

- 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?

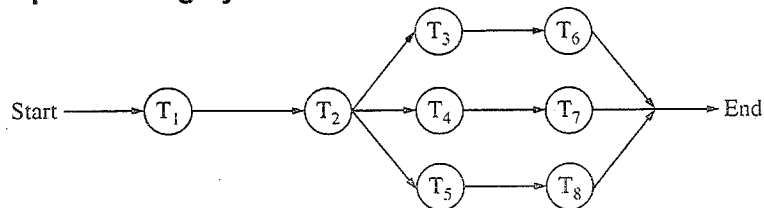
- a 27 ms
 - b 26.2 ms
 - c 27.5 ms
 - d 27.2 ms
- 5 MOV [BX], AL type of data addressing is called
- a Register addressing
 - b Immediate addressing
 - c Register indirect addressing
 - d Register relative
- 6 Evaluate $(X \text{ xor } Y) \text{ xor } Y$
- a All 1's
 - b All 0's
 - c X
 - d Y
- 7 Which 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, . . . , 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)
	R(Y) W(Y)	W(Z)	
		R(Y) W(Y) R(X) W(X)	

- a T₁-T₂-T₃
 b T₃-T₁-T₂
 c T₂-T₁-T₃
 d T₁-T₃-T₂

- 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?

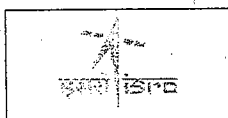
- a Does not map
 b 6
 c 11
 d 54

- 17 A context model of a software system can be shown by drawing a

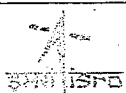
- a LEVEL-0 DFD
 b LEVEL-1 DFD
 c LEVEL-2 DFD
 d LEVEL-3 DFD

- 18 An example of poly-alphabetic substitution is

- a P-box
 b S-box
 c Caesar cipher
 d Vigenere cipher



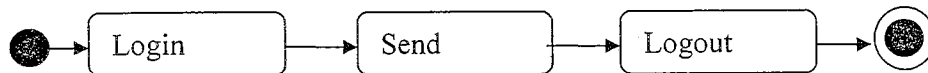
- 19 If node A has three siblings and B is parent of A, what is the degree of A?
a 0
b 3
c 4
d 5
- 20 The IEEE standard for WiMax technology is
a IEEE 802.16
b IEEE 802.36
c IEEE 812.16
d IEEE 806.16
- 21 Which type of DBMS provides support for maintaining several versions of the same entity?
a Relational 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 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 $R \cap S = (R \cup S) \cup (R-S)$

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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/character and horizontal sweep time of 100 μ s (including 20 μ s 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 $B^T A B$ 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 := 2x;
    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++;
```

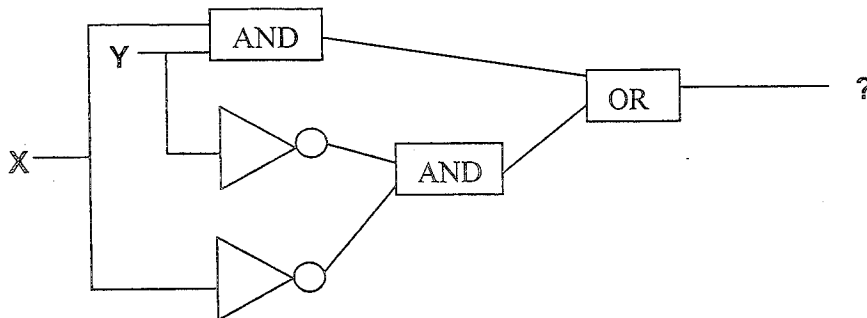
- a x = 22, y=10, z=12
- b x = 24, y=10, z=12
- c x = 24, y=11, z=13
- d x = 22, y=11, z=13



- 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

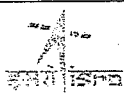


- a $X.Y + \overline{X}.Y$
 - b $X.Y + X.\overline{Y}$
 - c $X.Y$
 - d $X+Y$
- 48 The Hamming distance between the octets of 0xAA and 0x55 is
- a 7
 - b 5
 - c 8
 - d 6
- 49 Consider a 32-bit machine where four-level paging scheme is used. If the hit ratio to TLB is 98%, and it takes 20 nanoseconds to 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 6.9×10^{-9}
 - b 6.9×10^{-6}
 - c 69×10^{-9}
 - d 4×10^{-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 $n^n \cdot n!$
 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 $\langle P_4, P_1, P_3, P_2 \rangle$
 b $\langle P_4, P_2, P_1, P_3 \rangle$
 c $\langle P_4, P_2, P_3, P_1 \rangle$
 d $\langle P_3, P_1, P_2, P_4 \rangle$
- 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;

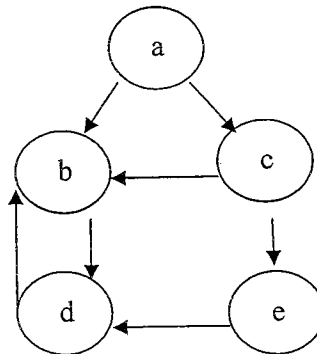
    for(index=1; index<=5;i++)
    {
        printf("%d",index);
        if(i == 3)
            continue;
    }
}
```

- a 1245
- b 12345
- c 12245
- d 12354

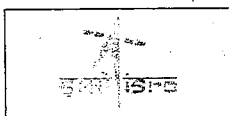
64 When n-type semiconductor is heated ?

- 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



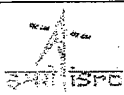
- a 3
- b 4
- c 5
- d 6



- 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
 $S \rightarrow aS \mid bA$
 $A \rightarrow d \mid cA$
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° about the origin in 2D?
- a $\begin{bmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{bmatrix}$
 - b $\begin{bmatrix} \sin \theta & -\cos \theta \\ \cos \theta & \sin \theta \end{bmatrix}$
 - c $\begin{bmatrix} \cos \theta & -\sin \theta \\ \cos \theta & \sin \theta \end{bmatrix}$
 - d $\begin{bmatrix} \sin \theta & -\cos \theta \\ \cos \theta & \sin \theta \end{bmatrix}$
- 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

