D)= ∑(4,6,7,9,12,14,15) using karnaugh map
* Reduce using K map F(A,B,C,D)= ∑(0,1,3,5,7,8,9,11,13,15)
* simplify the Boolean expression using K map F(A,B,C,D)= ∑(0,1,2,3,6,8,10,12,14)
* Reduce F(A,B,C,D)= ∑(0,2,4,6,8,10,12,14) using karnaugh map
* given the Boolean function F(A,B,C,D)= ∑(4,6,7,9,12,14,15) using karnaugh map
* Reduce F(A,B,C,D)= ∑(1,2,3,4,5,7,9,10,11,15) using karnaugh map
* Reduce F(A,B,C,D)= ∑(0,1,2,3,4,8,12,13) using karnaugh map
* given the Boolean function F(A,B,C,D)= ∑(0,1,2,3,4,5,8,9,10,11,13,15) using karnaugh map
* Reduce F(A,B,C,D)= ∑(0,4,8,9,10,11,12,13,15) using karnaugh map
* given the Boolean function F(A,B,C,D)= ∑(0,2,4,5,6,7,9,10,11,13,15) using karnaugh map
* Reduce F(A,B,C,D)= ∑(0,1,3,4,5,6,7,9,10,11,13,14,15) using karnaugh map
* given the Boolean function F(A,B,C,D)= ∑(0,1,2,8,9,10,11) using karnaugh map
* given the Boolean function F(A,B,C,D)= ∑(1,3,4,5,6,7,9,11,12,13,14,15) using karnaugh map

1. **This question from chapter 7 i.e Classes & Object**

* Explain the features class ?
* Explain class definition? Explain the class diagram, syntax and example?
* What are class members? Explain how to create an object & explain how to access class members using object of a class?
* What is the significance of using access specifier? Explain the different types of access specifier in details? **“or”** what are access specifier explain with program example?
* Explain member function inside the class definition with program example
* Explain member function outside the class definition with program example
* Explain following with C++ program

1. Create a class with name demo
2. Declare private integer type variable called n,i& sum
3. Write a function read() inside the class & reads the values n & assign 0 to sum.
4. Write another function add() outside the class definition that adds all the number between 1 to n using for loop& stores the result in the variable sum.
5. Write one more function print() inside the class the prints the value of sum.
6. Create an object named obj inside the main function & access read(), add() & print() functions.

* What is array of object? Explain with program example?
* What is array as a member of class? Explain with example?
* Write the difference between class & structure?
* Explain the following member function with syntax

a. Inside the class b. Outside the class

* Describe how object can be used as function arguments, explain with program example?

1. **This question from chapter 14 i.e sql commands**

* Write a sql command to develop following student table

|  |  |
| --- | --- |
| Column name | Data type |
| Emp\_id | Number(4) |
| Ename | Varchar(20) |
| Designation | Varchar(20) |
| Salary | Number(5,2) |

1. Create a table named emp with above details
2. Insert 3 records into table
3. Add residence varchar(20) to the table
4. Display the details of emp who earning montly salary of 50,000/-
5. Calculate the annual salary with a virtual column named annual salary and display it?

* What is sql group function? Explain any 5 group function in sql?
* Write the difference between order by & group by clause in sql with syntax & example?
* Write a sql command & develop the following table

|  |  |
| --- | --- |
| Column Name | Data type |
| Reg\_no | Number(4) |
| S1 | Number(3) |
| S2 | Number(3) |
| S3 | Number(3) |

1. create above table using create command
2. add the total field to the table using alter command
3. calculate the total using update command
4. display the structure of table using desc command
5. display reg\_no & total of all the student

* Explain different logical operator in SQL?
* Write a SQL command to develop following table and also find total, maximum & minimum marks in the table

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Reg | Name | Sub1 | Sub2 | Sub3 | Tot | Max | Min |
| 001 | Abc | 80 | 85 | 83 | 248 | 85 | 80 |
| 002 | Pqr | 89 | 70 | 80 | 239 | 89 | 70 |
| 003 | Lmn | 90 | 93 | 92 | 275 | 93 | 90 |

* Given table

|  |  |  |  |
| --- | --- | --- | --- |
| Emp\_id | Emp\_name | Deparment | Salaray |
| E101 | Akarsh | Marketing | 45,000/- |
| E102 | Kiran | IT | 1,55,000/- |
| E103 | Rajesh | Account | 65,000/- |
| E104 | Arjun | IT | 1,00,000/- |

1. Write the SQL command to display all the record
2. Write a SQL command to count no of rows in a table
3. Write a SQL command to display maximum salary of an employee
4. Write a SQL command to delete a record of Emp\_id 103
5. Write a SQL command to display details of employee those who working in IT department

* What is DML command in SQL? Explain the features/function of DML command
* What is DML command in SQL? Explain the different commands that comes under DML with syntax?
* What is DDL command in SQL? Explain the features/function of DDL command
* What is DDL command in SQL? Explain the different commands that comes under DDL with syntax?
* Write the syntax of following commands
* a. insert b.delete c. update d. select e. create
* Explain delete and drop commands with syntax & example
* Explain alter and update command with syntax and example
* Explain SQL constraint with an example?
* Explain arithmetic operator in SQL?
* Explain the different comparison/relational operator in SQL?
* Explain any 5 logical operator in used in SQL
* Write the purpose of following keyword

a. distinct b. unique c. order by d. group by e. set

* Write the purpose of following functions in SQL

a. sum() b. count() c. max() d. min() e. avg()