

1. The nitrogenous supply of the soil is maintained when _____ is alternated with other crops.
 - a) Moong
 - b) Wheat
 - c) Carrots
 - d) Tea

2. The Great Plain of North India is a _____ plain
 - a) Aggradational
 - b) Till
 - c) Abyssal
 - d) Erosional

3. Humidity in the air is measured by
 - a) Hydrometer
 - b) Hygrometer
 - c) Opisometer
 - d) Barometer

4. Which of the following is a fact of history:
 - a) Vasco da Gama reached Calcutta in 1498.
 - b) Vasco da Gama reached Calicut in 1498.
 - c) Vasco da Gama never came to India.
 - d) Vasco da Gama was an Italian traveller to India

5. Mean, Median and Mode are measures of
 - a) Dispersion
 - b) Central Tendency
 - c) Probability
 - d) Index Numbers

6. Arrange the layers of the atmosphere in order of increasing altitude
 - a) Troposphere, stratosphere, mesosphere, thermosphere
 - b) Mesosphere, stratosphere, thermosphere, troposphere
 - c) Troposphere, stratosphere, thermosphere, mesosphere
 - d) Thermosphere, mesosphere, stratosphere, troposphere

7. Who was the first Indian ruler who inscribed his messages on rocks and stone pillars?
 - a) Akbar
 - b) Ashoka
 - c) Chandragupta Maurya
 - d) Harshvardhan

8. As we move towards the Poles, the relative distance between two meridians of longitude
- a) Increase in a definite proportion
 - b) Decrease in a definite proportion
 - c) Remain constant
 - d) Increase in an indefinite proportion
9. Which of the following energy sources is not biological in origin?
- a) Wood
 - b) Gobar gas
 - c) Nuclear
 - d) Coal
10. A Judge of Supreme Court can be impeached by:
- a) President
 - b) Governor
 - c) Parliament
 - d) Election Commission
11. The phenomenon of splitting of a beam of white light into its seven constituent colours is
- a) Reflection of light
 - b) Refraction of light
 - c) Dispersion of light
 - d) Interference of light
12. Who among the following heads the recently formed EAC-PM (Economic Advisory Council to the PM)?
- a) Arvind Pangaryia
 - b) Bibek Debroy
 - c) A Subramanium
 - d) K.Venugopal
13. The Sirhind Canal carries water from the river
- a) Satluj
 - b) Ravi
 - c) Jhelum
 - d) Beas

14. Which of the following statements are correct
1. Humus is not a mineral
 2. Humus helps to retain moisture in the soil
 3. Humus helps the plant in absorbing materials from the soil for building its body
 4. A soil looks dark on account of the presence of humus
- a) 1,2,3 & 4
b) 2, 3 & 4
c) 1, 3 & 4
d) 1, 2 & 4
15. The Chairman of the Public Accounts Committee of the Parliament is appointed by
- a) Speaker of Lok Sabha
 - b) Prime Minister of India
 - c) President of India
 - d) Chairman of Rajya Sabha
16. Who among the following was popularly known as 'Punjab Kesari'?
- a) Ranjit Singh
 - b) Lala Lajpat Rai
 - c) Duleep Singh
 - d) Bhagat Singh
17. Radioactivity was discovered by
- a) Kelvin
 - b) Thomson
 - c) Bacquerel
 - d) Rutherford
18. Lala Lajpat Rai was a prominent leader of which of the following movements?
- a) Protests against the Simon Commission
 - b) Salt Satyagraha
 - c) Anti-Rowlatt Act Agitation
 - d) Anti-Apartheid movement
19. China is involved in a territorial dispute with countries such as Philippines and Vietnam in:
- a) East China Sea
 - b) South China Sea
 - c) Timor Sea
 - d) Sargasso Sea

20. Verghese Kurien is considered to be the father of
- Operation White
 - Operation Flood
 - Operation Milk
 - Operation Milky White
21. Narendra Modi is the first Indian PM to visit which of the following countries?
- China
 - Israel
 - Pakistan
 - Iraq
22. Who is the creator of the iconic Rock Garden?
- Master Tara Singh
 - Ms. Amrita Pritam
 - Kaptan Singh Solanki
 - Nek Chand
23. Which one of the following wetlands is not in Punjab?
- Rudrasagar
 - Harike
 - Ropar
 - Kanjli
24. Which of the following is not an abiotic component of an ecosystem?
- Carbon dioxide
 - Sun light
 - Water
 - Green Plants
25. Which among following is called "Gift of the Nile"
- Libya
 - Sudan
 - Iraq
 - Egypt
26. In the following series how many consonants come before 3?
- 3 A 3 F 4 T 7 U 3 S 3 T T 3 J J 3 4 5 3 D X 3 X Z 3 T 3 H
- 7
 - 5
 - 6
 - None of these

27. Two persons working 2 hours a day assemble 2 machines in 2 days. The number of machines assembled by 6 persons working 6 hours a day in 6 days is
- a) 6
 - b) 18
 - c) 27
 - d) 54
28. The owner of a furniture shop charges his customers 12% more than the cost price. If a customer paid Rs. 14,056 for a dining table, what is the cost price of the dining table?
- a) 14,000
 - b) 12,500
 - c) 11,550
 - d) None of these
29. The difference between 55% of a number and 25% of the same number is 11.10. What is 75% of that number?
- a) 27.75
 - b) 37
 - c) 21.25
 - d) 45
30. The product of two successive numbers is 1980. Which is the smaller number?
- a) 34
 - b) 44
 - c) 35
 - d) 45
31.level supply information to strategic tier for the use of top management.
- a) Operational
 - b) Environmental
 - c) Competitive
 - d) Tactical
32. can be defined as data that has been processed into a form that is meaningful to the recipient and is of real or perceive value in current or prospective decisions.
- a) System
 - b) Information
 - c) Technology
 - d) Service

33. After the design phase the document prepared is known as.....
- system specification
 - performance specification
 - design specification
 - None of these
34. A data flow can
- Only emanate from an external entity
 - Only terminate in an external entity
 - May emanate and terminate in an external entity
 - May either emanate or terminate in an external entity but not both
35. The data Flow Diagram is the basic component of system]
- Conceptual
 - Logical
 - Physical
 - None of the above
36. Consider the following four schedules due to three transactions (indicated by the subscript) using read and write on a data item x , denoted by $r(x)$ and $w(x)$ respectively. Which one of them is conflict serializable.
- (A) $r_1(x) ; r_2(x) ; w_1(x) ; r_3(x) ; w_2(x)$
- (B) $r_2(x) ; r_1(x) ; w_2(x) ; r_3(x) ; w_1(x)$
- (C) $r_3(x) ; r_2(x) ; r_1(x) ; w_2(x) ; w_1(x)$
- (D) $r_2(x) ; w_2(x) ; r_3(x) ; r_1(x) ; w_1(x)$
- A
 - B
 - C
 - D
37. Consider the following schedule S of transactions T1, T2, T3, T4:

| T1 | T2 | T3 | T4 |
|---------------------|---|---------------------|--------------------------------|
| Writes(X) Commit | Reads(X) Writes(Y) Reads(Z) Commit | Writes(X) Commit | Reads(X) Reads(Y) Commit |

Which one of the following statements is CORRECT?

- S is conflict-serializable but not recoverable
- S is not conflict-serializable but is recoverable
- S is both conflict-serializable and recoverable
- S is neither conflict-serializable nor is it recoverable

38. Consider the transactions T1, T2, and T3 and the schedules S1 and S2 given below.

T1: r1(X); r1(Z); w1(X); w1(Z)
T2: r2(Y); r2(Z); w2(Z)
T3: r3(Y); r3(X); w3(Y)
S1: r1(X); r3(Y); r3(X); r2(Y); r2(Z);
w3(Y); w2(Z); r1(Z); w1(X); w1(Z)
S2: r1(X); r3(Y); r2(Y); r3(X); r1(Z);
r2(Z); w3(Y); w1(X); w2(Z); w1(Z)

Which one of the following statements about the schedules is TRUE?

- a) Only S1 is conflict-serializable
 - b) Only S2 is conflict-serializable
 - c) Both S1 and S2 are conflict-serializable
 - d) Neither S1 nor S2 is conflict-serializable
39. Consider the following log sequence of two transactions on a bank account, with initial balance 12000, that transfer 2000 to a mortgage payment and then apply a 5% interest.
1. T1 start
 2. T1 B old=12000 new=10000
 3. T1 M old=0 new=2000
 4. T1 commit
 5. T2 start
 6. T2 B old=10000 new=10500
 7. T2 commit

Suppose the database system crashes just before log record 7 is written. When the system is restarted, which one statement is true of the recovery procedure?

- a) We must redo log record 6 to set B to 10500
 - b) We must undo log record 6 to set B to 10000 and then redo log records 2 and 3
 - c) We need not redo log records 2 and 3 because transaction T1 has committed
 - d) We can apply redo and undo operations in arbitrary order because they are idempotent
40. Which operation contains all pairs of tuples from the two relations, regardless of whether their attribute values match?
- a) Join
 - b) Cartesian product
 - c) Intersection
 - d) Set difference

41. The _____ operation performs a set union of two “similarly structured” tables
- a) Union
 - b) Join
 - c) Product
 - d) Intersect
42. Which address is used in an internet employing the TCP/IP protocols?
- a) physical address and logical address
 - b) port address
 - c) specific address
 - d) all of the mentioned
43. Transmission data rate is decided by
- a) network layer
 - b) physical layer
 - c) data link layer
 - d) transport layer
44. The physical layer is responsible for
- a) line coding
 - b) channel coding
 - c) modulation
 - d) all of the mentioned
45. A single channel is shared by multiple signals by
- a) analog modulation
 - b) digital modulation
 - c) multiplexing
 - d) none of the mentioned
46. B Trees are generally
- a) very deep and narrow
 - b) very wide and shallow
 - c) very deep and very wide
 - d) cannot say
47. All aggregate functions except _____ ignore null values in their input collection.
- a) Count(attribute)
 - b) Count(*)
 - c) Avg
 - d) Sum

48. The _____ keyword is used to access attributes of preceding tables or sub queries in the from clause.
- a) In
 - b) Lateral
 - c) Having
 - d) With
49. ICMP is primarily used for
- a) error and diagnostic functions
 - b) addressing
 - c) forwarding
 - d) none of the mentioned
50. Transmission control protocol is
- a) connection oriented protocol
 - b) uses a three way handshake to establish a connection
 - c) receives data from application as a single stream
 - d) all of the mentioned
51. Which one of the following is a transport layer protocol?
- a) stream control transmission protocol
 - b) internet control message protocol
 - c) neighbor discovery protocol
 - d) dynamic host configuration protocol
52. User datagram protocol is called connectionless because
- a) all UDP packets are treated independently by transport layer
 - b) it sends data as a stream of related packets
 - c) both (a) and (b)
 - d) none of the mentioned
53. Data cannot flow between two data stores because
- a) it is not allowed in DFD
 - b) a data store is a passive repository of data
 - c) data can get corrupted
 - d) they will get merged
54. Which of the following is not a aggregate function?
- a) Avg
 - b) Sum
 - c) With
 - d) Min

55. Which of the following protocols ensures conflict serializability and safety from deadlocks?
- a) Two-phase locking protocol
 - b) Time-stamp ordering protocol
 - c) Graph based protocol
 - d) Both (a) and (b) above
56. E-mail is
- a) Loss-tolerant application
 - b) Bandwidth-sensitive application
 - c) Elastic application
 - d) None of the mentioned
57. The entire hostname has a maximum of
- a) 255 characters
 - b) 127 characters
 - c) 63 characters
 - d) 31 characters
58. The approach used in top-down analysis and design is
- a) to identify the top level functions by combining many smaller components into a single entity
 - b) to prepare flow charts after programming has been completed
 - c) to identify a top level function and then create a hierarchy of lower-level modules and components
 - d) All of the above
59. The "big picture" diagram of a system is the
- a) block diagram
 - b) logic diagram
 - c) system flowchart
 - d) program flowchart
60. In Decision trees
- a) nodes represent the conditions, with the right side of tree listing the actions to be taken
 - b) the root is drawn on the left and is the starting point on the decision sequence
 - c) the branch depends on the condition and decisions to made
 - d) All of the above
61. Which one is an example of network database?
- a) Unify
 - b) Ingress
 - c) IDMS
 - d) None of the above

62. Before use of DBMS information was stored using _____.
- a) Cloud Storage
 - b) Data System
 - c) None of these
 - d) File Management System
63. A transaction may release locks but may not obtain any new locks this phase is called as _____.
- a) Shrinking phase
 - b) Partially committed phase
 - c) Two phase
 - d) Growing phase
64. Writing the buffered log to disk is something reflected to as a _____.
- a) write ahead logging
 - b) log force
 - c) no force
 - d) undo phase
65. Which of the following function cannot be performed by SQL?
- a) Setting permissions on tables
 - b) Creating Complex UI
 - c) Creating views in a database
 - d) Updating records
66. A transaction may obtain locks but may not release any lock is known as _____.
- a) Shrinking phase
 - b) Growing phase
 - c) Strict two phase
 - d) Rigorous
67. In which phase system reply update to all transactions by scanning the log forward from the checkpoint?
- a) Redo phase
 - b) Undo phase
 - c) Partial committed
 - d) None of the above

68. Which of the following are valid ways to refer only to host 172.16.30.55 in an IP access list?
1. 172.16.30.55 0.0.0.255
 2. 172.16.30.55 0.0.0.0
 3. any 172.16.30.55
 4. host 172.16.30.55
 5. 0.0.0.0 172.16.30.55
 6. ip any 172.16.30.55
- a) 1 and 4
 - b) 2 and 4
 - c) 1, 4 and 6
 - d) 3 and 5
69. The problem of a station not being able to detect a potential competitor for the medium because it thinks that there is activity between them is called
- a) Exposed Station Problem
 - b) Collision Avoidance Problem
 - c) Hidden Station Problem
 - d) Access Grant Problem
70. Fragmentation means
- a) adding of small packets to form large packet
 - b) breaking large packet into small packets
 - c) combining large packets in to a single packet
 - d) forwarding a packet through different networks
71. Information can be categorized into
1. Environmental information
 2. Competitive information
 3. Government information
 4. Internal information
- a) 1, 2 & 3
 - b) 1, 2 & 4
 - c) 2, 3 & 4
 - d) 1, 3 & 4

72. Structured Programming involves:
- functional modularization
 - localization of errors
 - decentralized programming
 - stress on analysis
73. A model-driven analysis approach that focuses on the structure of stored data in a system rather than on processes is
- structured analysis
 - information engineering
 - rapid architected analysis
 - object-oriented analysis
74. Consider a hash table with 100 slots. Collisions are resolved using chaining. Assuming simple uniform hashing, what is the probability that the first 3 slots are unfilled after the first 3 insertions?
- $(97 \times 97 \times 97)/100^3$
 - $(99 \times 98 \times 97)/100^3$
 - $(97 \times 96 \times 95)/100^3$
 - $(97 \times 96 \times 95)/(3! \times 100^3)$
75. Suppose $T(n) = 2T(n/2) + n$, $T(0) = T(1) = 1$
Which one of the following is false?
- $T(n) = O(n^2)$
 - $T(n) = \Theta(n \log n)$
 - $T(n) = \Omega(n^2)$
 - $T(n) = O(n \log n)$
76. Let S be an NP-complete problem and Q and R be two other problems not known to be in NP. Q is polynomial time reducible to S and S is polynomial-time reducible to R. Which one of the following statements is true?
- R is NP-complete
 - R is NP-hard
 - Q is NP-complete
 - Q is NP-hard

77. In which case is it mandatory to provide a destructor in a class?
- a) Almost in every class
 - b) Class for which two or more than two objects will be created
 - c) Class for which copy constructor is defined
 - d) Class whose objects will be created dynamically
78. Which of the following is true?
- a) A finally block is executed before the catch block but after the try block.
 - b) A finally block is executed, only after the catch block is executed.
 - c) A finally block is executed whether an exception is thrown or not.
 - d) A finally block is executed, only if an exception occurs.
79. Suspend thread can be revived by using
- a) start() method
 - b) Suspend() method
 - c) resume() method
 - d) yield() method

80. What is the output of this program?

```
class output {  
    public static void main(String args[])  
    {  
        char ch;  
ch = "hello".charAt(1);  
System.out.println(ch);  
    }  
}
```

- a) h
- b) e
- c) l
- d) o

81.

```
public void test(int x)  
{  
int odd = 1;  
if(odd) /* Line 4 */  
{  
System.out.println("odd");  
}
```

```

else
{
System.out.println("even");
}
}

```

Which statement is true for above code?

- a) Compilation fails.
- b) "even" will always be output.
- c) "odd" will always be output.
- d) "odd" will be output for odd values of x, and "even" for even values.

82. What will be the output of the following program code?

```

public class Test implements Runnable{
    public static void main(String[] args){
        Thread t = new Thread(this);
t.start();
    }
    public void run(){
System.out.println("test");
    }
}

```

- a) The program does not compile because this cannot be referenced in a static method.
- b) The program compiles fine, but it does not print anything because t does not invoke the run() method.
- c) The program compiles and runs fine and displays test on the console.
- d) None of the above

83. File management function of the operating system includes

- i) File creation and deletion
 - ii) Disk scheduling
 - iii) Directory creation
 - iv) Mapping file in secondary storage.
- a) i, ii and iii only
 - b) i, iii and iv only
 - c) ii, iii and iv only
 - d) All i, ii, iii and iv

84. Consider a system having m resources of the same type. These resources are shared by 3 processes A, B and C which have peak demands of 3, 4 and 6 respectively. For what value of m deadlock will not occur?

- a) 7
- b) 9
- c) 10
- d) 13

85. Interval between the time since submission of the job to the time its results become available, is called
- a) Response Time
 - b) Throughput
 - c) Waiting time
 - d) Turnaround Time
86. SQL is a standard language for _____.
- a) Creating Front Ends
 - b) Creating Web Pages
 - c) None of these
 - d) Accessing databases
87. An association of several structure of a data base can be expressed graphically by?
- a) Tuple
 - b) Record
 - c) Relationship
 - d) Field
88. joins are SQL server default.
- a) Outer
 - b) Inner
 - c) Equi
 - d) None of the above
89. Transaction X holds a shared lock R. if transaction Y requests for a shared lock on R :
- a) result in deadlock situation
 - b) Immediately Granted
 - c) Immediately rejected
 - d) Granted as is released by X
90. An attribute or set of attributes within one relation that matches the candidate key of some(possibly the same) relation:
- a) Super Key
 - b) Candidate key
 - c) Primary key
 - d) Foreign key

91. Which is a multiversion concurrency control protocol based on validation?
- a) Two phase
 - b) Tree protocol
 - c) Snapshot isolation
 - d) Time-stamp ordering
92. Which of the following would be a good starting point for troubleshooting if your router is not translating?
- a) Reboot
 - b) Call networking company
 - c) Check your interfaces for the correct configuration
 - d) Run the debug all command
93. Which layers of the OSI model are host-to-host layers?
- a) Network, Transport, Session, Presentation
 - b) Transport, Session, Presentation, Application
 - c) Datalink, Network, Transport, Session
 - d) Physical, Datalink, Network, Transport
94. You have 10 users plugged into a hub running 10Mbps half-duplex. There is a server connected to the switch running 10Mbps half-duplex as well. How much bandwidth does each host have to the server?
- a) 100 kbps
 - b) 1 Mbps
 - c) 2 Mbps
 - d) 10 Mbps
95. You want to implement a mechanism that automates the IP configuration, including IP address, subnet mask, default gateway, and DNS information. Which protocol will you use to accomplish this?
- a) SMTP
 - b) SNMP
 - c) DHCP
 - d) ARP

96. Match the following and select the correct options given under
- i) physical design A) Documentation
 - ii) interview B) Type of output
 - iii) Input design C) defines design specifications that are to be coded
 - iv) Installation procedure D) a data gathering technique
 - v) report E) Identification and design of interfaces to enter data
- a) i-D, ii – A, iii-B, iv – C, v- E
 - b) i-C, ii – D, iii-E, iv – A, v- B
 - c) i-A, ii – D, iii-B, iv – C, v- E
 - d) i-D, ii – A, iii-E, iv – B, v- C
97. Consider the tree arcs of a BFS traversal from a source node W in an unweighted, connected, undirected graph. The tree T formed by the tree arcs is a data structure for computing
- a) the shortest path between every pair of vertices.
 - b) the shortest path from W to every vertex in the graph.
 - c) the shortest paths from W to only those nodes that are leaves of T.
 - d) the longest path in the graph.
98. is the method used by card sorter.
- a) Radix sort
 - b) Insertion sort
 - c) Heap sort
 - d) Quick sort
99. Which of the following is true about client-side script use in HTML documents?
- a) Java, JavaScript, Jscript and VBScript are used on many web sites as Scripting languages.
 - b) Client side scripts are executed on the server and the resulting page will be downloaded and interpreted by the browser.
 - c) Client-side scripts increase the network traffic on execution of the script.
 - d) Client-side scripts can perform many functions such as data validation and provide interactive feedback to the user.

100. Which of the following are the functions of operating system?

- i) recovering from errors
 - ii) facilitating input/output
 - iii) facilitating parallel operation
 - iv) sharing hardware among users
 - v) implementing user interface
- a) i, ii, iii, and v only
 - b) i, ii, iii, and iv only
 - c) ii, iii, iv and v only
 - d) All i, ii, iii, iv and v
