

- 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 <sub>1</sub>	10
P <sub>2</sub>	5
P <sub>3</sub>	20
P <sub>4</sub>	8
P <sub>5</sub>	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

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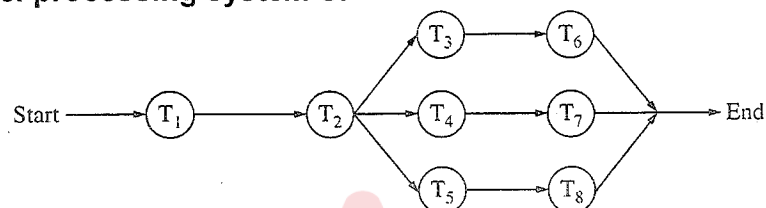
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- 8 What is the decimal value of the floating-point number C1D00000 (hexadecimal notation)? (Assume 32-bit, single precision floating point IEEE representation)
- 28
  - 15
  - 26
  - 28
- 9 What is the raw throughput of USB 2.0 technology?
- 480 Mbps
  - 400 Mbps
  - 200 Mbps
  - 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  $T_1, \dots, T_8$  takes the same time and the system S has five processors?

- 25%
  - 40%
  - 50%
  - 90%
- 11 How many distinct binary search trees can be created out of 4 distinct keys?
- 5
  - 14
  - 24
  - 35
- 12 The network protocol which is used to get MAC address of a node by providing IP address is
- SMTP
  - ARP
  - RIP
  - BOOTP
- 13 Which of the following statements about peephole optimizations is False?
- It is applied to a small part of the code
  - It can be used to optimize intermediate code
  - To get the best out of this, it has to be applied repeatedly
  - 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?
- Quick-sort
  - Insertion sort
  - Selection sort
  - Heap sort

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

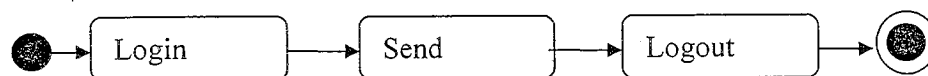
Transaction	T <sub>1</sub>	T <sub>2</sub>	T <sub>3</sub>
	R(X) W(X)		R(Y) R(Z)
	R(Y) W(Y)	W(Z)	W(Y) W(Z)
		R(Y) W(Y) R(X) W(X)	

- T<sub>1</sub>-T<sub>2</sub>-T<sub>3</sub>
  - T<sub>3</sub>-T<sub>1</sub>-T<sub>2</sub>
  - T<sub>2</sub>-T<sub>1</sub>-T<sub>3</sub>
  - T<sub>1</sub>-T<sub>3</sub>-T<sub>2</sub>
- 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?
- Does not map
  - 6
  - 11
  - 54
- 17 A context model of a software system can be shown by drawing a
- LEVEL-0 DFD
  - LEVEL-1 DFD
  - LEVEL-2 DFD
  - LEVEL-3 DFD
- 18 An example of poly-alphabetic substitution is
- P-box
  - S-box
  - Caesar cipher
  - Vigenere cipher

- 19 If node A has three siblings and B is parent of A, what is the degree of A?
- 0
  - 3
  - 4
  - 5
- 20 The IEEE standard for WiMax technology is
- IEEE 802.16
  - IEEE 802.36
  - IEEE 812.16
  - IEEE 806.16
- 21 Which type of DBMS provides support for maintaining several versions of the same entity?
- Relational Data Base Management Systems
  - Hierarchical
  - Object Oriented Data Base Management Systems
  - 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?
- 800 x 600
  - 1024 x 768
  - 1280 x 1024
  - 1920 x 1440
- 23 What is the meaning of  $\overline{RD}$  signal in Intel 8151A?
- Read (when it is low)
  - Read (when it is high)
  - Write (when it is low)
  - 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
- 1 M bytes
  - 2 M bytes
  - 4 M bytes
  - 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?
- 1.83
  - 2
  - 3
  - 6

- 26 The in-order traversal of a tree resulted in FBGADCE. Then the pre-order traversal of that tree would result in
- FGBDECA
  - ABFGCDE
  - BFGCDEA
  - AFGBDEC
- 27 Which one of the following is 'true'
- $R \cap S = (R \cup S) - [(R-S) \cup (S-R)]$
  - $R \cup S = (R \cap S) - [(R-S) \cup (S-R)]$
  - $R \cap S = (R \cup S) - [(R-S) \cap (S-R)]$
  - $R \cap S = (R \cup S) \cup (R-S)$

28



The above figure represents which one of the following UML diagram for a single send session of an online chat system.

- Package Diagram
  - Activity Diagram
  - Class Diagram
  - Sequence Diagram
- 29 Which 'Normal Form' is based on the concept of 'full functional dependency' is
- First Normal Form
  - Second Normal Form
  - Third Normal Form
  - Fourth Normal Form
- 30 In Boolean algebra, rule  $(X+Y)(X+Z) =$
- $Y+XZ$
  - $X + YZ$
  - $XY+Z$
  - $XZ + Y$
- 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?
- 7
  - 8
  - 9
  - 10
- 32 In which layer of network architecture, the secured socket layer (SSL) is used?
- physical layer
  - session layer
  - application layer
  - 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  $\mu$ s (including 20  $\mu$ s of retrace time)?
- 8 Mbps
  - 6.4 Mbps
  - 0.8 Mbps
  - 0.64 Mbps
- 34 Black Box software testing method focuses on the
- Boundary condition of the software
  - Control Structure of the Software
  - Functional Requirement of the Software
  - Independent paths of the software
- 35 How many edges are there in a forest with  $v$  vertices and  $k$  components?
- $(v+1) - k$
  - $(v+1)/2 - k$
  - $v - k$
  - $v + k$
- 36 If  $A$  and  $B$  are square matrices of the same order and  $A$  is symmetric, then  $B^T A B$  is
- Skew symmetric
  - Symmetric
  - Orthogonal
  - Idempotent
- 37 Find the memory address of the next instruction executed by the microprocessor (8086), when operated in real mode for  $CS = 1000$  and  $IP = E000$
- 10E00
  - 1E000
  - F000
  - 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.
- 576000 Kilobytes / sec
  - 9600 Kilobytes / sec
  - 4800 Kilobytes / sec
  - 19200 Kilobytes / sec
- 39 Two control signals in microprocessor which are related to Direct Memory Access (DMA) are
- INTR & INTA
  - RD & WR
  - S0 & S1
  - 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?

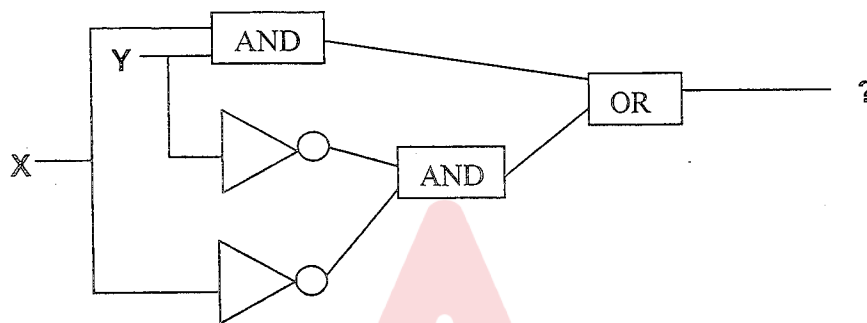
- a 4  
b 5  
c 6  
d 7
- 41 If a microcomputer operates at 5 MHz with an 8-bit bus and a newer version operates at 20 MHz with a 32-bit bus, the maximum speed-up possible approximately will be
- a 2  
b 4  
c 8  
d 16
- 42 The search concept used in associative memory is
- a Parallel search  
b Sequential 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



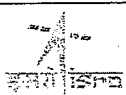
- 45 The broadcast address for IP network 172.16.0.0 with subnet mask 255.255.0.0 is
- 172.16.0.255
  - 172.16.255.255
  - 255.255.255.255
  - 172.255.255.255
- 46 Which RAID level gives block level striping with double distributed parity
- RAID 10
  - RAID 2
  - RAID 6
  - RAID 5
- 47 The output expression of the following gate network is



- $X.Y + \overline{X}.\overline{Y}$
  - $X.Y + X.\overline{Y}$
  - $X.Y$
  - $X+Y$
- 48 The Hamming distance between the octets of 0xAA and 0x55 is
- 7
  - 5
  - 8
  - 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?
- 126
  - 128
  - 122
  - 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?
- 6.9 e-9
  - 6.9 e-6
  - 69 e-9
  - 4 e-9
- 51 Warnier Diagram enables the analyst to represent
- Class Structure
  - Information Hierarchy
  - Data Flow
  - State Transition
- 52 Given
- |     |   |    |    |
|-----|---|----|----|
| X : | 0 | 10 | 16 |
| Y : | 6 | 16 | 28 |
- The interpolated value at  $X = 4$  using piecewise linear interpolation is
- 11
  - 4
  - 22
  - 10
- 53 In functional dependency, Armstrong's inference rules refers to
- Reflexive, Augmentation and Decomposition
  - Transitive, Augmentation and Reflexive
  - Augmentation, Transitive, Reflexive and Decomposition
  - Reflexive, Transitive and Decomposition
- 54 Number of chips (128 x 8 RAM) needed to provide a memory capacity of 2048 bytes
- 2
  - 4
  - 8
  - 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?
- 1
  - 2
  - 3
  - 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  $n$ ?
- $O(n)$
  - $O(n \log n)$
  - $O(n^2)$
  - $O(n^3)$

- 57 Which of the following UNIX command allows scheduling a program to be executed at the specified time?
- cron
  - nice
  - date and time
  - schedule
- 58 In DMA transfer scheme, the transfer scheme other than burst mode is
- cycle technique
  - stealing technique
  - cycle stealing technique
  - cycle bypass technique
- 59  $n^{\text{th}}$  derivative of  $x^n$  is
- $nx^{n-1}$
  - $n^n \cdot n!$
  - $nx^{n!}$
  - $n!$
- 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   |
- $\langle P_4, P_1, P_3, P_2 \rangle$
  - $\langle P_4, P_2, P_1, P_3 \rangle$
  - $\langle P_4, P_2, P_3, P_1 \rangle$
  - $\langle P_3, P_1, P_2, P_4 \rangle$
- 61 Three coins are tossed simultaneously. The probability that they will fall two heads and one tail is
- $5/8$
  - $1/8$
  - $2/3$
  - $3/8$
- 62 The average depth of a binary search tree is
- $O(n^{0.5})$
  - $O(n)$
  - $O(\log n)$
  - $O(n \log n)$



63 What is the output of the following C code?

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

void main()
{
    int index;

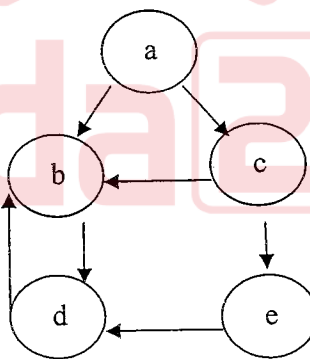
    for(index=1; index<=5;i++)
    {
        printf("%d",index);
        if(i == 3)
            continue;
    }
}
```

- 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?
- Greedy method
  - Backtracking
  - Dynamic programming
  - 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
- 27.2%
  - 50.25%
  - 51.13%
  - 37.4%
- 68 Which of the following sentences can be generated by
- $$S \rightarrow aS \mid bA$$
- $$A \rightarrow d \mid cA$$
- bccdd
  - abbcca
  - abcabc
  - abcd
- 69 Lightweight Directory Access Protocol is used for
- Routing the packets
  - Authentication
  - obtaining IP address
  - 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
- L
  - $L/2$
  - $(L+1)/2$
  - $2L$
- 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 ?
- 96 Gbps
  - 192 Mbps
  - 512 Gbps
  - 192 Gbps
- 72 Find the output of the following Java code line
- ```
System.out.println(math.floor(-7.4))
```
- 7
  - 8
  - 7.4
  - 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  $\theta^\circ$  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

