ROLL NUMBER ☐

WRITTEN TEST FOR THE POST OF TECHNICAL ASSISTANT (COMPUTER) - A
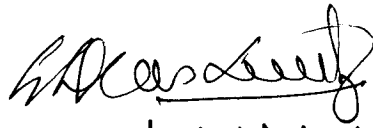
DATE: 13.05.2010

TIME: 9 A.M

DURATION: 90 MINUTES

Total Marks: 60

INSTRUCTIONS TO THE CANDIDATES

1. Write your Roll Number on the top of the Question Booklet and in the answer sheet.

2. Each question carries 1 mark.

3. There will not be any Negative Marking.

4. Over writing of the answers is not permitted.

5. Write legibly the alphabet of the most appropriate answer in the separate answer sheet provided.

6. Candidate should sign in the question paper and answer sheet.

7. Clarifications may be sought from supervisors.

8. Candidate should hand over the question paper and answer sheet to the invigilator before leaving the examination hall.

Signature of the Candidate

1. C language is
   (A) Regular   (B) Context free   (C) Context sensitive
   (D) Recursive

2. $(1+0)^*$ doesn't contain the substring
   (A) 10   (B) 01   (C) 11   (D) None of the above

3. Which of the following is Type 3 grammar ?
   (A) Regular   (B) Context free   (C) Context sensitive
   (D) Phrase-structure

4. How many 128 x 8 RAM chips are needed to provide a memory capacity of 2048 bytes ?
   (A) 8   (B) 16   (C) 32   (D) None of the above

5. Simplify the expression X = (A' + B) (A+B+D)D'
   (A) B'D   (B) A'D'   (C) A'B   (D) BD'

6. Find the 7 bit 2's complement representation of -6
   (A) 0000110   (B) 0111001   (C) 1000110
   (D) 1111010

7. If $(33)_{10} = (201)_x$ then the value of x is
   (A) 16   (B) 4   (C) 3   (D) None of the above

8. The number of bits needed to encode all letters (26), 10 symbols and all numbers (10) is
   (A) 5   (B) 6   (C) 7   (D) 8

9. Which of the following is equivalent to x' ?
   (A) x NAND x   (B) x AND 1 (C) x NOR 1   (D) None

10. Which gates are called universal gates ?
    (A) XOR & NAND   (B) NOR & XOR   (C) NAND & NOR
    (D) AND & OR

11. Which memory unit has lowest access time?
    (A) Cache   (B) Registers(C) Magnetic disk   (D) Main memory

12. Which of the following keeps track of instruction execution sequence ?
    (A) Accumulator   (B) Program counter(C) Stack pointer
    (D) Instruction register

13. Registers are high speed memory elements situated in
    (A) Memory   (B) CPU   (C) I/O Unit   (D) ROM or EPROM

14. Machine language and assembly language are examples of
    (A) High level language   (B) Low level language
    (C) High level and low level respectively (D)High level and low level respectively

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15. During DMA transfer, DMA controller takes over the buses to manage the transfer
(A) Directly from CPU to memory   (B) Directly from memory to CPU
(C) Indirectly between the I/O device & memory   (D) Directly between the I/O device & memory

16. Booth's algorithm is used in floating point
(A) Addition   (B) Subtraction   (C) Multiplication   (D) Division

17. A given memory chip has 12 address pins and 4 data pins. It has the following number of locations
(A) 2^2 (B) 2^{12} (C) 2^{48} (D) 2^{16}

18. A tiny bootstrap loader program
(A) Hard disk   (B) ROM   (C) BIOS   (D) None

19. RAM is called DRAM when
(A) It is always moving around data   (B) It require periodic refreshing
(C) It can do several things simultaneously   (D) None

20. Which of the following is the name of the data structure in a compiler that is responsible for managing information about variables and their attributes?
(A) Abstract syntax tree   (B) Symbol table   (C) Parse table
(D) Semantic stack

21. The complete binary tree at level d contains _____ leaves.
(A) 2^d-1   (B) 2^d(C) 2^d+1   (D) None

22. The average successful search time taken by binary search on a sorted array of 10 items is
(A) 2.6   (B) 2.7   (C) 2.8   (D) 2.9

23. Atomicity property is ensured by
(A) Transaction Manager   (B) User
(C) Concurrency control subsystem   (D) Recovery manager

24. Every determinant should be a candidate key is the definition for _____
(A) 5NF   (B) 2NF   (C) BCNF   (D) 3NF

25. If a relation schema is in BCNF then it is also in
(A) 1NF   (B) 2NF   (C) 3NF   (D) All

26. R (ABCDE) F = { A -> BCDE, B -> C, D ->E } the table is in
(A) 1NF   (B) 2NF   (C) 3NF   (D) BCNF

27. In TCP , SYN flag is used in
(A) Connection establishment   (B) Data transfer
(C) Connection termination   (D) None of the above

28. A token ring frame can be identified as a token frame by a bit in the ____ field.
(A) SD   (B) AC   (C) FC   (D) FD

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29. Data unit is known as a frame in _____ layer
(A) Physical (B) Data link (C) Network (D) Transport

30. The number of network in Class A addressing system is
(A) 2^8 (B) 2^{16} (C) 2^{24} (D) 2^{32}

31. A class B network has subnet mask 255.255.224.0. What is the maximum number of hosts that are possible per subnet ?
(A) 1024 (B) 2048 (C) 4096 (D) 8192

32. In sliding window protocol if the window size is 64, What is the range of sequence number ?
(A) 0 to 63 (B) 0 to 64 (C) 1 to 63 (D) None

33. Collision cannot occur in _____
(A) Ethernet (B) Token ring (C) FDDI (D) None

34. Uniqueness is mandatory for
(A) Logical addressing (B) Physical addressing (C) Both A & B
(D) None of these

35. Monitor is an example of which of the following communication mode ?
(A) Simplex (B) Half duplex (C) Full duplex (D) None

36. TTL field in IP header is used to
(A) To calculate the shortest path from source & destination
(B) To avoid infinite loop (C) Fragment the packets in the subnet
(D) Both A & C

37. Directed broadcasting address can be used as
(A) Source IP address (B) Destination IP address (C) Both A & B
(D) None

38. Activation record size can be known at
(A) Compile time (B) Run time (C) Loading time (D) None

39. Heap allocation is required for languages that support
(A) Recursion (B) Dynamic scope rules (C) Dynamic data structures
(D) None

40. If attribute can be evaluated in depth first order then definition is
(A) S-attributed definition (B) L-attributed definition (C) Both A & B
(D) None

41. Predictive parsers are
(A) Bottom up parsers (B) Top down parsers (C) Universal parsers
(D) None

42. Choose the appropriate one that defines Data Flow Diagram
(A) Views the system as a function
(B) The function transforms input to output
(C) None of the above (D) Both A & B

43. Which HTML tag gives bigger heading in size ?
   (A) H1   (B) H3   (C) H6   (D) Header

44. A proxy server, which will accept client connections from any IP address and make connections to any Internet resource
   (A) Transparent proxy   (B) Open proxy   (C) Reverse proxy   (D)   Split proxy

45. What does XSL stands for
   (A) eXpandable Style Language   (B) eXtra Style Language
   (C) eXtensible Style Listing   (D) eXtensible Style sheet Language

46. Which of the following is not related to DFD ?
   (A) Process   (B) Data flow   (C) Cardinalty (D) External entity

47. The three stages of analysis phase are
   (A) Discovery, refinement, design   (B) Discovery, modeling, design
   (C) Discovery, refinement, modeling   (D) Refinement, design , modeling

48. Translation of design into machine readable form is called
   (A) Testing   (B) Debugging   (C) Coding   (D) Detailed designing

49. Which ISO standard shows the highest quality software product ?
   (A) ISO 9001:2000   (B) ISO 2001:9000   (C) ISO 9000:2001
   (D) ISO 9001:2001

50. Which testing reveals maximum number of errors in software ?
   (A) Black box testing   (B) Beta testing   (C) Validation testing
   (D) White box testing

51. Which one of the following is NOT shared by the threads of the same process ?

   A) Stack   B) Address Space
   C) File Descriptor Table   D) Message Queue

52. Which one of the following regular expressions is NOT equivalent to the regular expression $(a + b + c)*$?
   A) $(a* + b* + c*)*$ B) $(a*b*c*)*$

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

53. Consider the following message M = 1010001101. The cyclic redundancy check (CRC) for this message using the divisor polynomial $x^5 + x^4 + x^2 + 1$ is :

   A) 01110   B) 01011

   C) 10101   D) 10110

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54. In a depth-first traversal of a graph G with n vertices, k edges are marked as tree edges. The number of connected components in G is

A) k   B) k+1

C) n-k-1   D) n-k

55. The address resolution protocol (ARP) is used for

A) Finding the IP address from the DNS

B) Finding the IP address of the default gateway

C) Finding the IP address that corresponds to a MAC address

D) Finding the MAC address that corresponds to an IP address

56. Consider a direct mapped cache of size 32 KB with block size 32 bytes. The CPU generates 32 bit addresses. The number of bits needed for cache indexing and the number of tag bits are respectively

A) 10, 17 B) 10, 22

C) 15, 17 D) 5, 17

57. Which one of the following is true for a CPU having a single interrupt request line and a single interrrupt grant line?

A) Neither vectored interrupt nor multiple interrupting devices are possible.

B) Vectored interrupts are not possible but multiple interrupting devices are possible.

C) Vectored interrupts and multiple interrupting devices are both possible.

D) Vectored interrupt is possible but multiple interrupting devices are not possible.

58. The Boolean function $x' y' + xy + x, y$

A) $x, + y'$ B) $x + y$

C) $x + y'$ D) $x' + y$

59. The minimum number of page frames that must be allocated to a running process in a virtual memory environment is determined by

A) the instruction set architecture B) page size

C) physical memory size   D) number of processes in memory

60. The best data structure to check whether an arithmetic expression has balanced parentheses is a

A) queue B) stack

C) tree   D) list