

Computer Science & IT

DRDO Scientist B PYQ

2008 Paper



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DRDO Scientist B PYQ

- 1. Consider a binomial experiment of flipping a biased coin five times with probability of head, p = 0.75 and probability of tail, q = 0.25 in each flip.
 - A. (0 + 1) * 11(0 + 1)*
 - B. 0*110*
 - C. 0*10*10*
 - D. (0+1)*1(0+1)*1(0+1)*
- 2. Which of the following is/are regular language(s)?
 - i. $\{a^mb^n \mid m, n \ge 0\}$
 - ii. $\{w \in \{a, b\}^* | has equal number of a' s and b' s\}$
 - iii. $\{a^m b^n \mid m > n\}$
 - iv. $\{w \in \{a, b\}^* w \text{ has even number of } a' s\}$
 - A. Only
 - B. And Only
 - C. And Only
 - D. Only
- 3. Which of the following is true?
 - A. For every NFA there is an equivalent PDA.
 - B. Nondeterministic TMs are more powerful than deterministic TMs.
 - C. DPDAs and NPDAs are equivalent in power.
 - D. NFAs accept the class of CFLs.
- 4. Let L be a CFL. Then L' must be
 - A. CFL but not regular.
 - B. Recursive.
 - C. Recursively Enumerable but not Recursive.
 - D. Regular but not CFL.



- 5. Which of the following is false?
 - A. CFLs are closed under union but not closed under complement.
 - B. Regular sets are closed under intersection and Kleene Closure.
 - C. Recursive languages are closed under intersection but not closed under complement.
 - D. Recursively enumerable languages are closed under union and intersection.
- 6. Which of the following is not possible?
 - A. Finding out a minimal DFA for any arbitrary regular language.
 - B. Constructing a deterministic TM for any arbitrary CFL.
 - C. Determining whether two CFGs generate the same language.
 - D. Given an arbitrary TM M (which halts on all inputs) whether the complement of the language accepted by M is recursive.
- 7. Which of the following is false?
 - A. Regular expressions and DFAs are equivalent.
 - B. A DPDA cannot accept by any arbitrary CFL.
 - C. The language accept by any TMs is a CFL.
 - D. Complement of every regular language is CFL.
- 8. Consider the languages L_1 and L_2 given below.
 - $L_1 = \{ <M_1, M_2 > | M_1 \text{ and } M_2 \text{ are NFAs and } L(M_1) = L(M_2) \}$
 - $L_2 = \{ < M_1, M_2 > | M_1 \text{ and } M_2 \text{ are TMs and } L(M_1) = L(M_2) \}$

Which of the following is true?

- A. L_1 is undecidable but L_2 is decidable.
- B. L_2 is undecidable but L_1 is decidable.
- C. Both L_1 and L_2 are undecidable.
- D. Both L_1 and L_2 are decidable.
- 9. Let A and B be languages corresponding to two decision problems π_A and π_B respectively. Let A be NP complete problem, then hat would not B NP. Which of the following is true?
 - A. B is NP- complete
 - B. A proportional _p B
 - C. B proportional _p A
 - D. None of the above.



10. If there is a polynomial time algorithm for an NP- complete problem, then that would not imply which of the following:

A.
$$P = NP$$

- B. NP = Co- NP
- C. $P = NP \cap Co-NP$
- D. P NP
- 11. A 1KB RAM can be organized as an 8 K bit RAM.
 - A. Using a 1 to 8 line demultiplexer.
 - B. Using an 8 to 1 multiplexer.
 - C. Using an 8 input OR gate.
 - D. None of the above.
- 12. A 2 KB RAM can be economically organized using-
 - A. 64 numbers of 256 bit RAM chip and a 1/8 line decoder.
 - B. 64 numbers of 256 bit RAM chip and a 1/64 line decoder.
 - C. 8 numbers of 256 bit RAM chips and a 1/8 line decoder.
 - D. 8 numbers of 256 bit RAM chips and a 1/64 line decoder
- 13. With reference to RETURN instruction, which of the following statement is / are true?
 - 1. The instruction can be used only to take the flow of control back to the program from which it initially jumped.
 - 2. The instruction retrieves the address using the current stack pointer from the stack and alters the control to the program pointed to by it.
 - 3. The instruction works only if the registers used in the main program have been pushed and later popped before its execution.
 - 4. The instruction can be used only in conjunction with the call instruction.
 - A. 1st and 2nd
 - B. 2nd only
 - C. 1st, 2nd and 3rd only
 - D. All the statement are true
- 14. In an n- CPU shared bus system, if is the probability that any CPU requests the bus in a given cycle, the probability that only one CPU uses the bus is given by
 - A. $Nz(1 z)^{(n-1)}$
 - B. Z(1 z)⁽ⁿ⁻¹⁾
 - C. N(1 z)ⁿ
 - D. $(N 1)z(1 z)^n$



- 15. A variable X has been assigned fresh values in statements numbered 6, 9 and 12 in a 25statement program which does not have any jump instructions. This variable is used in statements numbered 7, 8, 10, 16 and 17.the statement range where the register, used by the variable X, could be assigned to some other variable are-
 - A. 8-9, 10- 12, 17- 25
 - B. 11, 18-25
 - C. 17-25
 - D. None of the above
- 16. If the Intel Pentium processors, was not made compatible to programs written for its predecessor, it could have been designed to be a faster processor.
 - A. The statement is true
 - B. The statement is false
 - C. The speed cannot be predicted.
 - D. Speed has nothing to do with the compatibility.
- 17. A certain snooping cache an snoop only an address lines. Which of the following is true?
 - A. This would adversely affect the system if the write through protocol is used.
 - B. This would run well if the write through protocol is used.
 - C. Data snooping is mandatory.
 - D. None of the above.
- 18. Repeated occurrence of identical interrupt during execution of this service routine can result in
 - A. Program error.
 - B. Stack overflow
 - C. Hardware error
 - D. None of the above
- 19. Micro programmed control is not fit for RISC architectures because-
 - A. It tends to slow down the processor.
 - B. It consumes more chips area.
 - C. Handling a large number of registers is impossible in micro programmed systems.
 - D. The 1 instruction / cycle timing requirement for RISC is difficult to achieve for all instructions.



- 20. A certain RISC processor has 12register windows and 16 global registers. Each window has 8 input, 16 local and 8 output registers. The total number of registers in the processor is
 - A. 312
 - B. 320
 - C. 296
 - D. 304
- 21. In a certain system the main memory access time is 1000 ns. The cache memory is 10 times faster then the main memory uses the write through protocol. If the hit ratio for read request is 0.92 and 85% of the memory requests generated by the CPU are for the read, the remaining being for write, then the average time considering both read and write request is
 - A. 14.62 ns
 - B. 348.47 ns
 - C. 29.62 ns
 - D. 296.2 ns
- 22. Shown below are segments of a code run on a CISC and a RISC architecture separately.

CISC	RISC
MOV AX, 05	MOV AX, 00
MOV BX, 06	MOV BX, 05
MUL AX, BX; Multiply AX with BX	MOV CX, 06
	START: ADD AX, BX
	LOOP START ; loop till CX=0

If the MUL instruction takes 402 clock cycles, which of the following statement is true?

- A. The CISC code will faster by a factor of 1.8.
- B. The RISC code will run aster by a factor of 2.8.
- C. The CISC code will faster by a factor of 0.025.
- D. The RISC code will run aster by a factor of 40.
- 23. The frequent of different types of instructions executed by a machine is tabulated below.

Operand Accessing Mode	Frequency in %
Register	30
Immediate	20
Direct	20
Memory indirect	17
Index	11



Assuming two cycles are consumed for an operand to be read from the memory, one cycle for index arithmetic computations and zero cycles if operands are available in registers or with in instruction itself, the average operand fetch rate of the machine is

- A. 1.45
- B. 2.54
- C. 2.67
- D. 2.34
- 24. A 1 ns cycles time unpipeline processor consumes 4 cycles for ALU operations,3 cycles for branches and 5 for memory operations. The relative frequencies of these operations are 45%, 15% and 40% respectively. What is the speedup in the instruction execution rate if the same were pipelined? Assume a 0.4 ns overhead consumed in setup and clock skew taken together.
 - A. 4.25
 - B. 3.04
 - C. 3.85
 - D. 3.44
- 25. The range of integers that one can represent using an n –bit 2s complement number system is
 - A. $-2^{(n-1)}$ to $(2^{n}-1)$
 - B. $-2^{(n-1)}$ to $(2^{(n-1)}-1)$
 - C. −2ⁿ to(2ⁿ-1)
 - D. $-2^{n} + 1$ to $(2^{(n-1)} 1)$
- 26. The octal representation of the number (1FO)₁₆ is
 - A. (760)₈
 - B. (13300)₈
 - C. (170)8
 - D. (180)8

27.



The minimized function f obtained from the K-map given above is



- A. C'E'+A'BCE+BCD'E
- B. B'C'E'+A'BCE+ABCD'E+BC'E'
- C. C'E'+A'BCE+BCDE
- D. B'C'E+A'BCE+ABCD'E+BC'E
- 28. The standard sum of products of the function f = A+B'c is expressed as
 - A. ∑m(1, 4, 5, 6, 7) + d(0, 2, 3)
 - B. ∑m(1, 4, 5, 6, 7)
 - C. $\Sigma m(0, 2, 3) + d(1, 4, 5, 6, 7)$
 - D. ∑M (1, 4, 5, 6, 7)
- 29. Hazards in combinational circuits are removed by
 - A. Enclosing the minterms that cause the hazard with a product term that overlaps both groupings.
 - B. Using NOT gates at all inputs.
 - C. Using NOT gates at all outputs.
 - D. None of the above.
- 30. Four D type flip flops are connected in such a manner that output Qi of one is connected to the D input of the next flip flop.the input to the initial D-flip flop is given by D1 = Q3 XOR Q4. All flip flops are clocked synchronously. Which of the following statements is /are true?
 - i. D1 is ahead of Qi by one clock pulse.
 - ii. The circuit outputs the sequence 100010011010111 along all Qi 's
 - A. Only (i) is true
 - B. Only (ii) is true
 - C. Both (i) and (ii) are true
 - D. None of the statement is true.
- 31. Three is NOT gates are cascaded and the out put of the third provides input to the first. Which of the following statements is true?
 - A. The connection from the output to the will lead to contention and hence damage the circuit on power on.
 - B. The output is unpredictable making the circuit useless.
 - C. The output will be uniformly held at either logic 0 and logic 1.
 - D. The out put will alternate between logic 0 and logic 1 continuously.



- 32. A certain device dumps data into its interface register every 200 ns. The main memory access time is 50 ns. If the CPU were interfaced to his device in cycle stealing mode, what percentage of time does the CPU be in hold state?
 - A. 20
 - B. 25
 - C. 50
 - D. None of these
- 33. If a disc has a rotation speed of R rpm and track storage capacity of C bits, the data transfer rate of the drive is defined as
 - A. R/C bits/min
 - B. C/R bits/min
 - C. 0.5(R*C) bits/min
 - D. R*C bits/min
- 34. In the NONIX operating system, the time required for various file read operations are given below:

Disk seek time: 25 msec Disk latency time: 8 msec

Disk transfer time: 1 msec/Kbyte

Operating system overheads: 1 mse/Kbyte + 10 msec. What is the time required to retrieve a block of Kbytes?

- A. 45 msec
- B. 47 msec
- C. 90 msec
- D. 94 msec
- 35. Which of the following page replacement method guarantee the minimum number of page faults?
 - A. Replace the page whose next reference will be the farthest in future.
 - B. Replace the page whose next reference will be the nearest in future.
 - C. Replace the page whose most recent reference was the nearest in past.
 - D. Replace the page whose most recent reference was the farthest in past



- 36. Which of the following statement is/are true about paging? P: it divides memory into units of equal size.
 - Q: it permits implementation of virtual memory.
 - R: it suffers from internal fragmentation.
 - A. P only
 - B. Q only
 - C. R only
 - D. P and Q only
- 37. The sequence of page addresses generated by program is 1, 2, 2, 1, 3, 4, 2, 1, 3, 4. This program is run on a system with main memory size equal to 3 pages. Which pages are in the memory just before 5th page fault, if least recently used page replacement is followed?
 - A. 1, 2, 3
 - B. 1, 2, 4
 - C. 1, 3, 4
 - D. 2, 3, 4
- 38. Assume that the following jobs are to be executed on a single processor system.

Job id	CPU burst time
1	3
2	4
3	5
4	1

Assume that the jobs are arrived at time 0^* and in the 1, 2, 3, 4. for round robin scheduling with time slice 1, what is the completion time for the jobs 2?

- A. 7
- B. 8
- C. 9
- D. 11

39. Consider the following jobs given below:

JobID	Arriaval time	CPU time
1	0	4
2	3	7
3	7	4
4	1	1

What is the average turnaround time with non- preemptive shortest job first scheduling algorithm?

- A. 2.75
- B. 5.75
- C. 6.5
- D. 8.5



- 40. Which of the following statement is /are TRUE about thrashing?
 - P: implies excessive page faults.
 - Q: CPU utilization decreases
 - R: implies less page faults.
 - A. Ponly
 - B. Q only
 - C. P and Q only
 - D. Q and R only
- 41. A computer system has 9 printers, with a processes competing for them. Each process needs 3 printers. What is the maximum value of n for the system to be deadlock free?
 - A. 3
 - B. 4
 - C. 5
 - D. 6
- 42. A counting semaphore was initialized to eight. Then four P (wait) operations and six V (signal) operations are performed on the semaphore. What is the resulting value of the semaphore?
 - A. 0
 - B. 8
 - C. 10
 - D. 12
- 43. A computer system uses the Banker's algorithm to deal with deadlocks its current state is shown in the table below, where P₀, P₁, P₂ and P₄ are processes and A, B, and C are resources types.

Maximum

	Α	В	С
PO	6	5	4
P1	3	4	2
P2	1	0	4
P3	3	2	5

Allocated



Available



Which of the following is/are safe sequences?

- P: P₁, P₀, P₂, P₃
- Q: P1, P2, P0, P3
- R: P₁, P₃, P₀, P₄
- A. P and Q only
- B. P and R only
- C. Q and R only
- D. All P, Q and R
- 44. Which of the following most appropriately describes the language generated by the grammer: $S \to aSa|\; bSb \mid \epsilon$
 - A. The set of string over $\{a, b\}$ that begin and end with the same symbol.
 - B. The set of palindromes over {a, b}.
 - C. The set of string over $\{a, b\}$ with equal number of a's and b's.
 - D. The set of even length palindromes over {a, b}.
- 45. Consider the rule of the C programming language –"every variable must be declared before its use." in which of the following phase of the compiler will an error violating this rule be detected?
 - A. Code generation
 - B. Lexical analysis
 - C. Syntax analysis
 - D. Semantic analysis.

46. Find the best match between the element of Group-1 and Group -2 given below.

Group – 1

Group – 2

2. Semantic analysis

- P. Dataflow analysis 1. Lexical analysis
- Q. Regular expression
- R. Type Checking
- S. Pushdown Automata
- 4. Code optimization

3. Parsing

- A. P-4, Q-1, R-3, S-2
- B. P-2, Q-1, R-4, S-3
- C. P-1, Q-4, R-2, S-3
- D. P-4, Q-1, R-2, S-3
- 47. Consider the grammar: $S \rightarrow L= R \mid R$

 $L \rightarrow * R \mid id$

 $\mathsf{R}\to\mathsf{L}$

Which of the following set of LR (0) items definitely does not represent a valid state of an LR (0) parser?

- A. $S \rightarrow L = \cdot R, R \rightarrow \cdot L$
- $\mathsf{B.}\quad\mathsf{L}\to\mathsf{id.}$
- $\mathsf{C.} \quad \mathsf{S} \to \mathsf{L} \cdot \, = \, \mathsf{R} , \; \mathsf{R} \to \mathsf{L} \cdot$
- $\mathsf{D.} \quad \mathsf{R} \to \mathsf{L} \cdot$
- 48. Which of the following is/are true?
 - I. A left recursive grammar cannot be LL(1).
 - II. A right recursive gammar cannot be LR(1).
 - III. Every grammar that can be parsed by a canonical LR parser can also be parser by some SLR parser.
 - A. I and II only
 - B. I only
 - C. II only
 - D. I, II and III
- 49. Consider a state of an LR (0) parser containing the following two items only.

 $A \rightarrow abB$

 $\mathsf{C} \to \mathsf{a.b}$

Which of the following cannot be deducted from the information provided above?

- A. There is shift reference conflict in the parsing table.
- B. The given grammar is not LR(0).
- C. There is reduce reference conflict in the parsing table.
- D. The goto function for this state on symbol b must lead to some state.





- 50. Who developed the original version of SQL?
 - A. Oracle
 - B. IBM
 - C. mySQL AB
 - D. Microsoft
- 51. For the relational schema RK1K2 are the only candidate keys. R has a functional dependency $X \rightarrow A$ where X is a set of attributes and A is an attribute. It is known that $A \rightarrow K1$ and $A \rightarrow K2$ and X is not a super key. Which of the following is true?
 - A. R should be in BCNF.
 - B. R is not surely in BCNF, but could be in 3NF
 - C. R is not surely in 3NF, but could be in 2NF
 - D. R is not surely in 2NF, but could be in 1NF
- 52. R is a rational schema with the following functional dependencies.

 $A \rightarrow DC \qquad B \rightarrow A \qquad C \rightarrow E \qquad E \rightarrow BD$

Which of the following is not a candidate key of R.

- A. AD
- B. BE
- C. CD
- D. AB
- 53. If the following elements are inserted in the given order into initially empty B+tree in which each node can hold at most 4 pointers, what will be the number of leaf nodes in the B+ tree at the end of the insertions?

1 3 5 6 7 8 14 22 32 33 37

- A. 4
- B. 5
- C. 6
- D. 7
- 54. In the following, T1 and T2 are transactions and A is an object. Which of the following has the potential of making T2 irrecoverable?
 - A. T2 writes A after T1 wrote A; T1 is uncommitted
 - B. T2 reads A after T1 wrote A ; T1 is uncommitted
 - C. T2 writes A after T1 wrote A ; T1 is committed
 - D. T2 reads A after T1 wrote A; T1 is uncommitted
- 55. Which of the following is impossibility?
 - A. A sparse primary index
 - B. A sparse secondary index
 - C. A dense primary index
 - D. A dense secondary index



- 56. RDBMS QUERY
- 57. RDBMS Query
- 58. DBMS Query
- 59. Arrange the following functions in increasing asymptotic order

P) $\sqrt{(\log_2 n)}$ (Q) \sqrt{n} (R) 2 $(\log_2 n / \log_2 \log_2 n) / *$ power of 2(then log part) */

- (S) $log_2 log_2(n!)$
- A. PQRS
- B. PQRS
- C. PSRQ
- D. SPQR
- 60. Which of the following is false?
 - A. the aveg case time complexities of quick sort and heap sort are O(nlogn).
 - B. the worst case time complexities of quick sort and heap sort are $O(n^2)$.
 - C. the aveg case time complexities of merge sortand insertion sort are $O(n^2)$.
 - D. the worst case time complexities of quick sort and merge sort are O(nlogn).
- 61. Which of the following exemplifies Divide and conquer?
 - A. Heapsort
 - B. Insertion sort
 - C. Bubble sort
 - D. Merge sort.
- 62. Consider a sequence A of length n which is sorted except for one item that appears out of order. Which of the following can sort the sequence in O(n) time?
 - A. Heapsort
 - B. Quick sort
 - C. Merge sort
 - D. Insertion sort.

63. If T(n)= 3T(n/2)+n, if n>1. T(1)=1. Then T(n)=?

- A. Θ(n)
- B. $\Theta(n (\log_2^3))$ { n to the power \log_2^3 }
- C. Θ(n ^{3/2})
- D. $\Theta(n (\log_2^3) \log_2^n)$

64. Let S1= $\sum nr/2^r$ (r=0 to logn-1) .S2= $\sum r2^r$ (r=0 to logn-1) Which of the following is true?

- A. $S1 = \Theta(nlogn), S2 = \Theta(nlogn)$
- B. $S1 = \Theta(n)$, $S2 = \Theta(n \log n)$
- C. $S1 = \Theta(nlogn), S2 = \Theta(n)$
- D. $S1 = \Theta(n), S2 = \Theta(n)$



- 65. Question based on Dynamic programming with memorization. Complexity is asked for a function.
- 66. To remove recursion from a program we have to use the following data structure:
 - A. array
 - B. stack
 - C. quence
 - D. list
- 67. Absence of terminating condition in a recursive program causes the following run time error:
 - A. array out of bounds
 - B. stack overflow
 - C. null ptr access
 - D. division by zero
- 68. On a set of n elements linear search is preferred over binary search when there are :
 - A. $\Omega(\log n)$ queries
 - B. O(log² n) queries
 - C. o(log n) queries
 - D. $\Theta(\log^2 n)$ queries
- 69. #include <stdio.h>

Void main()

{

int

```
a=4,b=5,c=6;
```

```
C+=a++ + ++b;
```

```
Printf("a=%d, b=%d, c=%d, \n", a, b, c);
```

}

What is the o/p of the above c program:

- A. 5617
- B. 5618
- C. 5516
- D. 5616
- 70. What is the max size of the operator stack during the conversion of the infix exp A+B*C-D/E to postfix?
 - A. 1
 - B. 2
 - C. 3
 - D. 4



- 71. What is the max size of the operand stack while evaluating the postfix exp 623 + -382/+*?
 - A. 1
 - B. 2
 - C. 3
 - D. 4
- 72. Binary search can be carried out on the set of ordered out on a set of ordered data items stored in a:
 - A. array
 - B. stack
 - C. queue
 - D. list
- 73. To o/p a binary tree level by level we have to use the following data structure
 - A. array
 - B. stack
 - C. queue
 - D. list
- 74. Which one of the following arrays satisfies max-heap property?
 - A. 16, 10, 12, 8, 3, 5
 - B. 16, 8, 5, 10, 12, 3
 - C. 16, 12, 8, 3, 5, 10
 - D. 10, 16, 12, 8, 5, 3
- 75. The max number of comparisons required to sort 5 elements is
 - A. 4
 - B. 5
 - C. 6
 - D. 7
- 76. The worst case time complexity of quicksort for n elements when the median is selected as the pivot element is
 - A. Θ (n²)
 - B. O(n²)
 - C. Θ (n log n)
 - D. o(n log n)



- 77. The number of null links in a binary tree with n nodes is :
 - A. n 1
 - B. n
 - C. n + 1
 - D. 2n
- 78. What is the max possible height of an AVL tree with 20 nodes?
 - A. 4
 - B. 5
 - C. 6
 - D. 7
- 79. Let T be a B-tree of order m and height h. If n is the no of key elements in T then the max value of n is :
 - A. $(m 1)^{h} 1$
 - B. $(m 1)^{h-1} + 1$
 - C. m^h 1
 - D. $m^{h-1} + 1$
- 80. Adjacency list is preferred over adjacency matrix when the graph is :
 - A. Plannar
 - B. Dense
 - C. Clique
 - D. None of the above
- 81. A binary tree can be uniquely reconstructed from the following traversal(s):
 - A. preorder
 - B. postorder
 - C. preorder and postorder
 - D. inorder and preorder
- 82. In a simple connected undirected graph with n nodes ($n \ge 2$) the max number of nodes with distinct degrees is
 - A. n 1
 - B. n 2
 - C. n 3
 - D. 2



- 83. The max number of edge disjoint cut sets in a simple graph with n nodes is:
 - A. n
 - B. $\binom{n}{2}$
 - C. 2n
 - D. n-1
- 84. If an undirected graph has Hamiltonian cycle then it is definitely :
 - A. tree
 - B. clique
 - C. Bi-connected
 - D. Tri-connected
- 85. If an undirected graph doesn't have an odd cycle , then it is:
 - A. tree
 - B. planner
 - C. Bi-partite
 - D. clique
- 86. To color a cycle of length 9, max number of colors required is :
 - A. 2
 - B. 3
 - C. 4
 - D. 5
- 87. What is the number of edge disjoint Hamiltonian cycles in a complete graph G=(V,E), where |v|=n and n is odd?
 - A. n
 - B. [n/2]
 - C. (n) / 2
 - D. n²
- 88. Given a set of n elements not all distinct, the majority element is one with freq > = n/2. So the majority elements is always the
 - A. max element
 - B. minimum element
 - C. mean element
 - D. median element



- 89. Let 01111 be the frame delimiter flag in a data link protocol. What is the transmitted bit sequence for the data 0111110111011110 using the bit stuffing method?
 - A. 0111110111011110
 - B. 011101101110111010
 - C. 01111011011100111010
 - D. 011100110111001110010
- 90. A frame 110010111001 is to be transmitted using the CRC with generating poly x^3+x+1 to protect it from errors. What is the transmitted frame?
 - A. 1101011001010
 - B. 1111010110010
 - C. 1110110110101
 - D. 1110111010111
- 91. The distance between two microwave towers, with link capacity 100Mbps, is 24km and the speed of the signal is 3×10^8 m/s. If the frame size is 16kb in the stop and wait protocol, what is the approx link utilization? Assume that the ack packets are negligible in size and there are no errors during comm...
 - A. 33%
 - B. 50%
 - C. 60%
 - D. 75%
- 92. Two ground stations r connected by a 10Mbps Sat link. The altitude of the satellite is 36000km and the speed of the signal is 3X10⁸ m/s.What shd be the packet size for the channel utilization of 50% using go-back-100 sliding window protocol? assume that the ack packets are negligible in size and there are no errors during comm.
 - A. 1.5 Kbytes
 - B. 3 Kbytes
 - C. 4.5 Kbytes
 - D. 6 Kbytes
- 93. Match the following
 - I. Data link layer P. POP3
 - II. Network layer Q. UDP
 - III. Transport layer R. RARP
 - IV. APP layer S. PPP
 - A. I-P, II-Q, III-R ,IV-S
 - B. I-P, II-R, III-Q, IV-S
 - C. I-S, II-Q, III-R, IV-P
 - D. I-S, II-R, III-Q, IV-S



- 94. The sound trip propagation delay for 100Mbps Ethernet having 48-bit jamming signal is 64 μ s. What is the minimum frame size?
 - A. 400 bytes
 - B. 600 bytes
 - C. 800 bytes
 - D. 1400 bytes
- 95. Match the following
 - I. 802.3 P. Wireless LAN
 - II. 802.11 Q. Bluetooth
 - III. 802.15 R. Ethernet
 - IV. 802.16 S. Wireless MAN
 - A. I-R, II-P, III-Q ,IV-S
 - B. I-R, II-P, III-S, IV-Q
 - C. I-R, II-Q, III-P ,IV-S
 - D. I-P, II-R, III-S, IV-Q
- 96. Match the following
 - I. Gateway
 - II. Switch
 - III. Router
 - IV. HUB

R. Network layerS. Transport layer

P. Physical layer

Q. Data link layer

- A. I-S, II-P, III-R, IV-Q
- B. I-S, II-R, III-Q, IV-P
- C. I-R, II-Q, III-S, IV-P
- D. I-S, II-Q, III-R, IV-P
- 97. Which of the following statements is/r true about datagram subnet?
 - P: each packet contains the full source and destination addresses.
 - Q: Two packets b/n source and destination can follow diff. paths
 - A. P only
 - B. Q only
 - C. Both P and Q
 - D. Neither P nor Q



- 98. A computer on a 6Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 2Mbps. It is initially filled to a full capacity of 8Mb. How long can the computer transmit at the full 6Mbps?
 - A. 1.3 sec
 - B. 1.6 sec
 - C. 1.9 sec
 - D. 2 sec
- 99. The routing table of a router is shown below

Destination	Subnet mask	interface
132.81.0.0	255.255.0.0	Eth0
132.81.64.0	255.255.224.0	Eth1
132.81.68.0	255.255.255.0	Eth2
132.81.68.64	255.255.255.224	Eth3

A packet bearing a destination address 132.81.68.132 arrives at router. On which interface will it be forwarded?

- A. Eth0
- B. Eth1
- C. Eth2
- D. Eth3
- 100. Which of the following statements is /are True about IP address?

P: IP address 128.128.255.255 is used for broadcasting on class B network.

Q: IP address 127.127.255.255 is used for loopback testing.

- A. P only
- B. Q only
- C. Both P and Q
- D. Neither P nor Q
