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

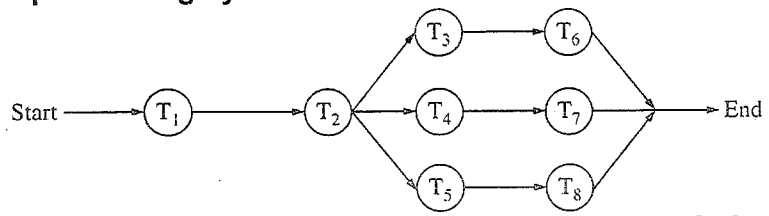
8 What is the decimal value of the floating-point number C1D00000 (hexadecimal notation)? (Assume 32-bit, single precision floating point IEEE representation)

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 *T*1, . . . , *T*8 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)

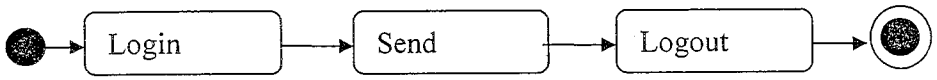
24 If the page size in a 32-bit machine is 4K bytes then the size of page table is
- a 1 M bytes
- b 2 M bytes
- c 4 M bytes
- d 4 K bytes

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



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

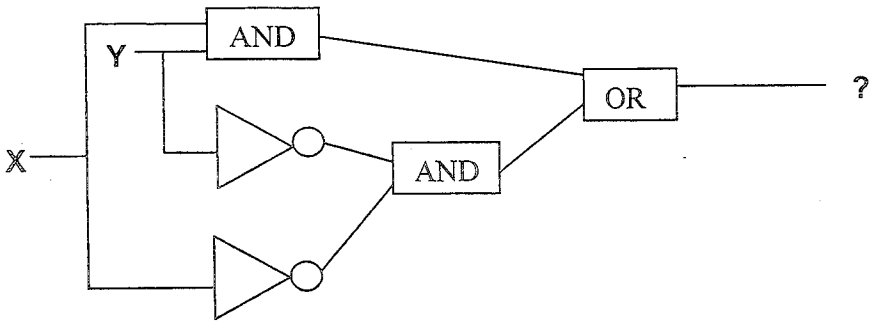
45 The broadcast address for IP network 172.16.0.0 with subnet mask 255.255.0.0 is

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 :	0	10	16
Y :	6	16	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 $n^n . n!$
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?

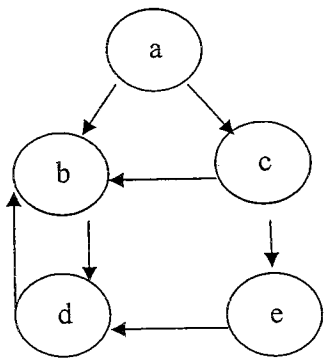
```
#include <stdio.h>
#include <conio.h>

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