Arrays

1. Define Data Structure. Name any C++ in-built data structure.
2. Discuss, how computer memory is allocated for a 2d array.
3. State condition under which binary search is applicable
4. What is a vector
5. Discuss briefly logic of:
    a. Bubble sort
    b. Insertion sort
    c. Selection sort
    d. Merge sort
    e. Linear search
    f. Binary search
6. What do you understand by base address

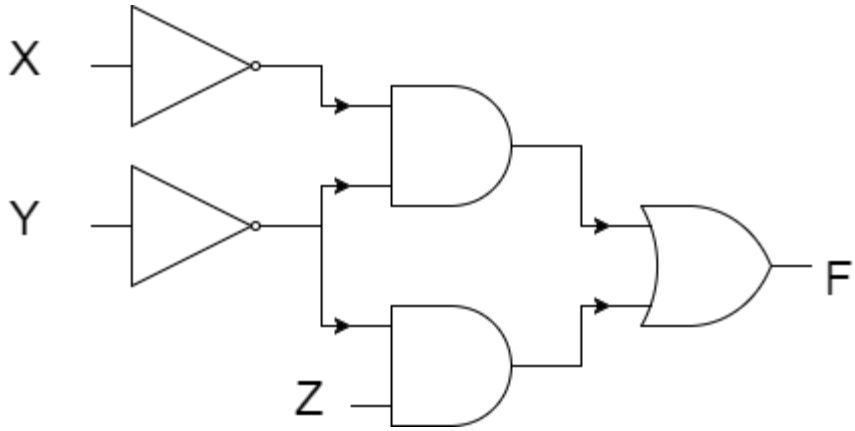
Boolean

1. State principal of duality.Give dual of (A+0).(A.1.A').
2. Draw truth table of ABC + AB'C + A'BC'
3. For given truth table give canonical SOP and canonical POS expressions

X	Y	Z	F
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	0
1	1	1	1

4. Draw Logic Circuit Diagram (LCD) for: Y = ab + b'c + c'a'
5. Draw LCD using NAND to NAND and NOR to NOR for: A' (B + C)
6. Prove Algebraically ((x + y)' + (x + y)')' = x + y
7. Find complement of F = AB' + C'D'
8. State distributive laws and prove algebraically.
9. If F(A,B,C,D) = Σ (0,2,4,5,7,8,10,12,13,15) obtain simplified form using K-Map
10. If F(A,B,C,D) = π (0,2,4,5,7,8,10,12,13,15) obtain simplified form using K-Map
11. Convert following boolean expression into its equivalent canonical POS form AB'C + A'BC + A'BC'

12. Write the equivalent canonical SOP expression for following POS expression F(x,y,x) = π(1,3,6,7)
13. Write equivalent Boolean expression for logic circuit



14. Express P + Q'R in canonical SOP form.
15. State and verify Demorgan's theorem, algebraically.
16. Find POS expression for F(A,B,C) = π(0,2,4,5) using K-Map

Classes and Objects

1. Differentiate between Class and Structure.
2. Give Similarity Between Class and Structure.
3. Define Class and object. Give example.
4. Discuss Private, Protected and Public access specifiers.
5. Define inline functions, give two ways to inline a function.
6. Give advantages and limitations of inline functions.
7. How a parameterised constructor behave like default constructor?
8. What are the two situations when a constructor can be called a default constructor.
9. Differentiate between
    a. local class and global class
    b. local object and global object
10. Discuss accessor mutator and manager functions
11. Discuss abstraction, Data Hiding and encapsulation with the help of C++ code
12. If 5 objects of a class are defined how many copies of that class's data items are stored in the memory? How many copies of its member functions are stored.
13. What is the significance of scope resolution operator :: ?
14. What do you mean by
    a. static data member
    b. static Member function
15. Differentiate between Constructor and destructor functions, give example.

16. What is the size of the class if it doesn't contain any data member.
17. What is that class called which does not have a public constructor.
18. Differentiate between implicit and explicit invocation of constructor.
19. Define temporary instances, give example.
20. Discuss the 4 situations when constructors are called.
21. What is copy constructor, when it is called .
22. Why the argument to copy constructor is passed by reference
23. Give the need for destructor.

Data File Handling

1. Differentiate between two types of data files.
2. Define stream .
3. If you include fstream.h it in your file handling program you need not include iostream.h. Why?
4. What are the two ways a file can be opened.
5. Differentiate between
    a. ios::out and ios::app
    b. Ios::out and ios::ate
6. Discuss purpose of close() function.
7. Differentiate between:
    a. get() and getline()
    b. seekg() and seekp()
    c. tellg() and tellp()
    d. seekg() and tellg()
    e. ifstream class and ofstream class
    f. read() and write()
    g. getline() and getc()
8. What is the need and uses of read() and write() function when there are get() and put() functions for I/O
9. File mode constants are defined in which class.

Inheritance

1. Define inheritance and discuss its various forms.
2. What is the need of inheritance.
3. Differentiate between multiple and multilevel inheritance.
4. Discuss the importance of different visibility modes.
5. Differentiate between private and protected data members.
6. Discuss invocation of constructor and destructor in case of single, multiple and multilevel inheritance.
7. What is the purpose of member initialisation list?

8. Differentiate between abstract class and concrete class.
9. What is function overriding.
10. What is the need of virtual base class.
11. What is dreaded diamond.
12. Define containership, containment, and aggregation.
13. How does invocation of constructor differ in inheritance and containership.
14. Discuss IS-A, HAS-A, HOLDS-A relationship.
15. Define base class and derived class.
16. Class Y has been derived from class X. The class Y does not contain any data members of its own. Does the class Y require constructors. If yes, why?

Networking

1. Write two advantages and disadvantages of star topology.
2. Differentiate between Telnet and FTP.
3. Expand: SMS, MAN, WWW, MODEM, PPP, ARPANET, DHTML, ISP, FTP, URL, TCP/IP, XML, CDMA, WLL, HTML, GSM, WAN, HTTP, SMTP, FLOSS, FSF, GNU.
4. Define switching techniques.
5. Differentiate between coaxial and optical cable.
6. Define Firewall and cookies.
7. Write two applications of Cyber Law.
8. Differences and similarities between HTML and XML.
9. Differentiate between Internet and intranet.
10. Advantages and disadvantages of star topology over bus topology.
11. Name two transmission media for networking.
12. Differentiate between hackers and crackers.
13. Explain function of modem and switch.
14. Advantages and disadvantages of bus topology over star topology.
15. Significance of Cyber Law.
16. Which of the following unit measures the speed with which data can be transmitted from one node to another load of a network. also give expansion of the suggested unit.
    a. Mbps
    b. Kmph
    c. MGps
17. Define hub, modem, repeater.
18. How is email different from a chat?
19. What is protocol? which protocol is used to search information from Internet using an Internet browser?
20. Difference between
    a. LAN & WAN

b. LAN & MAN
c. Website & Browser

21. Which protocol is used to copy a file from/to remotely located server.
22. Discuss role of arpanet.
23. Which of the following is not a unit for data transfer rate
    a. bps
    b. abps
    c. gbps
    d. kbps
24. Differentiate between
    a. Trojan horse and worm
    b. Trojan horse and Virus
25. Give a term to block unauthorised access while permitting authorised Communications.
26. Differentiate between OSS and proprietary software give example.
27. Define VoIP.
28. Out of the following identify client side script(s) and server side script(s)
    a. ASP
    b. VB script
    c. JavaScript
    d. JSP
29. Give one example of cybercrime.
30. What is web 2.0
31. Name any two components required for networking.
32. What out of the following you will use to have an audio visual chat with an expert sitting in a far away place to fix up technical issue
    a. Email
    b. VoIP
    c. FTP
33. Differentiate between URL and domain, give example.
34. Give applications of any two open source software.
35. Advantage of switch over hub.

OOPS

1. Define programming paradigm.
2. Define polymorphism and function overloading, give example.
3. Discuss transitive nature of inheritance, give its significance.
4. Discuss advantages and disadvantages of OOPs.
5. Define Static Binding/ early binding/ static linking.
6. What do you understand by functions signature?
7. Discuss restrictions on overloaded function.

8. How is matching done in case of overloaded functions.
9. How would you compare default arguments and function overloading?

Pointers

1. Define pointer.
2. Define free store.
3. Name the operators used to allocate/de-allocate memory to/from heap.
4. Discuss situations leading to memory leak.
5. Define null pointer and this pointer.
6. Why does an array always start with index 0 in C++?
7. What are self referential structures?
8. How does C++ organise memory when a program is run?
9. Differentiate between static and dynamic allocation of memory.
10. Can we pass constant as reference?
11. Which arithmetic operations can be done on pointers?
12. What is meant by dereferencing?
13. Give the names for the following operators
    a. &
    b. *

SQL

1. Explain cartesian product with the help of an example.
2. Explain set intersection.
3. Explain set difference
4. Explain Union operation
5. Differences between selection and projection.
6. Explain primary key with example
7. Explain candidate key with example
8. Explain alternate key with example
9. Explain foreign key with example
10. Differentiate between degree and cardinality
11. Differentiate between tuple and attribute
12. Define domain
13. Define data dictionary
14. Briefly discuss three sub languages of SQL
15. Differences between Char and varchar
16. Define constraint in which two constraints are applied automatically when primary key constraint is applied.
17. Differentiate between unique constraint and primary constraint.
18. Difference between alter and update.

19. Differentiate between where and having clause.
20. Differentiate between delete and drop
21. Differentiate between count and count(*)
22. Differentiate between equi join and natural join.
23. Which join is produced if we forget to give join condition in SQL Query.

Stacks and Queues

1. What is the disadvantage of array queue over circular queue.
2. Differentiate between stack and queue.
3. Give one similarity between stack and queue.
4. Define deque, input restricted deque, and output restricted deque.
5. What do you understand by node.