Mca Computer Science 486

569

15P/208/2 Question Booklet No.....

(To be filled up by the candidate by blue/black ball-point pen)

Roll No. | | | | | | | | | |

Roll No.
(Write the digits in words) .....

Serial No. of OMR Answer Sheet .....

Day and Date ....
(Signature of Invigilator)

INSTRUCTIONS TO CANDIDATES

(Use only **blue/black ball-point pen** in the space above and on both sides of the Answer Sheet)

1. Within 10 minutes of the issue of the Question Booklet, check the Question Booklet to ensure that it contains all the pages in correct sequence and that no page/question is missing. In case of faulty Question Booklet bring it to the notice of the Superintendent/Invigilators immediately to obtain a fresh Question Booklet.
2. Do not bring any loose paper, written or blank, inside the Examination Hall *except the Admit Card without its envelope.*
3. A separate Answer Sheet is given. *It should not be folded or mutilated. A second Answer Sheet shall not be provided. Only the Answer Sheet will be evaluated.*
4. Write your *Roll Number and Serial Number of the Answer Sheet by pen* in the space provided above.
5. **On the front page of the Answer Sheet, write by pen your Roll Number in the space provided at the top, and by darkening the circles at the bottom. Also, wherever applicable, write the Question Booklet Number and the Set Number in appropriate places.**
6. No overwriting is allowed in the entries of Roll No., Question Booklet No. and Set No. (if any) on OMR sheet and also Roll No. and OMR Sheet No. on the Question Booklet.
7. Any change in the aforesaid entries is to be verified by the invigilator, otherwise it will be taken as unfair means.
8. Each question in this Booklet is followed by four alternative answers. *For each question, you are to record the correct option on the Answer Sheet by darkening the appropriate circle* in the corresponding row of the Answer Sheet, by ball-point pen as mentioned in the guidelines given on the first page of the Answer Sheet.
9. For each question, darken only one circle on the Answer Sheet. If you darken more than one circle or darken a circle partially, the answer will be treated as incorrect.
10. *Note that the answer once filled in ink cannot be changed.* If you *do not wish to attempt* a question, leave all the circles in the corresponding row blank (such question will be awarded zero mark).
11. For rough work, use the inner back page of the title cover and the blank page at the end of this Booklet.
12. Deposit *only the OMR Answer Sheet* at the end of the Test.
13. You are not permitted to leave the Examination Hall until the end of the Test.
14. If a candidate attempts to use any form of unfair means, he/she shall be liable to such punishment as the University may determine and impose on him/her.

[उपर्युक्त निर्देश हिन्दी में अन्तिम आवरण-पृष्ठ पर दिये गए हैं] [No. of Printed Pages : 32+2

No. of Questions/प्रश्नों की संख्या : 150

Time/समय : 2 Hours/घण्टे **Full Marks/पूर्णांक :** 450

Note : (1) Attempt as many questions as you can. Each question carries **3** marks. **One** mark will be deducted for each incorrect answer. Zero mark will be awarded for each unattempted question.

अधिकाधिक प्रश्नों को हल करने का प्रयत्न करें। प्रत्येक प्रश्न **3** अंक का है। प्रत्येक गलत उत्तर के लिए एक अंक काटा जाएगा। प्रत्येक अनुत्तरित प्रश्न का प्राप्तांक शून्य होगा।

(2) If more than one alternative answers seem to be approximate to the correct answer, choose the closest one.

यदि एकाधिक वैकल्पिक उत्तर सही उत्तर के निकट प्रतीत हों, तो निकटतम सही उत्तर दें।

1. In a vectored interrupt

(1) the branch address is assigned to a fixed location in memory

(2) the interrupting source supplies the branch information to the processor through an interrupt vector

(3) the branch address is obtained from a register in the processor

(4) branch address is assigned to variable location in memory

2. If memory access takes 20 ns with cache and 110 ns without it, then the ratio (cache uses a 10 ns memory) is

(1) 93% (2) 90% (3) 88% (4) 87%

3. The addressing mode used in an instruction of the form ADD *X Y*, is

(1) absolute (2) indirect (3) index (4) relative

4. ——— register keeps track of the instructions stored in program stored in memory.

(1) AR (Address Register) (2) XR (Index Register)

(3) PC (Program Counter) (4) AC (Accumulator)

5. Data hazards occur when

(1) greater performance loss

(2) pipeline changes the order of read/write access to operands

(3) some functional unit is not fully pipelined

(4) machine size is limited

6. Suppose that a bus has 16 data lines and requires 4 cycles of 250 nsec each to transfer data. The bandwidth of this bus would be 2 megabytes/sec. If the cycle time of the bus was reduced to 125 nsec and the number of cycles required for transfer stayed the same what would the bandwidth of the bus?

(1) 1 megabyte/sec (2) 4 megabytes/sec

(3) 8 megabytes/sec (4) 2 megabytes/sec

7. If n has the value 3, then the statement $a[++n]=n++$

(1) assigns 4 to $a[5]$ (2) assigns 4 to $a[3]$

(3) assigns 4 to $a[4]$ (4) produces unpredictable results

8. In signed-magnitude binary division, if the dividend is (11100)2 and divisor is (10011)2, then the result is

(1) (00100)2 (2) (10100)2 (3) (11001)2 (4) (01100)2

9. If the main memory is of 8 K bytes and the cache memory is of 2 K words. It uses associative mapping. Then each word of cache memory shall be

(1) 11 bits (2) 21 bits (3) 16 bits (4) 20 bits

10. PSW is saved in stack when there is a

(1) interrupt recognized (2) execution of RST instruction

(3) execution of CALL instruction (4) All of these

11. The multiplicand register and multiplier register of a hardware circuit implementing booth's algorithm have (11101) and (1100). The result shall be

(1) (812)10 (2) (−12)10 (3) (12)10 (4) (−812)10

12. 'Aging registers' are

(1) counters which indicate how long ago their associated pages have been referenced

(2) registers which keep track of when the program was last accessed

(3) counters to keep track of last accessed instruction

(4) counters to keep track of the latest data structures referred

13. An interface that provides a method for transferring binary information between internal storage and external devices is called

(1) I/O interface (2) input interface

(3) output interface (4) I/O bus

14. Status bit is also called

(1) binary bit (2) flag bit

(3) signed bit (4) unsigned bit

15. A device/circuit that goes through a predefined sequence of states upon the application of input pulses is called

(1) register (2) flip-flop (3) transistor (4) counter

16. A program counter contains a number 825 and address part of the instruction contains the number 24. The effective address in the relative address mode, when an instruction is read from the memory is

(1) 849 (2) 850 (3) 801 (4) 802

17. Which of the following is a database administrator's function?

(1) Database design (2) Backing up the database

(3) Performance monitoring (4) All of the above

18. Which of the following is not a logical database structure?

(1) Tree (2) Relational (3) Network (4) Chain

19. Primitive operations common to all record management systems include

(1) print (2) sort (3) look-up (4) All of the above

20. What is the language used by most of the DBMSs for helping their users to access data?

(1) High-level language (2) Query language

(3) SQL (4) 4GL

21. A locked file can be

(1) accessed by only one user

(2) modified by users with the correct password

(3) is used to hide sensitive information

(4) Both (2) and (3)

22. In SQL, which command is used to make permanent changes made by statements issue since the beginning of a transaction?

(1) ZIP (2) PACK (3) COMMIT (4) SAVE

23. Which two files are used during operation of the DBMS?

(1) Query language and utilities

(2) Data manipulation language and query language

(3) Data dictionary and transaction log

(4) Data dictionary and query language

24. Which one of the following statements about normal forms is FALSE?

(1) BCNF is stricter than 3 NF

(2) Lossless, dependency-preserving decomposition into 3 NF is always possible

(3) Lossless, dependency—preserving decomposition into BCNF is always possible

(4) Any relation with two attributes is BCNF

25. Which is a bottom-up approach to database design that design by examining the relationship between attributes?

(1) Functional dependency
(2) Database modelling
(3) Normalization
(4) Decomposition

26. Which forms are based on the concept of functional dependency?

(1) 1NF (2) 2NF (3) 3NF (4) 4NF

27. Empdt (empcode, name, street, city, state, pincode)

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, empdt 1 is a relation in

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

28. Which of the following indicates the maximum number of entities that can be involved in a relationship?

(1) Minimum cardinality
(2) Maximum cardinality
(3) ERD
(4) Greater Entity Count (GEC)

29. Which type of entity cannot exist in the database unless another type of entity also exists in the database, but does not require that the identifier of that other entity be included as part of its own identifier?

(1) Weak entity
(2) Strong entity
(3) ID-dependent entity
(4) ID-independent entity

30. Which type of entity represents an actual occurrence of an associated generalized entity?

(1) Supertype entity
(2) Subtype entity
(3) Archetype entity
(4) Instance entity

31. Which of the following is object-oriented development life cycle?

(1) Analysis, design and implementation steps in the given order and using multiple iterations

(2) Analysis, design and implementation steps in the given order and going through the steps no more than one time

(3) Analysis, design and implementation steps in any order and using multiple iterations

(4) Analysis, design and implementation steps in any order and going through the steps no more than one time

32. Which of the following is Aggregation?

(1) Expresses a part-of relationship and is a stronger form of an association relationship

(2) Expresses a part-of relationship and is a weaker form of an association relationship

(3) Expresses an is-a relationship and is a stronger form of an association relationship

(4) Expresses an is-a relationship and is a weaker form of an association relationship

33. Which of the following is not a method to preserve the security and integrity of information?

(1) Antivirus software
(2) Firewall
(3) Phishing
(4) Disk Encryption

34. Which of the following addresses is most commonly used loopback address?

(1) 0.0.0.1
(2) 127.1.1.1
(3) 127.0.0.1
(4) 255.255.255.255

35. What is Extranet?

(1) An extra fast computer network
(2) The intranet of two cooperating organisations interconnected via a secure leased line
(3) An extra network used by an organization for higher reliability
(4) An extra connection provided to cooperating organization

36. Debug is a term denoting

(1) error correction processes
(2) writing of instructions in developing a new program
(3) fault detection in equipment
(4) determining useful life

37. One megabyte equals approximately

(1) 1000 bits
(2) 1000 bytes
(3) 1 million bytes
(4) 1 million bits

38. ——— is collection of Web pages and ——— is the very first page that we see on opening of a Website.

(1) Home-page, web-page
(2) Website, home-page
(3) Web-page, home-page
(4) Web-page, website

39. A honey pot is an example of what type of software?

(1) Encryption
(2) Security-auditing
(3) Virus
(4) Intrusion-detection

40. The basic concepts of ethics in information society is/are

(1) responsibility
(2) accountability
(3) liability
(4) All of the above

41. Mechanism to protect private networks from outside attack is

(1) firewall
(2) antivirus
(3) digital signature
(4) formating

42. Which infrastructure includes application servers, data servers, and clients?

(1) Client/server
(2) Thin client
(3) 2-tier infrastructure
(4) 3-tier infrastructure

43. All of the following are examples of real security and privacy risks, *except*

(1) hackers (2) spam (3) viruses (4) identity theft

44. What is a person called when they try to hurt a group of people with the use of a computer?

(1) White hat intruder
(2) Cracker
(3) Social engineer
(4) Cyber terrorist

45. In the decimal numbering system, what is the MSD?

(1) The middle digit of a stream of numbers
(2) The digit to the right of the decimal point
(3) The last digit on the right
(4) The digit with the most weight

46. What is a digital-to-analog converter?

(1) It takes the digital information from an audio CD and converts it to a usable form
(2) It allows the use of cheaper analog techniques, which are always simpler
(3) It stores digital data on a hard drive
(4) It converts direct current to alternating current

47. A full subtracter circuit requires

(1) two inputs and two outputs
(2) two inputs and three outputs
(3) three inputs and one output
(4) three inputs and two outputs

48. How many address bits are needed to select all memory locations in the 2118 16 K × 1 RAM?

(1) 8 (2) 10 (3) 14 (4) 16

49. A flip-flop has

(1) one stable state
(2) no stable state
(3) two stable states
(4) four stable states

50. Determine the values of A, B, C and D that make the sum term $\overline{A} + B + \overline{C} + D$ equal to zero

(1) $A = 1, B = 0, C = 0, D = 0$
(2) $A = 1, B = 0, C = 1, D = 0$
(3) $A = 0, B = 1, C = 0, D = 0$
(4) $A = 1, B = 0, C - 1, D = 1$

51. One of De Morgan's theorems states that $\overline{X + Y} = \overline{XY}$, Simply stated, this means that logically there is no difference between

(1) a NOR and an AND gate with inverted inputs
(2) a NAND and an OR gate with inverted inputs
(3) an AND and a NOR gate with inverted inputs
(4) a NOR and a NAND gate with inverted inputs

52. One positive pulse with $t_w = 75\,\mu s$ is applied to one of the inputs of an exclusive-OR circuit. A second positive pulse with $t_w = 15\,\mu s$ is applied to the other input beginning 20 μs after the leading edge of the first pulse. Which statement describes the output in relation to the inputs?

(1) The exclusive-OR output is a 20 μs pulse followed by a 40 μs pulse, with a separation of 15 μs between the pulses
(2) The exclusive-OR output is a 20 μs pulse followed by a 15 μs pulse, with a separation of 40 μs between the pulses
(3) The exclusive-OR output is a 15 μs pulse followed by a 40 μs pulse
(4) The exclusive-OR output is a 20 μs pulse followed by a 15 μs pulse, followed by a 40 μs pulse

53. On the fifth clock pulse, a 4-bit Johnson sequence is $Q_0 = 0, Q_1 = 1, Q_2 = 1$ and $Q_3 = 1$. On the sixth clock pulse, the sequence is

(1) $Q_0 = 1, Q_1 = 0, Q_2 = 0, Q_3 = 0$ (2) $Q_0 = 1, Q_1 = 1, Q_2 = 1, Q_3 = 0$

(3) $Q_0 = 0, Q_1 = 0, Q_2 = 1, Q_3 = 1$ (4) $Q_0 = 0, Q_1 = 0, Q_2 = 0, Q_3 = 1$

54. A bidirectional 4-bit shift register is storing the nibble 1101. Its RIGHT/$\overline{\text{LEFT}}$ input is HIGH. The nibble 1011 is waiting to be entered on the serial data-input line. After three clock pulses, the shift register is storing

(1) 1101 (2) 0111 (3) 0001 (4) 1110

55. The check sum method of testing a ROM

(1) indicates if the data in more than one memory location is incorrect

(2) provides a means for locating and correcting data errors in specific memory locations

(3) allows data errors to be pinpointed to a specific memory location

(4) simply indicates that the contents of the ROM are incorrect

56. Convert the binary number $1001{\cdot}0010_2$ to decimal

(1) 90·125 (2) 9·125 (3) 125 (4) 12·5

57. A typical PC uses a 20-bit address code, how much memory can the CPU address?

(1) 20 MB (2) 10 MB (3) 1 MB (4) 580 MB

58. Convert $59{\cdot}72_{10}$ to BCD

(1) 111011 (2) 01011001·01110010

(3) 1110·11 (4) 0101100101110010

59. Solving $-11+(-2)$ will yield which two's-complement answer?

(1) 1110 1101 (2) 1111 1001 (3) 1111 0011 (4) 1110 1001

60. Which of the following combinations cannot be combined into K-map groups?

(1) Corners in the same row (2) Corners in the same column

(3) Diagonal corners (4) Overlapping combinations

61. Which statement BEST describes the operation of a negative-edge-triggered *D* flip-flop?

(1) The logic level at the *D* input is transferred to *Q* on *NGT* of *CLK*

(2) The *Q* output is ALWAYS identical to the *CLK* input if the *D* input is HIGH

(3) The *Q* output is ALWAYS identical to the *D* input when *CLK* = *PGT*

(4) The *Q* output is ALWAYS identical to the *D* input

62. How is a *J-K* flip-flop made to toggle?

(1) $J=0, K=0$ (2) $J=1, K=0$

(3) $J=0, K=1$ (4) $J=1, K=1$

63. Using four cascaded counters with a total of 16 bits, how many States must be deleted to achieve a modulus of 50000?

(1) 50000 (2) 65536 (3) 25536 (4) 15536

64. A basic multiplexer principle can be demonstrated through the use of a

(1) single-pole relay (2) DPDT switch

(3) rotary switch (4) linear stepper

65. What control signals may be necessary to operate a 1-line-to-16 line decoder?

(1) Flasher circuit control signal

(2) A LOW on all gate enable inputs

(3) Input from a hexadecimal counter

(4) A HIGH on all gate enable circuits

66. Which one of the following is not True?

(1) Kernel is the program that constitutes the central core of the operating system

(2) Kernel is the first part of operating system to load into memory during booting

(3) Kernel is made of various modules which cannot be loaded in running operating system

(4) Kernel remains in the memory during the entire computer session

67. Which facility dynamically adds probes to a running system, both in user processes and in the kernel?

(1) DTrace (2) DLocate (3) DMap (4) DAdd

68. A process can be terminated due to

(1) normal exit (2) fatal error

(3) killed by another process (4) all of the mentioned

69. A process stack does not contain

(1) function parameters (2) local variables

(3) return addresses (4) PID of child process

70. A bootstrap is

(1) a memory device

(2) a device to support the computer

(3) a small initialisation program to start up a computer

(4) an error correction technique

71. Time quantum is defined in

(1) shortest job scheduling algorithm

(2) round-robin scheduling algorithm

(3) priority scheduling algorithm

(4) multilevel queue scheduling algorithm

72. A situation where several processes access and manipulate the same data concurrently and the outcome of the execution depends on the particular order in which access takes place is called

(1) data consistency

(2) race condition

(3) aging

(4) starvation

73. The segment of code in which the process may change common variables update tables, write into files is known as

(1) program

(2) critical section

(3) non-critical section

(4) synchronizing

74. Which of the following conditions is required for deadlock to be possible?

(1) Mutual exclusion

(2) A process may hold allocated resources while awaiting assignment of other resources

(3) No resource can be forcibly removed from a process holding it

(4) All of the mentioned

75. When a program tries to access a page that is mapped in address space but not loaded in physical memory, then

(1) segmentation fault occurs

(2) fatal error occurs

(3) page fault occurs

(4) no error occurs

76. A process is thrashing if

(1) it is spending more time paging than executing

(2) it is spending less time paging than executing

(3) page fault occurs

(4) swapping cannot take place

77. The depth of a complete binary tree is given by

(1) $Dn = n \log 2n$

(2) $Dn = n \log 2n + 1$

(3) $Dn = \log 2n$

(4) $Dn = \log 2n + 1$

78. A binary tree whose every node has either zero or two children is called

(1) complete binary tree

(2) binary search tree

(3) extended binary tree

(4) data structure

79. When representing any algebraic expression E which uses only binary operations in a 2_tree, is

(1) the variable in E will appear as external nodes and operations in internal nodes

(2) the operations in E will appear as external nodes and variables in internal nodes

(3) the variables and operations in E will appear only in internal nodes

(4) the variables and operations in E will appear only in external nodes

80. A binary tree can easily be converted into q 2_tree is

(1) by replacing each empty subtree by a new internal node

(2) by inserting an internal nodes for non_empty node

(3) by inserting an external nodes for non_empty node

(4) by replacing each empty subtree by a new external node

81. When converting binary tree into extended binary tree, all the original nodes in binary tree are

(1) internal nodes on extended tree

(2) external nodes on extended tree

(3) vanished on extended tree

(4) live nodes

82. Which of the following sorting algorithms is of divide_ and _conquer type?

(1) Bubble sort (2) Insertion sort

(3) Quick sort (4) Radix sort

83. In a graph if $e = (u, v)$ means

(1) u is adjacent to v but v is not adjacent to u

(2) e begins at u and ends at v

(3) u is node and v is an edge

(4) both u and v are edges

84. If every node u in G is adjacent to every other node v in G, A graph is said to be

(1) isolated

(2) complete

(3) finite

(4) strongly connected

85. Two main measures for the efficiency of an algorithm are

(1) processor and memory

(2) complexity and capacity

(3) time and space

(4) data and space

86. Which of the following cases does not exist in complexity theory?

(1) Best case

(2) Worst case

(3) Average case

(4) Null case

87. The worst case occur in linear search algorithm when an

(1) item is somewhere in the middle of the array

(2) item is not in the array at all

(3) item is the last element in the array

(4) item is the last element in the array or is not there at all

88. The complexity of merge sort algorithm is

(1) $O(n)$ (2) $O(\log n)$ (3) $O(n2)$ (4) $O(n \log n)$

89. Linked lists are best suited

(1) for relatively permanent collections of data

(2) for the size of the structure and the data in the structure are constantly changing

(3) data structure

(4) collections

90. The memory address of fifth element of an array can be calculated by the formula

(1) LOC (Array[5] = Base(Array) + w(5_lower boun4., where w is the number of words per memory cell for the array

(2) LOC(Array[5]) = Base(Array[4]) + (5_lower boun4., where w is the number of words per memory cell for the array

(3) LOC(Array[5]) = Basc(Array[4]) + (5_Upper boun4., where w is the number of words per memory cell for the array

(4) Base(array[5]) + (5_lower boun4., where w is the number of words per memory cell for the array

91. A variable P is called pointer if

(1) P contains the address of an element in DATA

(2) P points to the address of first element in DATA

(3) P can store only memory addresses

(4) P contains the DATA and the address of DATA

92. When in-order traversing a tree resulted E A C K F H D B G; the pre-order traversal would return

(1) FAEKCDBHG (2) FAEKCDHGB

(3) EAFKHDCBG (4) FEAKDCHBG

93. Exit loop is applicable to ——— level of loops.

(1) 1 (2) 3 (3) 2 (4) all nested loops

94. A doubly linked list has ——— pointers with each node.

(1) 0 (2) 1 (3) 2 (4) 3

95. In a stack the command to access *nth* element from the top of the stack S will be

(1) S [Top_n] (2) S [Top + n]

(3) S [top_n_1] (4) S [top_1]

96. The result of evaluating prefix expression */b+_dacd, where a = 3, b = 6, c = 1, d = 5 is

(1) 0 (2) 5 (3) 10 (4) 15

97. A ——— is table of keys and addresses in which a unique external storage address is assigned to each key.

(1) hash table (2) address table

(3) mapping table (4) cross reference table

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

(1) finding the IP address from the DNS

(2) finding the IP address of the default gateway

(3) finding the IP address that corresponds to a MAC address

(4) finding the MAC address that corresponds to an IP address

99. ——— causes immediate, unconditional exit.

(1) Goto (2) Return(x) (3) Write ( ) (4) Exit loop

100. Let G be a simple undirected planar graph on 10 vertices with 15 edges. If G is a connected graph, then the number of bounded faces in any embedding of G on the plane is equal to

(1) 3 (2) 4 (3) 5 (4) 6

101. Let P be a quick sort program to sort numbers in ascending order. Let t_1 and t_2 be the time taken by the program for the inputs [1 2 3 4 5] and [5 4 3 2 1] respectively. Which of the following holds?

(1) $t_1 = t_2$ (2) $t_1 > t_2$

(3) $t_1 < t_2$ (4) $t_1 = t_2 + 5 \log 5$

102. Sometimes the object module produced by a compiler includes information (from the symbol table) mapping all source program names to their addresses. The most likely purpose of this information is

(1) for use as input to a debugging aid

(2) to increase the run-time efficiency of the program

(3) for the reduction of the symbol table space needed by the compiler

(4) to tell the loader where each variable belongs

103. A critical region is

(1) one which is enclosed by a pair of P and V operations an semaphores

(2) a program segment that often causes unexpected system crashes

(3) a program segment that has not been proved bug-free

(4) a program segment where shared resources are accessed

104. Two computers communicate with each other by sending data packets across a local area network. The size of these packets is 1000 bytes. The network has the capacity to carry 1000 packets per second. The CPU time required to execute the network protocol to send one packet is 10 milliseconds. The maximum rate at which one computer can send data to another is approximately

(1) 10000 bytes/second

(2) 25000 bytes/second

(3) 100000 bytes/second

(4) 1000000 bytes second

105. In a 16-bit computer, 10 digits are allotted for mantissa (including one sign digit) and 6 digits are allotted for exponent (including one sign digit) write the value of the function given below, in normalized form when $n = 5$

$$\frac{1}{2} + \frac{1}{2^2} + \frac{1}{2^3} + \cdots\cdots + \frac{1}{2^n}$$

(1) 0·1111 E 11

(2) 0·00001 E 10

(3) + 0·111110000 E + 00

(4) + 0·111111 E + 10

106. Which of the following assertions is false about the Internet Protocol (IP)?

(1) It is possible for a computer to have multiple IP addresses

(2) IP packets from the same source to the same destination can take different routes in the network

(3) IP ensures that a packet is forwarded if it is unable to reach its destination within a given number of hopes

(4) The packet source cannot set the route of an outgoing packets; the route is determined only by the routing tables in the routers on the way

107. A table for values of x and y is given below

x	93·0	96·2	100·0	104·2	108·7
y	11·38	12·80	14·70	17·07	19·91

Using Lagrange's formula the value of x when $y = 13 \cdot 5$ will be

(1) 98·14 (2) 97·66 (3) 96·99 4) 96·43

108. In the solution of ordinary differential equations in case $\frac{dy}{dx}$ is a function of alone, then which pair of methods becomes identical?

(1) Simpson's rule and trapezoidal rule

(2) Trapezoidal rule and Euler's method

(3) Simpson's rule and Runge-Kutta method

(4) Euler's method and Runge-Kutta method

109. The results obtained by using Simpson's rule will be greater than those obtained by using the trapezoidal rule

(1) in all cases

(2) provided the intervals are small

(3) provided the boundary is concave towards the base line

(4) provided the boundary is convex towards the base line

110. If $f(x_i) f(x_{i+1}) < 0$, then

(1) there must be a root of $f(x)$ between x_i and x_{i+1}

(2) there need not be a root if $f(x)$ between x_i and x_{i+1}

(3) the fourth derivative of $f(x)$ with respect to x vanishes at x_i

(4) the fourth derivative of $f(x)$ with respect to x vanishes at x_{i+1}

111. The probability that a single bit will be in error on a typical public telephone line using 4800 bps modem is 10 to the power -3. If no error detection mechanism is used, the residual error rate for a communication line using 9-bit frames is approximately equal to

(1) 0·003 (2) 0·009 (3) 0·991 (4) 0·999

112. Which of the following scheduling algorithms is non-preemptive?

(1) Round robin

(2) First-in first-out

(3) Multilevel queue scheduling

(4) Multilevel queue scheduling with feedback

113. The 'C' language is

(1) a context free language

(2) a context sensitive language

(3) a regular language

(4) parable fully only by a Turing machine

114. In a *J-K* flip-flop, toggle means

(1) set $Q = 1$ and $Q = 0$

(2) set $Q = 0$ and $Q = 1$

(3) change the output to the opposite state

(4) no change in output

115. Which of the following is NOT true about thrashing?

(1) Effects of thrashing can be limited by a local replacement algorithm

(2) When thrashing occurs it implies that the degree of multiprogramming is high

(3) Effective access time increases only for the thrashing processes

(4) The processes will be in the queue for the paging device cost of the time

116. A pipeline processing with 4 segments and 100 sub-operations take 20 ns to process a sub-operation in each segment. The speed up ratio of pipeline processing to sequential processing is

(1) 3·80 (2) 3·88 (3) 3·90 (4) 3·85

117. What will be output of following program?

```
main( )
  {
    int i = 5;
    printf("%d%d%d%d%d%d",i++,i--,++i,--i,i);
  }
```

(1) 45545 (2) 54545 (3) 44555 (4) 54544

118. In 'C' programming, if an array is used as a function argument, the array is passed

(1) by value

(2) by reference

(3) none of these as array cannot be used a function argument

(4) call by name

119. The programming language feature that allows the same operation to be carried out differently depending on the object is

(1) polymorphism (2) inheritance

(3) allocation (4) mangling

120. Reserving memory during program execution is known as reserving it

(1) dynamically (2) statically (3) functionally (4) powerfully

121. The trapezoidal rule for integration gives exact result when the integrand is a polynomial of degree

(1) 0 but not 1 (2) 1 but not 0

(3) 0 or 1 (4) 2

122. In 'C', masking operation can be performed through

(1) AND bitwise operator (2) XOR bitwise operator

(3) OR bitwise operator (4) shift operator

123. In databases, locking level is also called as

(1) gramulority (2) S lock (3) X lock (4) dead lock

124. The in order and pre-order traversal of a binary tree are d b e a f c g and a b d e c f g, respectively. The post-order traversal of the binary tree is

(1) debfgca (2) edbgfca (3) edbfgca (4) defgbca

125. Which of the following is not an scripting language?

(1) HTML (2) XML (3) Postscript (4) Javascript

126. An algorithm is made up of two independent time complexities $f(n)$ and $g(n)$. Then the complexities of the algorithm is in the order of

(1) $f(n) \times g(n)$ (2) $\max(f(n), g(n))$

(3) $\min(f(n), g(n))$ (4) $f(n) + g(n)$

127. The Protocol Data Unit (PDU) for the application layer in the Internet stack is

(1) segment (2) datagram (3) message (4) frame

128. The hexadecimal representation of 6578 is

(1) 1AF (2) D78 (3) D71 (4) 32F

129. Where does the swap space reside?

(1) RAM (2) Disk (3) ROM (4) On-chip cache

130. Consider a machine with 64 MB physical memory and a 32-bit virtual address space. If the page size is 4 KB, what is the approximate size of the page table?

(1) 16 MB (2) 8 MB (3) 2 MB (4) 24 MB

131. An Abstract Data Type (ADT) is

(1) same as an abstract class

(2) a data type that cannot be instantiated

(3) a data type for which only the operations defined on it can be used, but none else

(4) All of the above

132. A common property of logic programming languages and functional languages is

(1) both are procedural language (2) both are based on λ-calculus

(3) both are declarative (4) All of the above

133. Which one of the following is a a valid sequence of elements in an array representing 2-ary max heap?

(1) 1, 3, 5, 6, 8, 9 (2) 9, 6, 3, 1, 8, 5

(3) 9, 3, 6, 8, 5, 1 (4) 9, 5, 6, 8, 3, 1

134. Which of the following would indicate that the motherboard battery has failed?

(1) Operating system passwords are lost

(2) Files on the hard disk are lost and corrupted

(3) Hardware settings, including virtual memory reverts to default values

(4) Hardware settings, including the current date and time reverts to default values

135. Which American computer company is called Big Blue?

(1) IBM (2) Compaq Corp

(3) Microsoft (4) Tandy Svenson

136. Which of the following is NOT a function of the control unit?

(1) Read instructions (2) Interpret instruction

(3) Direct operation (4) Execute instructions

137. The technology used to read pencil or pen marks on a multiple choice answer sheet is

(1) OCR (2) OMR (3) POS (4) MICR

138. An airline reservation system is an example of

(1) batch processing (2) real time processing

(3) interactive processing (4) distributed processing

139. Persons at a downtown café realized that they were able to access the Internet on their laptop computers. The café could be considered as a

(1) metropolitan area network (2) hotspot

(3) local area network (4) satellite

140. Which of the following pair of items is used to create webpage?

(1) Homepage and website (2) HTML and authoring tool

(3) ISP and web browser (4) Internet and URL

141. Software piracy involves

(1) the authorized copying, use or selling of software that is copyrighted

(2) the authorized copying, use or selling of software that is not copyrighted

(3) the unauthorized copying, use or selling of software that is copyrighted

(4) the unauthorized copying, use or selling of software that is not copyrighted

142. Which of the following is not the characteristic of software?

(1) Software does not wear out (2) Software is flexible

(3) Software is not manufactured (4) Software is always correct

143. In object-oriented design of software, objects have

(1) attributes and names only

(2) operations and names only

(3) attributes, name and operations

(4) attributes only

144. A script is a

(1) program or sequence of instructions that is interpreted or carried out by processor directly

(2) program or sequence of instruction that is interpreted or carried out by another program

(3) program or sequence of instruction that is interpreted or carried out by web server only

(4) All of the above

145. PHP is a widely used ——— scripting language that is especially suited for web development and can be embedded into HTML.

(1) open source general purpose (2) proprietary general purpose

(3) open source special purpose (4) proprietary special purpose

146. A web cookie is a small piece of data

(1) sent from a website and stored in user's web browser while a user is browsing a website

(2) sent from user and stored in the server while a user is browsing a website

(3) sent from root server to all servers

(4) sent from user to root servers

147. An alternative of Javascript on Windows platform is

(1) VB Script (2) ASP.NET (3) JSP (4) HTML

148. When Internet data leaves your campus, it normally goes to a(n) ——— before moving toward its destination.

(1) Internet backbone
(2) network access point
(3) base station
(4) communication system

149. Black box testing sometimes called

(1) data flow testing
(2) loop testing
(3) behavioural testing
(4) graph based testing

150. The goal of structured programming is to

(1) have well indented programs
(2) be able to infer the flow of control from the compiled code
(3) be able to infer the flow of control from the program text
(4) avoid the use of GOTO statements

***

अभ्यर्थियों के लिए निर्देश

(इस पुस्तिका के प्रथम आवरण-पृष्ठ पर तथा उत्तर-पत्र के दोनों पृष्ठों पर केवल नीली या काली बाल-प्वाइंट पेन से ही लिखें)

1. प्रश्न पुस्तिका मिलने के 10 मिनट के अन्दर ही देख लें कि प्रश्नपत्र में सभी पृष्ठ मौजूद हैं और कोई प्रश्न छूटा नहीं है। पुस्तिका दोषयुक्त पाये जाने पर इसकी सूचना तत्काल कक्ष-निरीक्षक को देकर सम्पूर्ण प्रश्नपत्र की दूसरी पुस्तिका प्राप्त कर लें।

2. परीक्षा भवन में *लिफाफा रहित प्रवेश-पत्र के अतिरिक्त,* लिखा या सादा कोई भी खुला कागज साथ में न लायें।

3. उत्तर-पत्र अलग से दिया गया है। ***इसे न तो मोड़ें और न ही विकृत करें। दूसरा उत्तर-पत्र नहीं दिया जायेगा, केवल उत्तर-पत्र का ही मूल्यांकन किया जायेगा।***

4. अपना *अनुक्रमांक तथा उत्तर-पत्र का क्रमांक प्रथम आवरण-पृष्ठ पर पेन* से निर्धारित स्थान पर लिखें।

5. उत्तर-पत्र के प्रथम पृष्ठ पर पेन से अपना अनुक्रमांक निर्धारित स्थान पर लिखें तथा नीचे दिये वृत्तों को गाढ़ा कर दें। जहाँ-जहाँ आवश्यक हो वहाँ प्रश्न-पुस्तिका का क्रमांक तथा सेट का नम्बर उचित स्थानों पर लिखें।

6. ओ० एम० आर० पत्र पर अनुक्रमांक संख्या, प्रश्न-पुस्तिका संख्या व सेट संख्या (यदि कोई हो) तथा प्रश्न-पुस्तिका पर अनुक्रमांक सं० और ओ० एम० आर० पत्र सं० की प्रविष्टियों में उपरिलेखन की अनुमति नहीं है।

7. उपर्युक्त प्रविष्टियों में कोई भी परिवर्तन कक्ष निरीक्षक द्वारा प्रमाणित होना चाहिये अन्यथा यह एक अनुचित साधन का प्रयोग माना जायेगा।

8. प्रश्न-पुस्तिका में प्रत्येक प्रश्न के चार वैकल्पिक उत्तर दिये गये हैं। ***प्रत्येक प्रश्न के वैकल्पिक उत्तर के लिये आपको उत्तर-पत्र की सम्बन्धित पंक्ति के सामने दिये गये वृत्त को उत्तर-पत्र के प्रथम पृष्ठ पर दिये गये निर्देशों के अनुसार पेन से गाढ़ा करना है।***

9. प्रत्येक प्रश्न के उत्तर के लिये केवल एक ही वृत्त को गाढ़ा करें। एक से अधिक वृत्तों को गाढ़ा करने पर अथवा एक वृत्त को अपूर्ण भरने पर वह उत्तर गलत माना जायेगा।

10. ध्यान दें कि एक बार स्याही द्वारा अंकित उत्तर बदला नहीं जा सकता है। यदि आप किसी प्रश्न का उत्तर ***नहीं देना चाहते हैं*** तो सम्बन्धित पंक्ति के सामने दिये गये सभी वृत्तों को खाली छोड़ दें। ऐसे प्रश्नों पर शून्य अंक दिये जायेंगे।

11. रफ़ कार्य के लिये प्रश्न-पुस्तिका के मुखपृष्ठ के अन्दर वाले पृष्ठ तथा अंतिम पृष्ठ का प्रयोग करें।

12. परीक्षा के उपरान्त केवल ***ओ०एम०आर० उत्तर-पत्र*** परीक्षा भवन में जमा कर दें।

13. परीक्षा समाप्त होने से पहले परीक्षा भवन से बाहर जाने की अनुमति नहीं होगी।

14. यदि कोई अभ्यर्थी परीक्षा में अनुचित साधनों का प्रयोग करता है, तो वह विश्वविद्यालय द्वारा निर्धारित दंड का/की, भागी होगा/होगी।