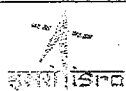


- 1 The encoding technique used to transmit the signal in giga ethernet technology over fiber optic medium is
- Differential manchester encoding
 - Non Return to zero
 - 4B/5B encoding
 - 8B/10B encoding
- 2 Which of the following is an unsupervised neural network
- RBS
 - Hopfield
 - Back propagation
 - Kohonen
- 3 In compiler terminology, reduction in strength means
- Replacing run time computation by compile time computation
 - Removing loop invariant computation
 - Removing common subexpressions
 - 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

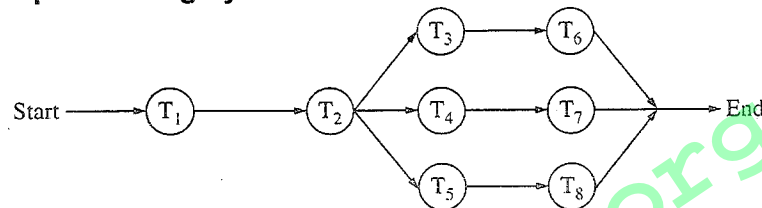
If round robin scheduling with 5ms is used what is the average waiting time of the processes in the queue?

- 27 ms
 - 26.2 ms
 - 27.5 ms
 - 27.2 ms
- 5 MOV [BX], AL type of data addressing is called
- Register addressing
 - Immediate addressing
 - Register indirect addressing
 - Register relative
- 6 Evaluate $(X \text{ xor } Y) \text{ xor } Y$
- All 1's
 - All 0's
 - X
 - Y
- 7 Which of the following is true about the z-buffer algorithm?
- It is a depth sort algorithm
 - No limitation on total number of objects in the scene
 - Comparison of objects is done
 - 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)
- 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

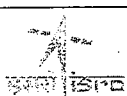


- 14 Which one of the following in place sorting algorithms needs the minimum number of swaps?
- Quick-sort
 - Insertion sort
 - Selection sort
 - Heap sort

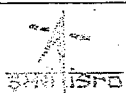
- 15 What is the equivalent serial schedule for the following transactions?

Transaction	T 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)	

- T₁-T₂-T₃
 - T₃-T₁-T₂
 - T₂-T₁-T₃
 - 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?
- 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



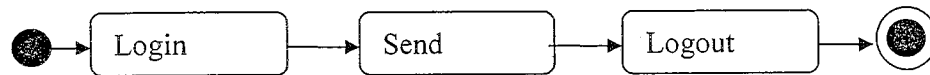
- 19 If node A has three siblings and B is parent of A, what is the degree of A?
- a 0
 - b 3
 - c 4
 - d 5
- 20 The IEEE standard for WiMax technology is
- a IEEE 802.16
 - b IEEE 802.36
 - c IEEE 812.16
 - d IEEE 806.16
- 21 Which type of DBMS provides support for maintaining several versions of the 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 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
- FGBDECA
 - ABFGCDE
 - BFGCDEA
 - AFGBDEC

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

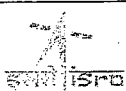
28



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 μ s (including 20 μ 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

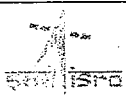


40 Consider the following pseudocode.

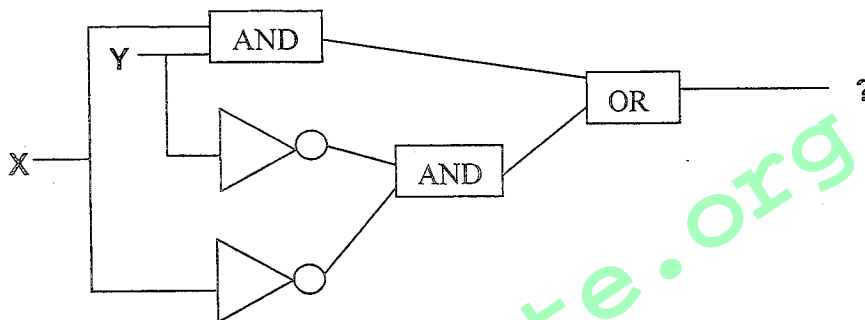
```
x := 1;
i := 1;
while (x ≤ 500)
begin
    x := 2x;
    i := i + 1;
end;
```

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

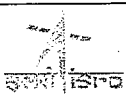
- a 4
 - b 5
 - c 6
 - d 7
- 41 If a microcomputer operates at 5 MHz with an 8-bit bus and a newer version operates at 20 MHz with a 32-bit bus, the maximum speed-up possible approximately will be
- a 2
 - b 4
 - c 8
 - d 16
- 42 The search concept used in associative memory is
- a Parallel search
 -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



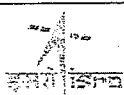
- a $X.Y + \overline{X}.Y$
 b $X.Y + X.\overline{Y}$
 c $X.Y$
 d $X+Y$
- 48 The Hamming distance between the octets of 0xAA and 0x55 is
 a 7
 b 5
 c 8
 d 6
- 49 Consider a 32-bit machine where four-level paging scheme is used. If the hit ratio to TLB is 98%, and it takes 20 nanoseconds to search the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

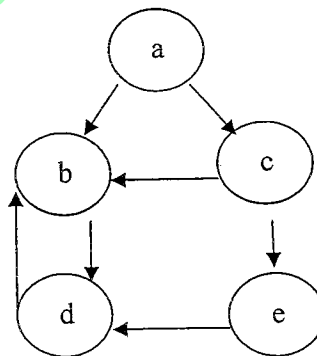
    for(index=1; index<=5;i++)
    {
        printf("%d",index);
        if(i == 3)
            continue;
    }
}
```

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

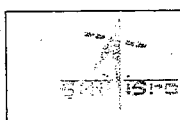
64 When n-type semiconductor is heated ?

- 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



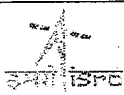
- a 3
- b 4
- c 5
- d 6



- 66 Which of the following algorithm design techniques is used in merge sort?
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

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