1 The encoding technique used to transmit the signal in giga ethernet technology over fiber optic medium is
   a Differential manchester encoding
   b Non Return to zero
   c 4B/5B encoding
   d 8B/10B encoding

2 Which of the following is an unsupervised neural network
   a RBS
   b Hopfield
   c Back propagation
   d Kohonen

3 In compiler terminology, reduction in strength means
   a Replacing run time computation by compile time computation
   b Removing loop invariant computation
   c Removing common subexpressions
   d Replacing a costly operation by a relatively cheaper one

4 The following table shows the processes in the ready queue and time required for each process for completing its job.

Process	Time (ms)
P_1	10
P_2	5
P_3	20
P_4	8
P_5	15

   If round robin scheduling with 5ms is used what is the average waiting time of the processes in the queue?
   a 27 ms
   b 26.2 ms
   c 27.5 ms
   d 27.2 ms

5 MOV [BX], AL type of data addressing is called
   a Register addressing
   b Immediate addressing
   c Register indirect addressing
   d Register relative

6 Evaluate (X xor Y) xor Y
   a All 1's
   b All 0's
   c X
   d Y

7 Which of the following is true about the z-buffer algorithm?
   a It is a depth sort algorithm
   b No limitation on total number of objects in the scene
   c Comparison of objects is done
   d z-buffer is initialized to background colour at start of algorithm
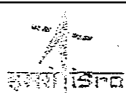
8   What is the decimal value of the floating-point number C1D00000 (hexadecimal notation)? (Assume 32-bit, single precision floating point IEEE representation)
   a   28
   b   -15
   c   -26
   d   -28

9   What is the raw throughput of USB 2.0 technology?
   a   480 Mbps
   b   400 Mbps
   c   200 Mbps
   d   12 Mbps

10   Below is the precedence graph for a set of tasks to be executed on a parallel processing system S.
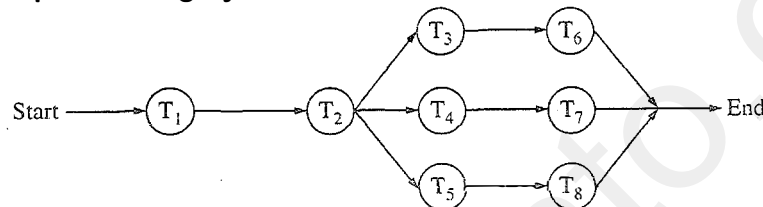
What is the efficiency of this precedence graph on S if each of the tasks $T1, \ldots, T8$ takes the same time and the system S has five processors?
   a   25%
   b   40%
   c   50%
   d   90%

11   How many distinct binary search trees can be created out of 4 distinct keys?
   a   5
   b   14
   c   24
   d   35

12   The network protocol which is used to get MAC address of a node by providing IP address is
   a   SMTP
   b   ARP
   c   RIP
   d   BOOTP

13   Which of the following statements about peephole optimizations is False?
   a   It is applied to a small part of the code
   b   It can be used to optimize intermediate code
   c   To get the best out of this, it has to be applied repeatedly
   d   It can be applied to a portion of the code that is not contiguous
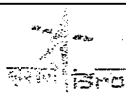
14. Which one of the following in place sorting algorithms needs the minimum number of swaps?
  a Quick-sort
  b Insertion sort
  c Selection sort
  d Heap sort

15. What is the equivalent serial schedule for the following transactions?

Transaction	T_1	T_2	T_3
			R(Y)
			R(Z)
	R(X)		
	W(X)		
			W(Y)
			W(Z)
		W(Z)	
	R(Y)		
	W(Y)		
		R(Y)	
		W(Y)	
		R(X)	
		W(X)	

  a T_1-T_2-T_3
  b T_3-T_1-T_2
  c T_2-T_1-T_3
  d T_1-T_3-T_2

16. Consider a direct mapped cache with 64 blocks and a block size of 16 bytes. To what block number does the byte address 1206 map to?
  a Does not map
  b 6
  c 11
  d 54

17. A context model of a software system can be shown by drawing a
  a LEVEL-0 DFD
  b LEVEL-1 DFD
  c LEVEL-2 DFD
  d LEVEL-3 DFD

18. An example of poly-alphabetic substitution is
  a P-box
  b S-box
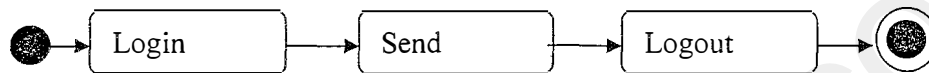 c Caesar cipher
  d Vigenere cipher
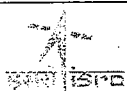
19 If node A has three siblings and B is parent of A, what is the degree of A?

     a   0
     b   3
     c   4
     d   5

20 The IEEE standard for WiMax technology is

     a   IEEE 802.16
     b   IEEE 802.36
     c   IEEE 812.16
     d   IEEE 806.16

21 Which type of DBMS provides support for maintaining several versions of the same entity?

     a   Relational Data Base Management Systems
     b   Hierarchical
     c   Object Oriented Data Base Management Systems
     d   Network

22 A system is having 8 M bytes of video memory for bit-mapped graphics with 64-bit colour. What is the maximum resolution it can support?

     a   800 x 600
     b   1024 x 768
     c   1280 x 1024
     d   1920 x 1440

23 What is the meaning of $\overline{RD}$ signal in Intel 8151A?

     a   Read (when it is low)
     b   Read (when it is high)
     c   Write (when it is low)
     d   Read and Write (when it is high)

24 If the page size in a 32-bit machine is 4K bytes then the size of page table is

     a   1 M bytes
     b   2 M bytes
     c   4 M bytes
     d   4 K bytes

25 A processor takes 12 cycles to complete an instruction I. The corresponding pipelined processor uses 6 stages with the execution times of 3,2,5,4,6 and 2 cycles respectively. What is the asymptotic speedup assuming that a very large number speedup assuming that a very large number of instructions are to be executed?

     a   1.83
     b   2
     c   3
     d   6

26 The in-order traversal of a tree resulted in FBGADCE. Then the pre-order traversal of that tree would result in
    a FGBDECA
    b ABFGCDE
    c BFGCDEA
    d AFGBDEC

**27** Which one of the following is 'true'
    a $R \cap S = (R \cup S) - [(R-S) \cup (S-R)]$
    b $R \cup S = (R \cap S) - [(R-S) \cup (S-R)]$
    c $R \cap S = (R \cup S) - [(R-S) \cap (S-R)]$
    d $R \cap S = (R \cup S) \cup (R-S)$

28

```
●──▶ Login ──▶ Send ──▶ Logout ──▶ ◉
```

The above figure represents which one of the following UML diagram for a single send session of an online chat system.
    a Package Diagram
    b Activity Diagram
    c Class Diagram
    d Sequence Diagram

29 Which 'Normal Form' is based on the concept of 'full functional dependency' is
    a First Normal Form
    b Second Normal Form
    c Third Normal Form
    d Fourth Normal Form

30 In Boolean algebra, rule (X+Y)(X+Z) =
    a Y+XZ
    b X + YZ
    c XY+Z
    d XZ + Y

31 How many 3-to-8 line decoders with a chip having enable pin are needed to construct a 6-to-64 line decoder without using any other logic gates?
    a 7
    b 8
    c 9
    d 10

32 In which layer of network architecture, the secured socket layer (SSL) is used?
    a physical layer
    b session layer
    c application layer
    d presentation layer
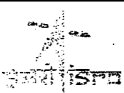
33   What is the bit rate of a video terminal unit with 80 character/line, 8 bits/charcter and horizontal sweep time of 100 μs (including 20 μs of retrace time)?
   a   8 Mbps
   b   6.4 Mbps
   c   0.8 Mbps
   d   0.64 Mbps

34   Black Box software testing method focuses on the
   a   Boundary condition of the software
   b   Control Structure of the Software
   c   Functional Requirement of the Software
   d   Independent paths of the software

35   How many edges are there in a forest with v vertices and k components?
   a   (v+1) - k
   b   (v+1)/2 - k
   c   v - k
   d   v + k

36   If A and B are square matrices of the same order and A is symmetric, then B^TAB is
   a   Skew symmetric
   b   Symmetric
   c   Orthogonal
   d   Idempotent

37   Find the memory address of the next instruction executed by the microprocessor (8086), when operated in real mode for CS = 1000 and IP = E000
   a   10E00
   b   1E000
   c   F000
   d   1000E

38   A fast wide SCSI-II disk drive spins at 7200 RPM, has a sector size of 512 bytes, and holds 160 sectors per track. Estimate the sustained transfer rate of this drive.
   a   576000 Kilobytes / sec
   b   9600 Kilobytes / sec
   c   4800 Kilobytes / sec
   d   19200 Kilobytes / sec

39   Two control signals in microprocessor which are related to Direct Memory Access (DMA) are
   a   INTR & INTA
   b   RD & WR
   c   S0 & S1
   d   HOLD & HLDA

40   Consider the following pseudocode.

```
x := 1;
i := 1;
while (x ≤ 500)
 begin
        x := 2^x ;
        i := i + 1;
end;
```

What is the value of i at the end of the pseudocode?

a   4
b   5
c   6
d   7

41   If a microcomputer operates at 5 MHz with an 8-bit bus and a newer version operates at 20 MHz with a 32-bit bus, the maximum speed-up possible approximately will be

a   2
b   4
c   8
d   16

42   The search concept used in associative memory is

a   Parallel search
b   Sequential search
c   Binary search
d   Selection search

43   Which variable does not drive a terminal string in the grammar

S - > AB
A -> a
B -> b
B -> C

a   A
b   B
c   C
d   S

44   In Java, after executing the following code what are the values of x, y and z?

```
int x,y = 10, z = 12;
x = y++ + z++;
```

a   x = 22, y=10, z=12
b   x = 24, y=10, z=12
c   x = 24, y=11, z=13
d   x = 22, y=11, z=13

45   The broadcast address for IP network 172.16.0.0 with subnet mask 255.255.0.0 is
    a   172.16.0.255
    b   172.16.255.255
    c   255.255.255.255
    d   172.255.255.255

46   Which RAID level gives block level striping with double distributed parity
    a   RAID 10
    b   RAID 2
    c   RAID 6
    d   RAID 5

47   The output expression of the following gate network is
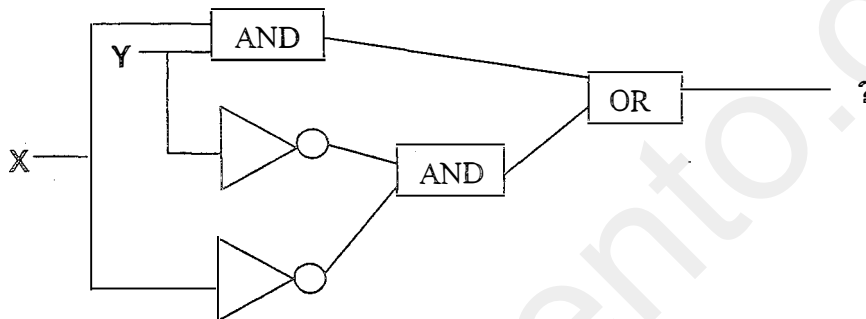
    a $X.Y + \overline{X}.\overline{Y}$
    b $X.Y + X.Y$
    c $X.Y$
    d $X+Y$

48   The Hamming distance between the octets of 0xAA and 0x55 is
    a   7
    b   5
    c   8
    d   6

49   Consider a 32-bit machine where four-level paging scheme is used. If the hit ratio to TLB is 98%, and it takes 20 nanoseconds to search the TLB and 100 nanoseconds to access the main memory what is effective memory access time in nanoseconds?
    a   126
    b   128
    c   122
    d   120

50　Data is transmitted continuously at 2.048 Mbps rate for 10 hours and received 512 bit errors. What is the bit error rate?

- a　6.9 e-9
- b　6.9 e-6
- c　69 e-9
- d　4 e-9

51　Warnier Diagram enables the analyst to represent

- a　Class Structure
- b　Information Hierarchy
- c　Data Flow
- d　State Transition

52　Given

$$X : \quad 0 \qquad 10 \qquad 16$$
$$Y : \quad 6 \qquad 16 \qquad 28$$

The interpolated value at X = 4 using piecewise linear interpolation is

- a　11
- b　4
- c　22
- d　10

53　In functional dependency, Armstrong's inference rules refers to

- a　Reflexive, Augmentation and Decomposition
- b　Transitive, Augmentation and Reflexive
- c　Augmentation, Transitive, Reflexive and Decomposition
- d　Reflexive, Transitive and Decomposition

54　Number of chips (128 x 8 RAM) needed to provide a memory capacity of 2048 bytes

- a　2
- b　4
- c　8
- d　16

55　There are three processes in the ready queue. When the currently running process requests for I/O how many process switches take place?

- a　1
- b　2
- c　3
- d　4

56　Let $T(n)$ be defined by $T(1) = 10$ and $T(n + 1) = 2n + T(n)$ for all integers $n \geq 1$. Which of the following represents the order of growth of $T(n)$ as a function of n?

- a　$O(n)$
- b　$O(n \log n)$
- c　$O(n^2)$
- d　$O(n^3)$

57   Which of the following UNIX command allows scheduling a program to be executed at the specified time?
- a   cron
- b   nice
- c   date and time
- d   schedule

58   In DMA transfer scheme, the transfer scheme other than burst mode is
- a   cycle technique
- b   stealing technique
- c   cycle stealing technique
- d   cycle bypass technique

59   n^{th} derivative of x^n is
- a nx^{n-1}
- b $n^n \cdot n!$
- c $nx^n!$
- d $n!$

60   A total of 9 units of a resource type are available, and given the safe state shown below, which of the following sequence will be a safe state?

Process	Used	Max
P_1	2	7
P_2	1	6
P_3	2	5
P_4	1	4

- a $<P_4, P_1, P_3, P_2>$
- b $<P_4, P_2, P_1, P_3>$
- c $<P_4, P_2, P_3, P_1>$
- d $<P_3, P_1, P_2, P_4>$

61   Three coins are tossed simultaneously. The probability that they will fall two heads and one tail is
- a   5/8
- b   1/8
- c   2/3
- d   3/8

62   The average depth of a binary search tree is
- a $O(n^{0.5})$
- b $O(n)$
- c $O(\log n)$
- d $O(n \log n)$
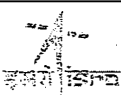
63   What is the output of the following C code?

```
#include <stdio.h>
#include <conio.h>

void main()
{
        int index;

        for(index=1; index<=5;i++)
        {
                printf("%d",index);
                if(i == 3)
                        continue;
        }
}
```

a   1245
b   12345
c   12245
d   12354

64   When n-type semiconductor is heated ?
a   number of electrons increases while that of holes decreases
b   number of holes increases while that of electrons decreases
c   number of electrons and holes remain same
d   number of electron and holes increases equally.

65   **The Cyclomatic Complexity metric V(G) of the following control flow graph is**
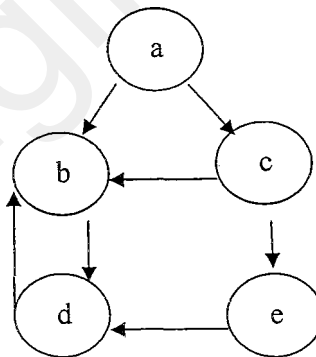

a   3
b   4
c   5
d   6

66   Which of the following algorithm design techniques is used in merge sort?
    a   Greedy method
    b   Backtracking
    c   Dynamic programming
    d   Divide and Conquer

67   The arithmetic mean of attendance of 49 students of class A is 40% and that of 53 students of class B is 35%. Then the % of arithmetic mean of attendance of class A and B is
    a   27.2%
    b   50.25%
    c   51.13%
    d   37.4%

68   Which of the following sentences can be generated by
    S -> aS | bA
    A -> d | cA
    a   bccdd
    b   abbcca
    c   abcabc
    d   abcd

69   Lightweight Directory Access Protocol is used for
    a   Routing the packets
    b   Authentication
    c   obtaining IP address
    d   domain name resolving

70   Number of comparisons required for an unsuccessful search of an element in a sequential search organized, fixed length, symbol table of length L is
    a   L
    b   L/2
    c   (L+1)/2
    d   2L

71   One SAN switch has 24 ports. All 24 port supports 8 Gbps Fiber Channel technology. What is the aggregate bandwidth of that SAN switch ?
    a   96 Gbps
    b   192 Mbps
    c   512 Gbps
    d   192 Gbps

72   Find the output of the following Java code line
    System.out.println(math.floor(-7.4))
    a   -7
    b   -8
    c   -7.4
    d   -7.0
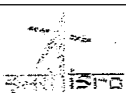
73 Belady's anomaly means

a Page fault rate is constant even on increasing the number of allocated frames

b Pages fault rate may increase on increasing the number of allocated frames

c Pages fault rate may increase on decreasing the number of allocated frames

d Pages fault rate may decrease on increasing the number of allocated frames

74 In an RS flip-flop, if the S line (Set line) is set high (1) and the R line (Reset line) is set low (0), then the state of the flip flop is

a Set to 1

b Set to 0

c No change in state

d Forbidden

75 In HTML, which of the following can be considered a container?

a <SELECT>

b <Value>

c <INPUT>

d <BODY>

76 What is the matrix that represents rotation of an object by θ^0 about the origin in 2D?

a $\begin{matrix} \cos\theta & -\sin\theta \\ \sin\theta & \cos\theta \end{matrix}$

b $\begin{matrix} \sin\theta & -\cos\theta \\ \cos\theta & \sin\theta \end{matrix}$

c $\begin{matrix} \cos\theta & -\sin\theta \\ \cos\theta & \sin\theta \end{matrix}$

d $\begin{matrix} \sin\theta & -\cos\theta \\ \cos\theta & \sin\theta \end{matrix}$

77 In a system having a single processor, a new process arrives at the rate of six processes per minute and each such process requires seven seconds of service time. What is the CPU utilization?

a 70%

b 30%

c 60%

d 64%

78 A symbol table of length 152 is possessing 25 entries at any instant. What is occupation density?

a 0.164

b 127

c 8.06

d 6.08
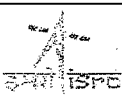
79   A problem whose language is recursion is called ?
      a   Unified problem
      b   Boolean function
      c   Recursive problem
      d   Decidable
80   Logic family popular for low power dissipation
      a   CMOS
      b   ECL
      c   TTL
      d   DTL