**A**
**SET**

**Booklet No. :**

# CS - 16

# Computer Science & Information Technology

**Duration of Test : 2 Hours** **Max. Marks : 120**

**Hall Ticket No.**

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**Name of the Candidate :** _____

**Date of Examination :** _____ **OMR Answer Sheet No. :** _____

_____ _____

**Signature of the Candidate** **Signature of the Invigilator**

## INSTRUCTIONS

1. This Question Booklet consists of **120** multiple choice objective type questions to be answered in **120** minutes.
2. Every question in this booklet has 4 choices marked (A), (B), (C) and (D) for its answer.
3. Each question carries **one** mark. There are no negative marks for wrong answers.
4. This Booklet consists of **16** pages. Any discrepancy or any defect is found, the same may be informed to the Invigilator for replacement of Booklet.
5. Answer all the questions on the OMR Answer Sheet using **Blue/Black ball point pen only.**
6. Before answering the questions on the OMR Answer Sheet, please read the instructions printed on the OMR sheet carefully.
7. OMR Answer Sheet should be handed over to the Invigilator before leaving the Examination Hall.
8. Calculators, Pagers, Mobile Phones, etc., are not allowed into the Examination Hall.
9. No part of the Booklet should be detached under any circumstances.
10. The seal of the Booklet should be opened only after signal/bell is given.

## COMPUTER SCIENCE & INFORMATION TECHNOLOGY (CS)

**1.** The system of equations $x+5y+3z=0$, $5x+y-z=0$, $x+2y+z=0$ has

(A) unique solution (B) many solutions

(C) no solution (D) either trivial solution or many solutions.

**2.** If 1 and 3 are eigen values of $A=\begin{bmatrix} 1 & 1 & 1 \\ 0 & 2 & 1 \\ -4 & 4 & 3 \end{bmatrix}$ then the third eigen value is

(A) 3 (B) 6 (C) 1 (D) 2

**3.** The function $f(x,y)=x^3+y^3-3axy, (a>0)$ is maximum at

(A) $(a,-a)$ (B) $(-a,-a)$ (C) $(a,a)$ (D) $(-a,a)$

**4.** If $u=ax+by$ and $v=cx+dy$ then $\frac{\partial(u,v)}{\partial(x,y)}=$

(A) $\frac{1}{ad-bc}$ (B) $ac-bd$ (C) $ad-bc$ (D) $\frac{1}{ac-bd}$

**5.** Let $f: Z \to Z$ be a function defined by $f(x)=2x+3$. Let $g: Z \to Z$ be a function defined by $g(x)=3x+2$, then $fog$ is

(A) $5x+11$ (B) $6x+11$ (C) $5x+4$ (D) $6x+7$

**6.** The dual of the Boolean statement $a+(a'.b)=a+b$ is

(A) $a+(a'+b)=a+b$ (B) $a'+(a.b)=ab$

(C) $a.(a'+b)=a.b$ (D) $a.(a'.b)=a+b$

**7.** Two persons A and B independently solve a problem with probability 0.6 and 0.8 respectively, then the probability that at least one of them solves the problem is

(A) 0.08 (B) 0.48 (C) 0.20 (D) 0.92

**8.** The variance of a uniform distribution $f(x)=\frac{1}{b-a}, a \le x \le b$ and 0 otherwise is

(A) $\frac{(b-a)^2}{12}$ (B) $\frac{a+b}{2}$ (C) $\frac{b-a}{2}$ (D) $\frac{b-a}{\sqrt{12}}$

**9.** Which of these numerical methods is of second order convergence ?

(A) secant method (B) bisection method

(C) regula false method (D) Newton-Raphson method

**10.** For which of these numerical integration methods the interval should be divided into even number of subintervals ?

(A) Simpson $1/3^{rd}$ rule (B) Trapizoidal rule

(C) Weddles rule (D) None of these

**11.** While computing the $n^{th}$ Fibonacci number F($n$) through recursion, the number of leaf nodes in the tree of recursive calls is equal to

(A) 2n (B) F(n+1) (C) F(n–1) (D) 2F(n)

**12.** Which of the following statements best relates the corresponding growth rates of execution time to its efficiency class ?

(A) $(13n^2+3n+8 \log n) \in \Theta(n^2)$ (B) $(13n^2+3n+8 \log n) \in \Theta(n^2 \log n)$

(C) $(13n^2+3n+8 \log n) \in O(n^2 + \log n)$ (D) $(13n^2+3n+8 \log n) \in \Omega(n^2 \log n)$

**13.** Which of the following is applied to resolve collisions without cluster formation in a hash table ?

(A) Rehashing (B) Extendible hashing

(C) Double hashing (D) Closed hashing

**14.** The best case time complexity of simple insertion sort algorithm is

(A) $\Theta(n^2)$ (B) $\Theta(\log n)$ (C) $\Theta(n \log n)$ (D) $\Theta(n)$

**15.** The number of multiplications required to multiply two '$n \times n$' matrices using Strassen's method with Divide and conquer strategy belongs to

(A) $\Theta(n^2)$ (B) $\Theta(n \log 7)$ (C) $\Theta(n^2 \log n)$ (D) $\Theta(n^3)$

**16.** The recurrence equation for finding number of comparisons required for identifying the $k^{th}$ order statistic in a list of $n$ numbers by partitioning it using decrease and conquer approach is

(A) $C(n) = 2C(n/2)+n+1$ (B) $C(n) = C(n-1)+n$

(C) $C(n) = C(n/2)+n+1$ (D) $C(n) = C(n/3)+n$

**17.** The number of distinct binary search trees possible to accommodate a given collection of 6 keys is equal to

(A) 14 (B) 168 (C) 42 (D) 132

**18.** Which algorithm design strategy is used in Warshall's algorithm for finding transitive closure of a graph ?

(A) Dynamic Programming (B) Greedy Technique

(C) Transform and conquer (D) Divide and Conquer

**19.** In graph theory which of the following algorithms uses the ADT 'collection of disjoint subsets of a set' for dynamic partitioning of vertices ?

(A) Floyd's algorithm (B) Kruskal's algorithm

(C) Prim's algorithm (D) Dijkstra's algorithm

**20.** Finding the most valuable subset of *n* items of a given integer weights and values that fit into a knapsack of a given capacity is known as Knapsack problem. It is classified into the set of

(A) Tractable problems (B) Undecidable problems

(C) NP-hard problems (D) NP-complete problems

**21.** With regard to computational complexity classes of problems (P and NP) which of the following statements is correct ?

(A) NP $\supset$ P (B) NP = P (C) P $\supset$ NP (D) P and NP are disjoint

**22.** The recurrence equation for the number of disc movements required for Towers of Hanoi problem using recursion is

(A) M(n) = 2M(n–1) + 1 (B) M(n) = M(n/2) + n + 1

(C) M(n) = M(n–1) + n +1 (D) M(n) = 2M(n/2) + 1

**23.** Which of the following data structure is most suitable to represent a priority queue ?

(A) Circular Queue (B) Single dimensional Array

(C) Max Heap (D) Linked list

**24.** Which of the following data structure is most suitable for representing arithmetic expressions involving repeated sub-expressions ?

(A) B-tree (B) Binary tree (C) Stack (D) Directed Acyclic Graph

**25.** The postfix equivalent of the infix expression (P + Q)* (R– S/T) is

(A) PQRST/–*+ (B) PQ+RST/–* (C) PQ+RS–T/* (D) PQRST+*–/

**26.** Which of the following data structure supports traversal of a dynamic list in both the directions ?

(A) Singly linked list with header node

(B) Singly linked Circular list

(C) Doubly linked list with header node

(D) Binary tree

**27.** If the postorder sequence of nodes of a binary search tree is 30, 23, 36, 68, 48 which of the following sequence of nodes corresponds to its preorder sequence ?

(A) 48, 36, 23, 30, 68 (B) 48, 23, 30, 36, 68

(C) 48, 68, 30, 36, 23 (D) 48, 23, 36, 30, 68

**28.** The type of binary tree structure suitable for Huffman coding is

(A) Complete Binary tree (B) AVL Tree

(C) Strictly Binary tree (D) Threaded Binary tree

**29.** The number of swaps (exchanges) required to sort the list containing 42, 63, 54, 38, 84 using Bubble sort algorithm is

(A) 4 (B) 2 (C) 5 (D) 10

**30.** In C programming the elements of a multi-dimensional array are stored in contiguous memory locations in

(A) column major order (B) row major order

(C) as per the array declaration (D) varies with operating system

**31.** In C programming self referencing structures are essential to implement

(A) Linked lists (B) Queues (C) Stacks (D) Complete binary trees

**32.** In C programming, if 'x' is declared as 'static int x=1' in a function 'foo'

(A) the scope of 'x' is limited to function 'foo'.

(B) the extent of 'x' continues until the program terminates.

(C) once initialised 'x' is not re-initialised in the subsequent function calls.

(D) all of the above options.

**33.** In C programming, a variable 'arr' is declared as 'float arr[5][5][5]'. Which of the following expressions refers to the base address of the $4^{th}$ row in $0^{th}$ matrix ?

(A) **arr+4 (B) *(arr+4) (C) *arr+4 (D) arr[4]

**34.** In C programming, which of the following mode strings is used in 'fopen' statement to open a text file for update ?

(A) w+ (B) r+ (C) a+ (D) wt

**35.** In C programming, which of the following 'format specifier' is used to read a hexadecimal integer using a 'scanf' statement ?

(A) %H (B) %X (C) %I (D) %D

**36.** The problem of finding whether a given graph has a path that starts and ends at the same vertex while passing through all other vertices of the graph exactly once is called

(A) Graph Traversal Problem (B) Hamiltonian circuit problem

(C) Travelling Salesman Problem (D) Eulerian circuit problem

**37.** With reference to Inter-process Communication which of the following is the name of the indivisible operation to read the contents of a memory location into a register followed by storing a non-zero value into the memory location read

(A) Semaphore (B) Critical section

(C) Test and Set Lock instruction (D) Monitor

**38.** The situation in which each process in a set of processes is waiting for an event to be caused by another process in the same set is referred to as

(A) Race condition (B) Deadlock

(C) Starvation (D) Critical section

**39.** Which of the following is used in Unix operating system to maintain the index of the disc blocks used for storing a file ?

(A) I-node (B) File descriptor

(C) Symbolic link (D) Access control list

**40.** When Round robin algorithm is used for CPU scheduling, if the time quantum for context switching is large, the performance becomes similar to that of

(A) Shortest job first scheduling (B) First-in first out scheduling

(C) Priority scheduling (D) long term scheduling

**41.** With reference to acyclic graph (file) directories implementation of which of the following file operators requires 'reference count' to maintain the number of file sharers ?

(A) Creation of file (B) Deletion of file

(C) Garbage collection (D) Creation of subdirectory

**42.** Which of the following problems is associated with multiple contiguous variable partition (MVT) allocation ?

(A) Internal fragmentation (B) Thrashing

(C) External fragmentation (D) Increased effective access time

**43.** Name the memory management scheme that handles very large address spaces containing pages by keeping only relevant portions of page table in RAM.

(A) Segmented paging (B) Paged segmentation

(C) Paging with B-tree indexing (D) Extended Paging

**44.** Which of the following memory management schemes provides the most appropriate level of protection and sharing for the users data and code ?

(A) Paging (B) Multiple variable partitions (MVT)

(C) Segmentation (D) Segmented paging

**45.** If the probability of page fault is 0.0001 and average page fault service time is 500 times more than the memory access time, the percentage degradation of effective memory access time due to demand paging is

(A) 10% (B) 1% (C) 5% (D) 0.5%

**46.** Which of the following algorithms is a drum / fixed head device scheduling algorithm ?

(A) Shortest seek time first (B) Sector queuing

(C) SCAN (D) First come first served (FCFS)

**47.** A cycle in the resource allocation graph that includes claim edges to indicate possible need of a resource suggests that the system is in

(A) Unsafe state (B) Deadlock state

(C) Wait state (D) Starvation state

**48.** As a consequence of improper sequencing of the semaphore operators, P and V, in one or more processes in a set of concurrent processes, the system may experience

(A) violation of mutual exclusion condition

(B) deadlock

(C) deadlock or violation of mutual exclusion

(D) doesn't influence the remaining processes in the set

**49.** The cryptographic system that process the input to produce output one element at a time as long as the input continues is categorised as

(A) Block cipher (B) Substitution cipher

(C) Transposition cipher (D) Stream cipher

**50.** Digital signatures are not used to impose the

(A) Source authentication (B) Message authentication

(C) Integrity (D) Confidentiality

**51.** In a packet switching network (PSN) the drawback of applying end-to-end encryption of packets is that

(A) Packet header is not readable by the PSN nodes.

(B) user has no control on the security at the nodes of PSN.

(C) Higher encryption / decryption overheads.

(D) None of these

**52.** A firewall is capable of protecting the network against the

(A) Internal threats

(B) transfer of Virus–infected files

(C) Unauthorised users and vulnerable services

(D) Sudden hardware breakdowns

**53.** Attack on high profile servers with spurious requests and messages to overload the network is known as

(A) Virus (B) Trojan horse

(C) Denial of service (D) Flooding

**54.** The sum of the first 7 terms of the series of cubes of natural numbers is

(A) 784 (B) 540 (C) 864 (D) 696

**55.** The number of 7 letter permutations that can be formed from the letters of the word 'COMMUTE' is

(A) 5040 (B) 2520 (C) 720 (D) none of these

**56.** How many ways can a committee of 5 members be formed from 8 workers and 5 managers such that at least 2 managers should be there in the committee ?

(A) 560 (B) 321 (C) 881 (D) 294

**57.** The number 4860 is divisible (without remainder) by how many integers ?

(A) 34 (B) 36 (C) 54 (D) 28

**58.** Which of the following determines the number of independent paths in the flow graph of a module used for testing a module of software being developed ?

(A) Chromatic number (B) Cyclomatic complexity
(C) Godel Number (D) Catalan number

**59.** Which of the following is most suitable for estimating the total effort required for software development in terms of person-months ?

(A) Prototype model (B) waterfall model
(C) COCOMO model (D) Spiral model

**60.** During system design phase of software development, the criteria for module design is that the overall system should have

(A) higher coupling
(B) higher cohesion
(C) lower coupling and higher cohesion
(D) higher coupling and lower cohesion

**61.** Which of the following is the limitation of waterfall model for large software development ?

(A) Innovative designing is not supported
(B) Limited to automating an existing manual system
(C) Makes the process documentation heavy
(D) All of these

**62.** Canonical representation of graphs is preferred for the purpose of finding whether two graphs are

(A) Isomorphic (B) Connected (C) Bipartite (D) Acyclic

**63.** The value of the maximum flow in a network represented as a weighted di-graph with specially designated source and sink vertices is equal to

(A) Capacity of the weakest (minimum capable) edge
(B) Min-Cut of the graph
(C) Capacity of the weakest (minimum capable) path
(D) Max-cut of the graph

**64.** Which of the following scenarios may lead to an irrecoverable error in a database system ?

(A) A transaction writes a data item after it is read by an uncommitted transaction.

(B) A transaction reads a data item after it is read by an uncommitted transaction.

(C) A transaction reads a data item after it is written by a committed transaction.

(D) A transaction reads a data item after it is written by an uncommitted transaction.

**65.** Relational Algebra is a

(A) Data Definition Language (B) Meta Language

(C) Procedural Query Language (D) None of the above

**66.** Given the set of functional dependencies B->C, C->A, B->D for the relational schema R(A,B,C,D) Which of the following decompositions has dependency preserving property ?

(A) Relation schemas (C, A) and (C, B, D)

(B) Relation schemas (A, C, D) and (B, D)

(C) Relation schemas (C, A) and (A, B, D)

(D) All of the above

**67.** A check pointing system is needed

(A) to ensure system security (B) to recover from transient faults

(C) to ensure system privacy (D) to ensure system integrity

**68.** In entity relationship modeling representing the concept –'teacher teaches course', attributes of the relationship "teaches" should be

(A) teacher code, teacher name, dept, phone no

(B) course no, course name, semester offered, credits

(C) teacher code, course no, semester no

(D) teacher code, course no, teacher name, dept, phone no

**69.** Which of the following is not a transaction management SQL command ?

(A) Commit (B) Select (C) Savepoint (D) Rollback

**70.** A relation Remp is defined with attributes Remp(empcode, name, street, city, state, pincode). Empcode is the primary key. For any pincode, there is only one city and state. Also, for given street, city and state, there is just one pincode. In normalization terms, Remp is a relation in

(A) 3NF and hence also in 2NF and 1NF

(B) 2 NF and hence also in 1 NF

(C) BCNF and hence also in 3NF, 2NF and 1NF

(D) 1 NF only

**71.** Which of the following recovery technique does not need logs ?

(A) Shadow paging (B) Immediate update

(C) Deferred update (D) None of the above

**72.** The file organization that provides very fast access to any arbitrary record of a file is

(A) Ordered file (B) B-Tree (C) Hashed file (D) B+-tree

**73.** A data dictionary is a special file that contains

(A) The name of all fields in all files.

(B) The width of all fields in all files.

(C) The data type of all fields in all files.

(D) All of the above.

**74.** Which of the operations constitute a basic set of operations for manipulating relational data ?

(A) Predicate calculus (B) Relational calculus

(C) Relational algebra (D) None of the above

**75.** Which of the following device interface is used to connect high speed HDDs, scanners, printers, etc. to the host computer in hot pluggable manner ?

(A) SATA (B) SCSI (C) IDE/ATA (D) DAS

**76.** Consider the grammar with the following translation rules and E as the start symbol.

E " E 1 #T value = .value * .value}

.value = .value}

" .value = .value + .value}

.value = .value}

"num .value =num.value}

Compute E .value for the root of the parse tree of expression:2 # 3 # & 5 # 6 & 4.

(A) 200 (B) 180 (C) 160 (D) 40

**77.** Which of the following suffices to convert an arbitrary CFG to an LL(1) grammar ?

(A) Removing left recursion alone

(B) Factoring the grammar alone

(C) Removing left recursion and factoring the grammar

(D) None of these

**78.** The grammar S→SS, S→(S), S→( ),S→t is

(A) Not LL(1) as it is left recursive

(B) Not LL(1) as it is ambiguous

(C) Not LR(1) as it is ambiguous

(D) None of the above

**79.** Which of the following statements is False ?

(A) An unambiguous grammar has same left most and right most derivation

(B) An LL(1) parser is a top-down parser

(C) LALR is more powerful than SLR

(D) An ambiguous grammar can never be LR (K) for any K

**80.** In a bottom-up evaluation of a syntax directed definition, inherited attributes can

(A) always be evaluated

(B) be evaluated if the definition is L-attributed

(C) be evaluated only if the definition has synthesized attributes

(D) never be evaluated

**81.** In a programming language, an identifier is permitted to be a letter followed by any number of letters or digits. If L and D denote the set of letters and digits respectively, which of the following expressions defines an identifier ?

(A) $(L \cup D)^+$ (B) $L.(L \cup D)^*$ (C) $(L.D)$ (D) $L.(L.D)^*$

**82.** Which of the following techniques is used to replace run-time computations by compile time computations ?

(A) Invariant computation (B) Peephole optimization

(C) Constant Folding (D) Code hoisting

**83.** In operator Precedence parsing precedence relations are defined

(A) Only for a certain pair of terminals and to delimit the handle

(B) For all pairs of terminals

(C) For all pairs of non-terminals

(D) None of these

**84.** Which of the following algorithms corresponds to the pre-order traversal of nodes of an undirected graph ?

(A) Depth first search (B) Breadth first search

(C) Topological sorting (D) Prim's algorithm

**85.** A shift reduce parser carries out the actions specified within braces immediately after reducing with the corresponding rule of a grammar

S->xxW{print "1"}

S->Y{print "2"}

S->Sz{print "3"}

What is the translation of XXXXYZZ using the syntax directed translation scheme described by the above rules ?

(A) 23131 (B) 11233 (C) 11231 (D) 33211

**86.** If G is a CFG and w is a string of length 'l' in L(G), how long is a derivation of w in G, if G is a Chomsky normal form ?

(A) 2l (B) 2l + 1 (C) 2l – 1 (D) l

**87.** Which of the following is true for the language {ap | p is a prime} ?

(A) It is not accepted by a Turing Machine

(B) It is regular but not context-free

(C) It is context-free but not regular

(D) It is neither regular nor context-free, but accepted by a Turing machine

**88.** A minimum state deterministic finite automaton accepting the language

L = {w|w € {0,1}*, number of 0s and 1s in w are divisible by 3 and 5 respectively} has

(A) 15 states (B) 11 states (C) 10 states (D) 9 states

**89.** Consider the following grammar

G: S → bS | aA | b

A → bA | aB

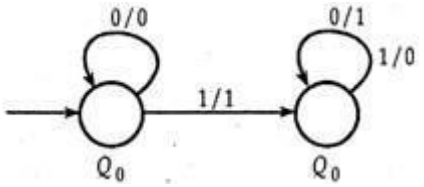
B → bB | aS | a

Let Na (w) and Nb (w) denote the number of a's and b's in a string w respectively. The language L(G) {a, b}+ generated by G is

(A) { w | Na(w) > 3Nb(w)} (B) { w | Nb(w) > 3Nb(w)}

(C) { w | Na(w) = 3k, k {0, 1, 2, ...}} (D) { w | Nb(w) = 3k, k {0, 1, 2, ...}}

**90.** The following diagram represents a finite state machine which takes as input a binary number from the least significant bit.




Which one of the following is TRUE ?

(A) It computes 1's complement of the input number

(B) It computes 2's complement of the input number

(C) It increments the input number

(D) It decrements the input number

**91.** The language accepted by this automaton is given by the regular expression

(A) b * ab * ab * ab * (B) (a + b) *

(C) b * a (a + b)* (D) b * ab * ab *

**92.** The main function of a browser is to

(A) Compile HTML (B) Interpret HTML

(C) De-compile HTML (D) Interpret CGI programs

**93.** Which of the following calls a JavaScript function when the cursor passes over an image ?
(A) onsubmit (B) onmouseover (C) onload (D) onmouseout

**94.** Which language is called client-side scripting language ?
(A) CSS (B) HTML (C) JavaScript (D) JavaBeans

**95.** Which of the following is stored on a client and contains state information ?
(A) Servlet (B) Cookie (C) Session (D) JSP

**96.** The minimum number of timing signals required to fetch an instruction for executing it is
(A) one (B) two (C) three (D) four

**97.** How many memory references are needed to bring a storage operand into the accumulator while processing a direct address instruction ?
(A) zero (B) one (C) two (D) three

**98.** The hardware priority interrupt scheme implemented using serially connected I/O devices is called
(A) Polling (B) Masked interrupts
(C) Vectored interrupt (D) Daisy chaining

**99.** A hypothetical system is designed with a 64K × 16 RAM and two-way set associative cache memory of size 1024 cache memory words. The length of each cache word is
(A) 32 (B) 44 (C) 16 (D) 32

**100.** Which of the following components are most essential for designing Binary Counters ?
(A) D-flip flops (B) Decoders (C) T-flip flops (D) Multiplexers

**101.** In two-wired hand shaking method of asynchronous data transfer the following control lines are used.
(A) Strobe and data bus (B) Data valid and data accepted
(C) Strobe and data accepted (D) Strobe and data valid

**102.** In floating point arithmetic which of the following operations does not require mantissa alignment ?
(A) addition (B) subtraction (C) multiplication (D) division

**103.** The hexadecimal equivalent to octal number '35425' is
(A) 3B15 (B) 981B (C) A8B0 (D) none of these

**104.** The binary equivalent representation for the decimal number '12.875' is
(A) 1010.10101 (B) 1100.11100 (C) 1100. 001101 (D) 1010.101011

**105.** Which of the following is the 8 bit signed-2's complement representation of the negative decimal number '–99' ?

(A) 10011101 (B) 11001111 (C) 11001110 (D) 00110000

**106.** Which of the following code provides 9's complement of a number by simple bit inversion (logical complementation) ?

(A) Binary Coded Decimal (BCD) (B) Excess-3 code

(C) Gray code (D) Parity code

**107.** Which of the following component is used to generate timer signals at pre-specified time intervals ?

(A) Shift Register (B) Multiplexers (C) Counters (D) Registers

**108.** Which of the following component is used as 'parallel-to-serial converter' ?

(A) Shift register (B) Counters (C) ALU (D) Decoders

**109.** Which Logic circuit would you use for addressing memory ?

(A) Full adder (B) Multiplexer (C) Decoder (D) DMA

**110.** A Single bit full adder can be designed using

(A) Two half adders and one OR gate (B) Two half adders

(C) One Ex-OR and two NAND gates (D) Two half adders and one AND gate

**111.** In the IPv4 addressing format, the number of networks allowed under Class C addresses is

(A) $2^{14}$ (B) $2^{7}$ (C) $2^{21}$ (D) $2^{24}$

**112.** 11001001 is the message to be sent to destination using the CRC polynomial 3x+1 to protect it from errors. The message that should be transmitted is:

(A) 11001001000 (B) 11001001011 (C) 11001010 (D) 110010010011

**113.** Station A needs to send a message consisting of 9 packets to Station B using a sliding window (window size 3) and go-back-n error control strategy. All packets are ready and immediately available for transmission. If every $5^{th}$ packet that A transmits gets lost, but no 'ack' from B is lost, then what is the number of packets that A will transmit for sending the message to B ?

(A) 12 (B) 14 (C) 16 (D) 18

**114.** An organization has a class B network and wishes to form subnets for 64 departments. The subnet mask would be:

(A) 255.255.0.0 (B) 255.255.64.0 (C) 255.255.128.0 (D) 255.255.252.0

**115.** In a network of LANs connected by bridges, packets are sent from one LAN to another through intermediate bridges. Since more than one path may exist between two LANs, packets may have to be routed through multiple bridges. Why is the spanning tree algorithm used for bridge-routing ?

(A) For shortest path routing between LANs

(B) For avoiding loops in the routing paths

(C) For fault tolerance

(D) For minimizing collisions

**116.** Station A uses 32 byte packets to transmit messages to Station B using a sliding window protocol. The round trip delay between A and B is 80 milliseconds and the bottleneck bandwidth on the path between A and B is 128 kbps. What is the optimal window size that A should use ?

(A) 20 (B) 40 (C) 160 (D) 320

**117.** In Ethernet when Manchester encoding is used, the bit rate is:

(A) Half the baud rate. (B) Twice the baud rate.

(C) Same as the baud rate. (D) None of the above

**118.** What is the maximum size of data that the application layer can pass on to the TCP layer below ?

(A) Any size (B) 216 bytes-size of TCP header

(C) 216 bytes (D) 1500 bytes

**119.** If link transmits 4000 frames per second, and each slot has 8 bits, the transmission rate of circuit this TDM is

(A) 32kbps (B) 500bps (C) 500kbps (D) None of these

**120.** An ATM cell has the payload field of

(A) 32 bytes (B) 48 bytes (C) 64 bytes (D) 128 bytes

**SPACE FOR ROUGH WORK**

COMPUTER SCIENCE & INFORMATION TECHNOLOGY

SET-A

| Question No | Answer | Question No | Answer |
|---|---|---|---|
| 1 | B | 61 | D |
| 2 | D | 62 | A |
| 3 | C | 63 | B |
| 4 | C | 64 | D |
| 5 | D | 65 | C |
| 6 | C | 66 | A |
| 7 | D | 67 | B |
| 8 | A | 68 | C |
| 9 | D | 69 | B |
| 10 | A | 70 | B |
| 11 | B | 71 | A |
| 12 | A | 72 | C |
| 13 | C | 73 | D |
| 14 | D | 74 | C |
| 15 | B | 75 | B |
| 16 | C | 76 | C |
| 17 | D | 77 | C |
| 18 | A | 78 | B |
| 19 | B | 79 | A |
| 20 | C | 80 | C |
| 21 | A | 81 | B |
| 22 | A | 82 | B |
| 23 | C | 83 | A |
| 24 | D | 84 | A |
| 25 | B | 85 | A |
| 26 | C | 86 | C |
| 27 | A | 87 | D |
| 28 | C | 88 | A |
| 29 | A | 89 | C |
| 30 | B | 90 | B |
| 31 | A | 91 | C |
| 32 | D | 92 | B |
| 33 | C | 93 | B |
| 34 | B | 94 | C |
| 35 | B | 95 | B |
| 36 | B | 96 | C |
| 37 | C | 97 | B |
| 38 | B | 98 | D |
| 39 | A | 99 | B |
| 40 | B | 100 | C |
| 41 | B | 101 | B |
| 42 | C | 102 | C |
| 43 | A | 103 | A |

| | | | |
|---|---|---|---|
| 44 | C | 104 | B |
| 45 | C | 105 | A |
| 46 | B | 106 | B |
| 47 | A | 107 | C |
| 48 | C | 108 | A |
| 49 | D | 109 | C |
| 50 | D | 110 | A |
| 51 | A | 111 | C |
| 52 | C | 112 | B |
| 53 | C | 113 | C |
| 54 | A | 114 | D |
| 55 | B | 115 | B |
| 56 | C | 116 | B |
| 57 | A | 117 | A |
| 58 | B | 118 | A |
| 59 | C | 119 | A |
| 60 | C | 120 | B |