

11P/208/30

382

Set No: (1)

Question Booklet No.....

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

Roll No.

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Roll No.

(Write the digits in words).....

Serial No. of 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 Roll No. and OMR sheet No. on the Question Booklet.
7. Any changes 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 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 marks).
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 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 निर्देशा हिन्दी में अन्तिम आवरण-पृष्ठ पर दिये गए हैं ]

Total No. of Printed Pages : 30

11P/208/30

No. of Questions : 150

प्रश्नों की संख्या : 150

Time : 2 hours ]

[ Full Marks : 450

समय : 2 घण्टे ]

[ पूर्णांक : 450

Note : (1) Attempt as many questions as you can. Each question carries 3 (Three ) 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 (तीन) अंकों का है। प्रत्येक गलत उत्तर के लिए एक अंक काटा जायेगा। 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. Let  $\left\{0, \frac{1}{2}, 1\right\}$  be three distinct points on  $[0, 1]$ . Let  $p$  be the unique interpolating polynomial of suitable degree on  $[0, 1]$  such that  $P(0) = 0$ ,  $P\left(\frac{1}{2}\right) = 0$ ,  $P(1) = 1$  then  $P\left(\frac{1}{4}\right)$  is equal to

(1)  $-1/8$       (2)  $-1/2$       (3)  $2/5$       (4)  $2/3$

2. The quadrature formula

$$\int_{-1}^1 f(x) dx = \frac{1}{3} [f(-1) + 4f(0) + f(1)]$$

with step length  $h = 1.0$  is exact for polynomials of degree less than or equal to

(1) Two      (2) Three      (3) Four      (4) Five

3. Let  $P$  be the unique polynomial of suitable degree such that  $P(1) = 2$ ,  $P'(1) = 3$ ,  $P(2) = 6$ ,  $P'(2) = 7$ ,  $P''(2) = 8$ , then  $P(0)$  is
- (1)  $-7$                       (2)  $0$                       (3)  $16$                       (4)  $-8$
4. Trapezoidal rule for evaluation of  $\int_a^b f(x) dx$  requires the interval  $(a, b)$  to be divided into
- (1) in sub-intervals of equal width  
 (2)  $(2n + 1)$  sub-intervals of equal width  
 (3) any number of sub-intervals of equal width  
 (4)  $4n$  sub-intervals of equal width
5. The equation  $x^3 - 3x + 4 = 0$  has only one real root. What is its first approximate value as obtained by the method of false position in  $(-3, -2)$ ?
- (1)  $-2.125$                       (2)  $2.125$                       (3)  $-2.812$                       (4)  $2.812$
6. When a number is rounded to  $n$  decimal digits, then the magnitude of the relative error cannot exceed
- (1)  $10^{-n}$                       (2)  $10^{-n+1}$                       (3)  $0.5 \times 10^{-n+1}$                       (4)  $10^{-n+2}$
7. If the equation  $x^3 - 3x + k = 0$  has all real roots, then
- (1)  $-2 < k < 2$                       (2)  $-1 < k < 1$   
 (3)  $0 < k < \infty$                       (4)  $-2 < k < 1$

8. The Gauss - Seidal method gives results faster when the pivotal elements are
- (1) Smaller than other coefficients
  - (2) Larger than other coefficients
  - (3) Equal to other coefficients
  - (4) Not equal to other coefficients
9. In group  $G = \{0, 1, 2, 3, 4, 5\}$  under addition modulo 6, a subgroup is
- (1)  $\{0, 2, 4\}$
  - (2)  $\{0, 1, 3\}$
  - (3)  $\{0, 3, 5\}$
  - (4)  $\{0, 4, 5\}$
10. The number of generators of an infinite cyclic group is
- (1) 1
  - (2) 2
  - (3) 3
  - (4) 4
11. In a group  $(G, *)$  if  $(a * b)^{-1} = a^{-1} * b^{-1}$  for all  $a, b \in G$ , then  $G$  is
- (1) abelian
  - (2) finite
  - (3) cyclic
  - (4) infinite
12.  $\neg(P \rightarrow Q)$  is equivalent to
- (1)  $P \wedge \neg Q$
  - (2)  $\neg P \wedge Q$
  - (3)  $\neg P \vee Q$
  - (4)  $P \vee Q$
13. Which of the following is/are tautology?
- (1)  $a \vee b \rightarrow b \wedge c$
  - (2)  $a \wedge b \rightarrow b \vee c$
  - (3)  $a \vee b \rightarrow (b \rightarrow c)$
  - (4)  $a \rightarrow b \rightarrow (b \rightarrow c)$
14. A complete graph with "n" vertices is
- (1) 2-chromatic
  - (2)  $\frac{n}{2}$  chromatic
  - (3)  $(n - 1)$  chromatic
  - (4)  $n$ -chromatic

15. A tree with “ $n$ ” nodes has

- (1)  $\frac{n}{2}$  edges                      (2)  $n$  edges  
 (3)  $n - 1$  edges                      (4)  $n + 1$  edges

16. The number of colours required to properly colour the vertices of every planar graph is

- (1) 2                      (2) 3                      (3) 4                      (4) 5

17. If  $R$  is an equivalence relation on a set  $A$ , then  $R^{-1}$  is

- (1) Reflexive                      (2) Symmetric  
 (3) Transitive                      (4) All of these

18. The maximum number of real roots of the equation  $x^{2n} - 1 = 0$  is

- (1) 2                      (2) 3                      (3)  $n$                       (4)  $2n$

19. If  $u = \frac{x+y}{x-y}$ , then  $\frac{\partial u}{\partial x} + \frac{\partial u}{\partial y}$  is

- (1)  $\frac{1}{x-y}$                       (2)  $\frac{2}{x-y}$                       (3)  $\frac{1}{(x-y)^2}$                       (4)  $\frac{2}{(x-y)^2}$

20. The value of  $\Delta \log x$  is

- (1)  $\log x$                       (2)  $\log(x + 9x)$   
 (3)  $x^2 + 2(9x)x$                       (4)  $\log\left(x + \frac{1}{x}\right)$

21. Critical section refers to code segment of

- (1) Program                      (2) Process  
 (3) Context switch                      (4) Memory

22. At a time, only one of cooperating processes should be executing in its critical section is known as
- (1) Context switch
  - (2) Bounded waiting
  - (3) Mutual exclusion
  - (4) Progress
23. The tool used to process synchronization is
- (1) Binary semaphores
  - (2) Mutual exclusion
  - (3) DMA
  - (4) Program
24. The running process could be suspended and transferred to
- (1) Ready Queue
  - (2) Running Queue
  - (3) Suspended Queue
  - (4) Request Queue
25. The average amount of work completed per unit time is known as
- (1) CPU utilization
  - (2) Response time
  - (3) System throughput
  - (4) Waiting time
26. Priority based algorithms suffer from
- (1) Starvation
  - (2) Deadlock
  - (3) Race condition
  - (4) All of the above
27. When a free partition is too small to accommodate any program, it is called
- (1) Internal Fragmentation
  - (2) External Fragmentation
  - (3) Paging
  - (4) Paging and Segmentation

28. The directory permits cycles is known as

- (1) Single level directory
- (2) Acyclic graph directory
- (3) General graph directory
- (4) Two level directory

29. Semaphore is used for

- (1) Synchronization
- (2) Deadlock avoidance
- (3) Box
- (4) Paging

30. Which is not a memory management scheme ?

- (1) Buddy system
- (2) Swapping
- (3) Monitors
- (4) Paging

31. If there are 32 segments, each of size 1 K byte, then the logical address should have

- (1) 13 bits
- (2) 14 bits
- (3) 15 bits
- (4) 16 bits

32. If the CPU scheduling policy is priority scheduling with preemption, the average waiting time will be

- (1) 19 ms
- (2) 7.6 ms
- (3) 6.8 ms
- (4) 21.7 ms

33. Thrashing
- (1) always occurs on large computers
  - (2) is a natural consequence of virtual memory systems
  - (3) can always be avoided by swapping
  - (4) can be caused by poor paging algorithms
34. A front end processor is usually used in
- (1) multi-programming
  - (2) virtual storage
  - (3) time sharing
  - (4) single user
35. The main advantage of interrupt concept is elimination of
- (1) spooling
  - (2) polling
  - (3) job scheduling
  - (4) blocking the currently running process
36. A technique which collects all deleted space onto free storage list is called
- (1) Static memory allocation
  - (2) Garbage collection
  - (3) Dynamic memory allocation
  - (4) Both (1) and (3)
37. Consider the linear arrays  $aaa(5 : 50)$ ,  $bbb(-5 : 10)$  and  $ccc(18)$ , then number of elements in each array is :
- (1) 46, 16, 18
  - (2) 46, 16, cannot be determined
  - (3) 45, 15, 18
  - (4) 46, 45, 15



38. Maximum number of children in a node in a B-Tree of order “ $m$ ” is

- (1)  $m$                       (2)  $m/2 - 1$       (3)  $m/2 + 1$       (4)  $m/2$

39. Which of the following is a collision resolution technique with open addressing in the context of hashing ?

- (1) Linear probing                      (2) Separate chaining  
(3) Folding                              (4) Mid-square method

40. Number of nodes with no children (right or left) in a full binary tree of depth 5 is

- (1) 16                      (2) 17                      (3) 15                      (4) 18

41. The node containing the minimum value in a binary search tree of integers must be

- (1) the root node  
(2) a leaf node  
(3) a node with an empty right child  
(4) a node with an empty left child

42. Which of the following sorting methods works in  $O(n \log n)$  time in the average case ?

- (1) Bubble sort                              (2) Selection sort  
(3) Quick sort                              (4) Insertion sort

43. Which of the following operations on linked lists becomes more efficient if lists are implemented as doubly connected ?

- (1) Accessing any arbitrary element
- (2) Traversing the list in left or right direction from any node
- (3) Concatenation of two lists
- (4) Accessing the middle element of a list

44. The array is known as

- (1) Serial access structure
- (2) Parallel access structure
- (3) Hybrid access structure
- (4) Random access structure

45. A buffer constitutes a

- (1) First-in-first out queue
- (2) Last-in-first queue
- (3) Random order access queue
- (4) Both (1) and (2)

46. Which of the following sorting algorithm has the best best-case time complexity ?

- (1) Simple selection sort
- (2) Quick sort
- (3) Merge sort
- (4) Insertion sort

47. What is the maximum number of nodes in a heap with 8 leaf nodes ?

- (1) 15
- (2) 16
- (3) 17
- (4) 31

48. How many distinct binary search tree can be formed which contains the integers 1, 2, 3 ?

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

49. Consider the recurrence relation

$$T(n) = 3T(n/2) \text{ if } n > 1 \text{ and}$$

$$T(1) = 1$$

If  $n = 2^m$  then which of the following is equal to  $T(n)$  ?

- (1)  $O(n \log n)$     (2)  $O(n)$               (3)  $O(n^2)$               (4)  $O(n^3)$

50. Which of the following types of expressions do not require precedence rules for evaluation ?

- (1) Fully parenthesized infix expression  
(2) Postfix expression  
(3) Partially parenthesized infix expression  
(4) More than one of the above.

51. How many cycles must be contained in a tree ?

- (1) 1                      (2) At least 1    (3) Zero                      (4) 2

52. To find an instance of a string of length  $p$ , in another string of length  $m$ , the Knuth - Morris - Pratt algorithm's time is at worst proportional to

- (1)  $m$                       (2)  $m + p$               (3)  $p$                       (4)  $m * p$

53. The  $n$ th node in a singly linked list is accessed via
- (1) the first  $n - 1$  nodes                      (2) 1 node-only the head  
(3) 1 node - only the tail                      (4) the first  $n + 1$  nodes
54. Which of the following is the best time for an algorithm ?
- (1)  $O(N)$                                               (2)  $O(\log N)$   
(3)  $O(1.5 \text{ to the power } N)$                       (4)  $O(N \text{ to the power } 2)$
55. Given 2 sorted lists of size  $m$  and  $n$  respectively. The number of comparisons needed in the worst case by merge sort will be
- (1)  $m * n$                                               (2)  $\text{Max}(m, n)$   
(3)  $\text{Min}(m, n)$                                       (4)  $m + n - 1$
56. A 2 MB PCM (Pulse Code Modulation) has
- (1) 32 channels  
(2) 30 voice channels and 1 signalling channel  
(3) 31 voice channels and 1 signalling channel  
(4) 32 channels out of which 30 voice channels, 1 signalling channel, and 1 synchronization channel
57. Time taken for 1 satellite hop in voice communication is
- (1) 1/2 second                                              (2) 1 seconds  
(3) 4 seconds                                              (4) 2 seconds
58. In OST, terminal emulation is done in
- (1) session layer                                              (2) application layer  
(3) presentation layer                                      (4) transport layer

59. Piggy backing is a technique for

- (1) Flow control
- (2) Sequence
- (3) Acknowledgement
- (4) Retransmission

60. Which of the following ISO level is more closely related to the physical communications facilities ?

- (1) Application
- (2) Session
- (3) Network
- (4) Data link

61. In a crossbar with 1000 crosspoints, how many statistically are in use at any time ?

- (1) 100
- (2) 250
- (3) 500
- (4) 1000

62. Which of the following uses an 8B/6T encoding scheme ?

- (1) 100 Base-TX
- (2) 100 Base-FX
- (3) 100 Base-T4
- (4) 100 Base-T1

63. Routers function in which layers ?

- (1) Physical and data link
- (2) Physical, data link and network
- (3) Data link and network
- (4) Network and transport

64. A noiseless 3 kHz channel transmits bits with binary level signals. What is the maximum data rate ?

- (1) 3 Kbps
- (2) 6 Kbps
- (3) 12 Kbps
- (4) 24 Kbps









82. Let  $(A2C)_{16} = (X)_8$ . Then  $X$  is given by

- (1) 7054      (2) 6054      (3) 5154      (4) 5054

83. If  $(292)_{10} = (204)_b$ , the possible base  $b$  is

- (1) 8      (2) 12      (3) 14      (4) 16

84. The minimum number of bits required to represent negative numbers in the range of  $-1$  to  $-11$  using 2's complement arithmetic is

- (1) 2      (2) 3      (3) 4      (4) 5

85. Subtracting the following binary numbers gives

$$10001.01 - 1111.11$$

- (1) 101.01      (2) 100.11      (3) 1.10      (4) 0.01

86. A synchronous sequential circuit can be described by

- (1) a state diagram only  
(2) a state table only  
(3) an ASM chart only  
(4) any one of the above

87. A finite state machine

- (1) is the same as a clocked sequential circuit  
(2) consists of combinational logic circuits only  
(3) consists of electrical motors  
(4) does not exist in practice.

88. A 4-bit presettable up-counter has present input 0101. The presetting operation takes place as soon as the counter becomes maximum. i.e. 1111. The modulus of this counter is

- (1) 5                      (2) 10                      (3) 11                      (4) 15

89. For the design of a combinational circuit with four outputs using only NAND gates, the number of K-maps required for the simplification process is

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

90.  $A + \bar{A}B + \bar{A}\bar{B}C + \bar{A}\bar{B}\bar{C}D + \dots =$

- (1)  $A + B + C + \dots$                       (2)  $\bar{A} + \bar{B} + \bar{C} + \bar{D}$   
 (3) 1                      (4) 0

91. Which of the following Boolean expression is incorrect ?

- (1)  $A + \bar{A}B = A + B$   
 (2)  $A + AB = B$   
 (3)  $(A + B)(A + C) = A + BC$   
 (4)  $(A + \bar{B})(A + B) = A$

92. The logic expression  $F = AB + \bar{B}C + AC$  is in

- (1) SOP form                      (2) POS form  
 (3) Standard SOP form                      (4) Standard POS form

93. The number of 1:16 demultiplexers required for designing a 4-output 4-variable combinational circuit is
- (1) 16                      (2) 8                      (3) 4                      (4) 1
94. The number of select lines  $m$ , required to select one out of  $n$  input lines is
- (1)  $m = \log_2 n$                       (2)  $m = \log n$   
(3) None                      (4)  $m = 2^n$
95. If memory access takes 20 ns with cache and 110 ns without it, then the hit ratio is
- (1) 93%                      (2) 90%                      (3) 87%                      (4) 88%
96. The sequence of events that happen during a typical fetch operation is
- (1) PC → MAR → Memory → MDR → IR  
(2) PC → Memory → MDR → IR  
(3) PC → Memory → IR  
(4) PC → MAR → Memory → IR
97. If SUB A,B means B - A, then SUB 4(R0), \* (R1) means ((X) means content of register or memory location X)
- (1) (((R1) + 5)) - (4 & (R0))  
(2) ((( R1) + 5)) - ((R0) + 4)  
(3) ((R1) + 5) - (4 \* (R0))  
(4) (( R1 + 4) - (R0 + 4))
98. FFFF will be the last memory location in a memory of size
- (1) 1 K                      (2) 16 K                      (3) 32 K                      (4) 64 K

99. The number of instructions needed to add ' $n$ ' numbers and store the result in memory using only one address instructions is
- (1)  $n$  (2)  $n + 1$   
(3)  $n - 1$  (4) independent of  $n$
100. Which of the following addressing modes permits relocation without any change what so ever in the code ?
- (1) Indirect addressing  
(2) Indexed addressing  
(3) Base register addressing  
(4) PC relative addressing
101. Under which circumstance should you create an index on a table ?
- (1) The table is small  
(2) The table is updated frequently  
(3) A columns values are static and contain a narrow range of values  
(4) Two columns are consistently used in the WHERE clause join condition of SELECT statements
102. Normalization is
- (1) The process of creating small stable structures from complex groups of data when designing a relational database  
(2) A methodology for documenting database illustrating the relationship between various entities in the database  
(3) Transaction process  
(4) Physical storage media

103. DBMS allows you to extrapolate information from your data by using a

- (1) Query language
- (2) Table generator
- (3) Report generator
- (4) Wizard

104. Consider a relation scheme  $R = (A, B, C, D, E, H)$  on which the following functional dependencies hold:  $(A \rightarrow B, BC \rightarrow D, E \rightarrow C, D \rightarrow A)$ . What are the candidate keys of  $R$ ?

- (1)  $AE, BE$
- (2)  $AE, BE, DE$
- (3)  $AEH, BEH, BCH$
- (4)  $AEH, BEH, DEH$

105. Global locks

- (1) synchronize access to local resources
- (2) synchronize access to global resources
- (3) are used to avoid local locks
- (4) prevent access to global resources

106. Consider the join of relation  $R$  with a relation  $S$ . If  $R$  has  $m$  tuples and has  $n$  tuples, then the maximum and minimum sizes of the join respectively are

- (1)  $m + n$  and 0
- (2)  $m + n$  and  $m - n$
- (3)  $mn$  and 0
- (4)  $mn$  and  $m + n$

107. How many levels of data abstraction are there?

- (1) 1
- (2) 4
- (3) 3
- (4) 5

108. Extension is

- (1) It is number of tuples present in a table at any instance
- (2) It is constant value that gives the name, structure of table
- (3) Defines constraints
- (4) It is no of attributes present in table

109. When data changes in multiple lists and all lists are not updated, this causes

- (1) data redundancy
- (2) information overload
- (3) duplicate data
- (4) data inconsistency

110. \_\_\_\_\_ describe what is database fields

- (1) Structures
- (2) Field makers
- (3) Field names
- (4) Field definition

111. A goal of normalization is to

- (1) minimize the number of relationships
- (2) minimize the number of redundancy
- (3) minimize the number of entities
- (4) minimize the number of tables

112. The code that relational database management systems use to perform their database task is referred to as

- (1) QBE
- (2) SQL
- (3) OLAP
- (4) Sequel Server

113. The purpose of the primary key in a database is to
- (1) unlock the database
  - (2) uniquely identify a record
  - (3) establish constraints on database operations
  - (4) provide a map of the data
114. The \_\_\_ contains data descriptions and defines the name, data type, and length of each field in the database
- (1) data dictionary
  - (2) data table
  - (3) data record
  - (4) data field
115. QUEL is the query language in the system
- (1) Ingers · QUEL based on the relation calculus
  - (2) Codsyl · QUEL
  - (3) SQL · QUEL
  - (4) SQL · QBE
116. A client/server
- (1) has clients that provide functions such as application control and shared computation
  - (2) uses client computers to provide copies of software to the server to allow server processing
  - (3) provides a company with the capability to down size from larger computer systems and move away from legacy systems
  - (4) has server computers that perform all processing, clients are, 'dumb' input/output devices only

117. The process of building a model that demonstrate the features of a proposed product service or system is called a
- (1) JAD (2) RAD  
(3) templating (4) prototyping
118. What is the term associated with the second part of an e-mail address ?
- (1) Logical address (2) Eight characters long  
(3) User name (4) Domain name
119. This type of software is designed for users who want to customize the programs they use
- (1) Shareware (2) Open-source software  
(3) Freeware (4) Macros
120. Which type of processing speed measurement is used primarily with supercomputers ?
- (1) Flops (2) Fractions of second  
(3) Gigahertz (4) MIPS
121. Suppose that two parties  $A$  and  $B$  wish to setup a common secret key (D – H key) between themselves using the Diffie-Hellman key exchange technique. They agree on 7 as the modulus and 3 as the primitive root. Party  $A$  chooses 2 and party  $B$  chooses 5 as their respective secrets. Their D–H key is
- (1) 3 (2) 4 (3) 5 (4) 6



122. — are viruses that are triggered by the passage of time or on a certain date

- (1) Boot - sector viruses
- (2) Macro viruses
- (3) Time bombs
- (4) Worms

123. Which of the following would most likely NOT be a symptom of a virus ?

- (1) Existing program files and icons disappear
- (2) The CD-ROM stops functioning
- (3) The web-browser opens to an unusual home page
- (4) Odd messages or images are displayed on the screen.

124. Which of the following is not an output device ?

- (1) Scanner
- (2) Printer
- (3) Flat screen
- (4) Touch screen

125. The memory location address are limited to

- (1) 00000 to Iffff(16)
- (2) 00001 to Iffff(16)
- (3) 00010 to Iffff(16)
- (4) 10000 to Iffff(16)

126. — means : that the data contained in a database is accurate and reliable

- (1) Data redundancy
- (2) Data integrity
- (3) Data reliability
- (4) Data consistency

127. The commonly used UNIX commands like ls, cat, etc. are stored in

- (1) /dev directory
- (2) /bin and /usr/bin directories
- (3) /unix directory
- (4) /tmp directory

128. A good query system

- (1) can accept English language commands
- (2) allows non-programmers to access information stored in a database
- (3) can be accessed only by data processing professionals
- (4) Both (1) & (2)

129. What is the availability of a software with the following reliability figures ?

Mean time between Failure = 25 days

Mean time to repair = 6 hours

- (1) 1 %
- (2) 24 %
- (3) 99 %
- (4) 99.009 %

130. A software that allows a personal computer to pretend is as a terminal is

- (1) auto-dialing
- (2) bulletin-board
- (3) modem
- (4) terminal emulation

131. What is the output of the following program ?

```
main ()
{
    static int var = 5;
    printf C"%d", var--);
    if (var)
        main ();
}
```

(1) 5 4 3 2 1

(2) 1 2 3 4 5

(3) 1 2 2 3 5

(4) 5 3 4 1 2

132. What is the output of the following program ?

```
main ()
{
    int i = -1, j = -1, k = 0, l = 2, m;
    m = i ++ && j++ && k++ || l++;
    printf (" %d%d%d%d%d", i, j, k, l, m);
}
```

(1) 1 2 1 0 3

(2) 2 1 0 1 1

(3) 0 0 1 3 1

(4) 0 1 0 3 2

133. Memory allocation variables in a program is

(1) allocated in RAM

(2) allocated in ROM

(3) assigned to registers

(4) allocated on stack



139. The general form of the conditional expression is

- (1) expression 1 ? expression 2 : expression 3
- (2) expression 2 ? expression 3 ? expression 1
- (3) expression 3 ? expression 2 : expression 1
- (4) expression 1 ? expression 2 ? expression 3

140. In a simple 'if' statement with no 'else', what happens if the condition following the 'if' false ?

- (1) The program searches for the last else in the program
- (2) Nothing
- (3) Control 'falls through' to the statement following 'if'
- (4) The body of the statement is executed

141. What is the output of following program ?

```
main ()
{
    char * str 1 = "abcd"
    char str2 [ ] = "abcd"
    printf ("%d%d%d", size of (str1), size of (str2), size of ("abcd"));
}
```

- (1) 255
- (2) 525
- (3) 552
- (4) 425

142. Any program in C, has access to three standard files

- (1) standard input file, standrad output file, standard error file
- (2) std in , stdout, stderr
- (3) keyboard, screen, screen
- (4) All of the above.

143. A while loop is more appropriate than a for loop when
- (1) the body of the loop will be executed at least once
  - (2) the terminating condition occurs unexpectedly
  - (3) the program will be executed at least once
  - (4) the number of times the loop will be executed is known before the loop is executed
144. An algorithm must have at least
- (1) one input
  - (2) one output
  - (3) one assignment
  - (4) two input
145. A basic control structure always has
- (1) one entry and two exit points
  - (2) two entry and one exit points
  - (3) one entry and one exit points
  - (4) any number of entry and exits points
146. A function that can access private members of a class, even though it is not a member of the class itself, is
- (1) a friend
  - (2) an inline function
  - (3) a private function
  - (4) never allowed in object-oriented programming

147. A function that is called automatically each time an object is destroyed is a

- (1) constructor
- (2) destructor
- (3) destroyer
- (4) terminator

148. The feature in object-oriented programming that allows the same operation to be carried out differently; depending on the object, is

- (1) inheritance
- (2) overfunctioning
- (3) overriding
- (4) polymorphism

149. The use of macro in the place of functions

- (1) reduces execution time
- (2) reduces code size
- (3) increases execution time
- (4) increase code size

150. Which of the following language support garbage collection ?

- (1) Java
- (2) C++
- (3) C
- (4) Small talk

## अभ्यर्थियों के लिए निर्देश

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

1. प्रश्न पुस्तिका मिलने के 10 मिनट के अन्दर ही देख ले कि प्रश्नपत्र में सभी पृष्ठ मौजूद है 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 संख्या और ओ० एम० आर० पत्र संख्या 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. एफ कार्य के लिये इस पुस्तिका के मुखपृष्ठ के अंदर वाला पृष्ठ तथा अंतिम खाली पृष्ठ का प्रयोग करें।
12. परीक्षा के उपरान्त केवल ओ० एम० आर० उत्तर-पत्र परीक्षा भवन में जमा करें।
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।