

Test Paper : II

Test Subject : **COMPUTER SCIENCE AND APPLICATIONS**

Test Subject Code : **K-2414**

Test Booklet Serial No. : _____

OMR Sheet No. : _____

Roll No. _____

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(Figures as per admission card)

Name & Signature of Invigilator/s

Signature: _____

Signature: _____

Name : _____

Name : _____

Paper : II

Subject : COMPUTER SCIENCE AND APPLICATIONS

Time : 1 Hour 15 Minutes

Maximum Marks : 100

Number of Pages in this Booklet : 8

Number of Questions in this Booklet : 50

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು

- ಈ ಪುಟದ ಮೇಲ್ಭಾಗದಲ್ಲಿ ಒದಗಿಸಿದ ಸ್ಥಳದಲ್ಲಿ ನಿಮ್ಮ ರೋಲ್ ನಂಬರನ್ನು ಬರೆಯಿರಿ.
- ಈ ಪತ್ರಿಕೆಯು ಬಹು ಆಯ್ಕೆ ವಿಧದ ಐವತ್ತು ಪ್ರಶ್ನೆಗಳನ್ನು ಒಳಗೊಂಡಿದೆ.
- ಪರೀಕ್ಷೆಯ ಪ್ರಾರಂಭದಲ್ಲಿ ಪ್ರಶ್ನೆಪುಸ್ತಕವನ್ನು ನಿಮಗೆ ನೀಡಲಾಗುವುದು. ಮೊದಲ 5 ನಿಮಿಷಗಳಲ್ಲಿ ನೀವು ಪುಸ್ತಕವನ್ನು ತೆರೆಯಲು ಮತ್ತು ಕೆಳಗಿನಂತೆ ಕಡ್ಡಾಯವಾಗಿ ಪರೀಕ್ಷಿಸಲು ಕೋರಲಾಗಿದೆ.
 - ಪ್ರಶ್ನೆಪುಸ್ತಕಕ್ಕೆ ಪ್ರವೇಶಾವಕಾಶ ಪಡೆಯಲು, ಈ ಹೊದಿಕೆ ಪುಟದ ಅಂಚಿನ ಮೇಲಿರುವ ಪೇಪರ್ ಸೀಲನ್ನು ಹರಿಯಿರಿ. ಸ್ಕ್ರಾಪ್ ಸೀಲ್ ಇಲ್ಲದ ಪ್ರಶ್ನೆಪುಸ್ತಕ ಸ್ವೀಕರಿಸಬೇಡಿ. ತೆರದ ಪುಸ್ತಕವನ್ನು ಸ್ವೀಕರಿಸಬೇಡಿ.
 - ಪುಸ್ತಕಿಯಲ್ಲಿನ ಪ್ರಶ್ನೆಗಳ ಸಂಖ್ಯೆ ಮತ್ತು ಪುಟಗಳ ಸಂಖ್ಯೆಯನ್ನು ಮುಖಪುಟದ ಮೇಲೆ ಮುದ್ರಿಸಿದ ಮಾಹಿತಿಯೊಂದಿಗೆ ತಾಳೆ ನೋಡಿರಿ. ಪುಟಗಳು/ಪ್ರಶ್ನೆಗಳು ಕಾಣೆಯಾದ, ಅಥವಾ ದ್ವಿಪ್ರತಿ ಅಥವಾ ಅನುಕ್ರಮವಾಗಿಲ್ಲದ ಅಥವಾ ಇತರ ಯಾವುದೇ ವ್ಯತ್ಯಾಸದ ದೋಷಪೂರಿತ ಪುಸ್ತಕವನ್ನು ಕೂಡಲೆ 5 ನಿಮಿಷದ ಅವಧಿ ಒಳಗೆ, ಸಂವಿಧಾನದ ಸರಿ ಇರುವ ಪುಸ್ತಕಕ್ಕೆ ಬದಲಾಯಿಸಿಕೊಳ್ಳಬೇಕು. ಆ ಬಳಿಕ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಬದಲಾಯಿಸಲಾಗುವುದಿಲ್ಲ, ಯಾವುದೇ ಹೆಚ್ಚು ಸಮಯವನ್ನೂ ಕೊಡಲಾಗುವುದಿಲ್ಲ.
- ಪ್ರತಿಯೊಂದು ಪ್ರಶ್ನೆಗೂ (A), (B), (C) ಮತ್ತು (D) ಎಂದು ಗುರುತಿಸಿದ ನಾಲ್ಕು ಪರ್ಯಾಯ ಉತ್ತರಗಳಿವೆ. ನೀವು ಪ್ರಶ್ನೆಯ ಎದುರು ಸರಿಯಾದ ಉತ್ತರದ ಮೇಲೆ, ಕೆಳಗೆ ಕಾಣಿಸಿದಂತೆ ಅಂಡಾಕೃತಿಯನ್ನು ಕವಾಕಿಸಬೇಕು.

ಉದಾಹರಣೆ: (A) (B) (C) (D)

(C) ಸರಿಯಾದ ಉತ್ತರವಾಗಿದ್ದಾಗ.
- ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ I ರಲ್ಲಿ ಕೊಟ್ಟಿರುವ OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ, ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ I ಮತ್ತು ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ II ರಲ್ಲಿ ಇರುವ ಪ್ರಶ್ನೆಗಳಿಗೆ ನಿಮ್ಮ ಉತ್ತರಗಳನ್ನು ಸೂಚಿಸತಕ್ಕದ್ದು. OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಅಂಡಾಕೃತಿಯಲ್ಲದೆ ಬೇರೆ ಯಾವುದೇ ಸ್ಥಳದಲ್ಲಿ ಉತ್ತರವನ್ನು ಗುರುತಿಸಿದರೆ, ಅದರ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುವುದಿಲ್ಲ.
- OMR ಉತ್ತರ ಹಾಳೆಯಲ್ಲಿ ಕೊಟ್ಟ ಸೂಚನೆಗಳನ್ನು ಜಾಗರೂಕತೆಯಿಂದ ಓದಿರಿ.
- ಎಲ್ಲಾ ಕರಡು ಕೆಲಸವನ್ನು ಪುಸ್ತಕಿಯ ಕೊನೆಯಲ್ಲಿ ಮಾಡತಕ್ಕದ್ದು.
- ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಬಹುದಾದ ನಿಮ್ಮ ಹೆಸರು ಅಥವಾ ಯಾವುದೇ ಚಿಹ್ನೆಯನ್ನು, ಸಂಗತವಾದ ಸ್ಥಳ ಹೊರತು ಪಡಿಸಿ, OMR ಉತ್ತರ ಹಾಳೆಯ ಯಾವುದೇ ಭಾಗದಲ್ಲಿ ಬರದರೆ, ನೀವು ಅನರ್ಹತೆಗೆ ಬಾಧ್ಯರಾಗಿರುತ್ತೀರಿ.
- ಪರೀಕ್ಷೆಯು ಮುಗಿದನಂತರ, ಕಡ್ಡಾಯವಾಗಿ OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ಸಂವಿಧಾನದಂತೆ ನೀವು ಹಿಂತಿರುಗಿಸಬೇಕು ಮತ್ತು ಪರೀಕ್ಷಾ ಕೊಠಡಿಯ ಹೊರಗೆ OMR ನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ಕೊಂಡೊಯ್ಯ ಕೂಡದು.
- ಪರೀಕ್ಷೆಯ ನಂತರ, ಪರೀಕ್ಷಾ ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆಯನ್ನು ಮತ್ತು ನಕಲು OMR ಉತ್ತರ ಹಾಳೆಯನ್ನು ನಿಮ್ಮೊಂದಿಗೆ ತೆಗೆದುಕೊಂಡು ಹೋಗಬಹುದು.
- ನೀಲಿ/ಕಪ್ಪು ಬಾಲ್ ಪಾಯಿಂಟ್ ಪೆನ್ ಮಾತ್ರವೇ ಉಪಯೋಗಿಸಿರಿ.
- ಕ್ಯಾಲ್ಕುಲೇಟರ್ ಅಥವಾ ಲಾಗ್ ಟೇಬಲ್ ಇತ್ಯಾದಿ ಯಾವುದೇ ಯಾವುದೇ ನಿಷೇಧಿಸಲಾಗಿದೆ.
- ಸರಿ ಅಲ್ಲದ ಉತ್ತರಗಳಿಗೆ ಋಣ ಅಂಕ ಇರುವುದಿಲ್ಲ.

Instructions for the Candidates

- Write your roll number in the space provided on the top of this page.
- This paper consists of fifty multiple-choice type of questions.
- At the commencement of examination, the question booklet will be given to you. In the first 5 minutes, you are requested to open the booklet and compulsorily examine it as below :
 - To have access to the Question Booklet, tear off the paper seal on the edge of this cover page. Do not accept a booklet without sticker-seal and do not accept an open booklet.
 - Tally the number of pages and number of questions in the booklet with the information printed on the cover page. Faulty booklets due to pages/questions missing or duplicate or not in serial order or any other discrepancy should be got replaced immediately by a correct booklet from the invigilator within the period of 5 minutes. Afterwards, neither the Question Booklet will be replaced nor any extra time will be given.**
- Each item has four alternative responses marked (A), (B), (C) and (D). You have to darken the oval as indicated below on the correct response against each item.

Example : (A) (B) (C) (D)

where (C) is the correct response.
- Your responses to the questions are to be indicated in the **OMR Sheet kept inside the Paper I Booklet only**. If you mark at any place other than in the ovals in the Answer Sheet, it will not be evaluated.
- Read the instructions given in OMR carefully.
- Rough Work is to be done in the end of this booklet.
- If you write your name or put any mark on any part of the OMR Answer Sheet, except for the space allotted for the relevant entries, which may disclose your identity, you will render yourself liable to disqualification.
- You have to return the test OMR Answer Sheet to the invigilators at the end of the examination compulsorily and must NOT carry it with you outside the Examination Hall.
- You can take away question booklet and carbon copy of OMR Answer Sheet soon after the examination.
- Use only Blue/Black Ball point pen.**
- Use of any calculator or log table etc., is prohibited.**
- There is no negative marks for incorrect answers.**

**COMPUTER SCIENCE AND APPLICATIONS****Paper – II**

Note : This paper contains **(50) fifty** objective type questions, **each** question carrying **two (2)** marks. Attempt **all** the questions.

- Let R denote the set of real numbers. Let $f : R \times R \rightarrow R \times R$ be bijective function defined by $f(x, y) = (x + y, x - y)$ inverse function of f is given by
 - $f^{-1}(x, y) = \left[\frac{1}{x + y}, \frac{1}{x - y} \right]$
 - $f^{-1}(x, y) = (x - y, x + y)$
 - $f^{-1}(x, y) = \left[\frac{x + y}{2}, \frac{x - y}{2} \right]$
 - $f^{-1}(x, y) = [2(x - y), 2(x + y)]$
- Let $f : R \rightarrow R$ be defined by

$$f(x) = \begin{cases} x + 2 & (x \leq -1) \\ x^2 & (-1 \leq x \leq 1) \\ 2 - x & (x \geq 1) \end{cases}$$
 Then value of $f(-1.75) + f(0.5) + f(1.5)$ is
 - 0
 - 2
 - 1
 - 1
- Let R_1 and R_2 be 2 equivalence relations on a set consider the following assertions :

I : $R_1 \cup R_2$ is an equivalence relation.
 II : $R_1 \cap R_2$ is an equivalence relation
 Which of the following is correct ?

 - Both assertions are true
 - Assertion I is true but assertion II is not true
 - Assertion II is true but Assertion I is not true
 - Neither I nor II is true
- If $L_1, L_2 \subseteq \Sigma^*$, $L_1 \in P$ and L_2 is neither 0 nor Σ^* then
 - $L_1 \leq PL_2$
 - $L_2 \leq PL_1$
 - Both (A) and (B) of above
 - None of the above
- The Language

$$L = \{ a^n b^m c^n b^m / n \geq 1, m \geq 1 \}$$
 - Is context free
 - Is not context free
 - Abstract problem of checking number of formal and actual parameters
 - Both (B) and (C) of above
- Which of the following consume minimum power ?
 - TTL
 - CMOS
 - DTL
 - RTL
- The output of a JK flip-flop with asynchronous preset and clear input is '1'. The output can be changed to '0' with one of the following conditions
 - By applying $J = 0, K = 0$ and using a clock
 - By applying $J = 1, K = 0$ and using a clock
 - By applying $J = 1, K = 1$ and using a clock
 - By applying a synchronous preset input



8. How many two input AND and OR gates are required to realize $Y = CD + EF + G$
- (A) 2, 2 (B) 2, 3
(C) 3, 3 (D) 2, 1
9. Values of X_1 and X_2 , where $X_1 = (23.6)_{10}$, $X_2 = (65.535)_{10}$, may be represented as
- (A) $(10111.100100)_2$ and $(41.88 F5)_{16}$
(B) $(10111.11001)_2$ and $(41.88 F5C)_{16}$
(C) $(10111.1001100)_2$ and $(41.88 F5E)_{16}$
(D) $(10111.10011)_2$ and $(41.88 F5C28)_{16}$
10. A combination circuit has 3 inputs A, B, C and output F. F is true for following input combination.
- A is false, B is true
A is false, C is true
A, B, C are false
A, B, C are true
- (i) $F = \bar{A} + B C$ (ii) $F = A + \bar{B} \bar{C}$
(iii) $F = \overline{A \bar{B} C}$ (iv) $F = (A \square \bar{B} C)$
- (A) All (i), (ii), (iii), (iv) are possible
(B) Only (i) is possible
(C) Only (i) and (iv) are possible
(D) Only (i) and (iii) are possible
11. What will be the output of the following program
- ```
main ()
{
static char a [] = "BOMBAY" ;
char * b = "BOMBAY" ;
printf("\n%d % d" size of (a), size of (b));
}
```
- (A) a = 7, b = 7    (B) a = 7, b = 2  
(C) a = 2, b = 7    (D) a = 7, b = 0
12. Identify the most appropriate sentence to describe union.
- (A) Unions are like structures  
(B) Unions contains members of different data types which share the same storage area in the memory  
(C) Unions are less frequently used in the program  
(D) Unions are used for set operations
13. Suppose DATA array contains 1000000 elements using binary search algorithm one requires only n compositions to find location of an item in DATA array, then n is
- (A) 60  
(B) 45  
(C) 20  
(D) None of these
14. The maximum combined length of command line arguments including the space between adjacent arguments is
- (A) 128 characters  
(B) 256 characters  
(C) 67 characters  
(D) It may vary from one operating system to another
15. Which of the following is not a type of constructor ?
- (A) Copy constructor  
(B) Friend constructor  
(C) Default constructor  
(D) Parameterized constructor



16. Evaluate the set of SQL statements :
- ```
CREATE TABLE dept  
(deptho NUMBER (2),  
dname VARCHAR 2(14),  
loc VARCHAR 2(131) ;  
ROLLBACK ;  
DESCRIBE DEPT
```
- What is true about the set ?
- (A) The DESCRIBE DEPT statement displays the structure of the DEPT table
- (B) The ROLLBACK statement frees the storage space occupies by the DEPT table
- (C) The DESCRIBE DEPT statement returns an error, object DEPT does not exist
- (D) The DESCRIBE DEPT statement displays the structure of the DEPT table only if there is a COMMIT statement introduced before the ROLLBACK statement
17. Evaluate the SQL statement
- ```
SELECT ROUND (TRUNC
(MOD(1600, 10), -1), 2)
FROM dual ;
```
- What will be displayed ?
- (A) 0                      (B) 1
- (C) 0.00                  (D) 1.00
18. In a SELECT statement that includes a WHERE clause, where is the GROUP BY clause placed in the SELECT statement ?
- (A) Before the WHERE clause
- (B) After the ORDER BY clause
- (C) Immediately after the SELECT clause
- (D) After the WHERE clause
19. In which case would you use a FULL OUTER JOIN ?
- (A) Both tables have NULL values
- (B) You want all unmatched data from both tables
- (C) One of the tables has more data than the other
- (D) You want all unmatched data from one table
20. What is necessary for your query on an existing view to execute successfully ?
- (A) The underlying table must have data
- (B) The underlying tables must be in the same schema
- (C) You need SELECT privileges on the view
- (D) You need SELECT privileges only on the underlying tables
21. In a row-major 2 dimensional array of size  $m \times n$ , the address of element  $a(i, j)$  is obtained by the general equation
- (A) base address +  $(j * m * \text{size}) + (i * n * \text{size})$
- (B) base address +  $(i * n * \text{size}) + (j * m * \text{size})$
- (C) base address +  $(i * n * \text{size}) + (j * \text{size})$
- (D) base address +  $(i * \text{size}) + (j * m * \text{size})$
22. The postfix of the infix expression  $((((a/b) - c) + (d * c)) - a * c)$
- (A)  $a/bc - de * + ac * -$
- (B)  $ab/c - de + * ac * -$
- (C)  $ab/c - de * + ac - *$
- (D)  $ab/c - de * + ac * -$



23. The total number of nodes in a complete binary tree of height  $n$  is
- (A)  $2^n$
  - (B)  $2^{n-1} - 1$
  - (C)  $2^{n-1}$
  - (D)  $2^{n+1}$
24. In the process of depth first search in a graph, the adjacency list is maintained in a
- (A) Stack
  - (B) Tree
  - (C) Graph
  - (D) Queue
25. The Indices of an Index sequential file maintains the details of
- (A) Record structure
  - (B) Storage structure
  - (C) Address of records based on key field
  - (D) None of the above
26. IP addresses are converted to
- (A) A binary string
  - (B) Alphanumeric string
  - (C) A hierarchy of domain names
  - (D) A hexadecimal string
27. Among services available on the World Wide Web are
- (i) Encryption
  - (ii) HTTP
  - (iii) HTML
  - (iv) Firewalls
- (A) (i) and (ii)
  - (B) (ii) and (iii)
  - (C) (iii) and (iv)
  - (D) (i) and (iv)
28. In a banyan switch, for 8 inputs and 8 outputs, we have \_\_\_\_\_ stages.
- (A) 8
  - (B) 4
  - (C) 3
  - (D) 2
29. X.25 recommendation makes references to different standards. Match these standards :
- (i) X.1      (a) Categories of access
  - (ii) X.2      (b) Reference connections for packets
  - (iii) X.10    (c) User classes of services
  - (iv) X.92    (d) User facilities
- (A) i – b, ii – c, iii – a, iv – d
  - (B) i – c, ii – d, iii – a, iv – b
  - (C) i – b, ii – d, iii – a, iv – c
  - (D) i – a, ii – d, iii – b, iv – c
30. Use RSA algorithm, with  $p = 3$ ,  $q = 11$ , and  $e = 7$ , the public and private keys will be
- (A) (7, 33) (3, 33)
  - (B) (7, 11) (3, 22)
  - (C) (3, 33) (11, 37)
  - (D) (7, 11) (3, 33)
31. Run-time is
- (A) Static policy
  - (B) Dynamic policy
  - (C) Hybrid policy
  - (D) Mixed policy



32. In the statement, which is the key word ?  
(A) 100  
(B) DO  
(C) I  
(D) 25
33. Which is compilation order ?  
I. Lex first  
II. Yacc second  
III. Lex second  
IV. Yacc first  
(A) II and III  
(B) III and IV  
(C) I and II  
(D) IV and I
34. Which is interpreter ?  
(A) C  
(B) Pascal  
(C) PL  
(D) Perl
35. VHDL is related to  
(A) Software  
(B) Firmware  
(C) Hardware  
(D) Internet
36. A critical section is a program segment  
(A) Which should run in a certain specified amount of time  
(B) Which avoids deadlocks  
(C) Where shared resources are accessed  
(D) Which must be enclosed by a pair of semaphore operations P and V
37. "Throughput" of a system is  
(A) Number of programs processed by it per unit time  
(B) Number of times the program is invoked by the system  
(C) Number of requests made to a program by the system  
(D) Number of programs loaded in the memory
38. For the following page reference string 1, 2, 3, 4, 1, 2, 5, 1, 2, 3, 4, 5 with frame size is equal to 3 find out number of page faults with FIFO ?  
(A) 8  
(B) 9  
(C) 10  
(D) 11
39. Suppose file 1 contains the following  
1 one  
2 two  
3 three  
and file 2 contains  
1 11  
2 22  
3 33  
issuing the command  
`$join -j 1 file 1 file 2`  
results  
(A) 1 one 11  
2 two 22  
3 three 33  
(B) 1 one 11 two 22 three 33  
(C) One 11  
two 22  
three 33  
(D) One 11 two 22 three 33



40. If you want to find all the lines in a file called `snolist` that begin with a number
- (A) `$grep *[0 - 9] snolist`
  - (B) `$grep @[0 - 9] snolist`
  - (C) `$grep ![0 - 9] snolist`
  - (D) `$grep ^[0 - 9] snolist`
41. Which one of the below is not a software development model ?
- (A) Prototyping
  - (B) Incremental
  - (C) Cocomo
  - (D) Spiral
42. RAD stands for
- (A) Rapid And Design
  - (B) Rapid Aided Development
  - (C) Rapid Application Design
  - (D) Rapid Application Development
43. Debugging is the process of
- (A) Checking for errors
  - (B) Locating errors
  - (C) Correcting errors
  - (D) Finding syntax errors
44. Software maintenance is required for
- (A) Enhancement
  - (B) Changes
  - (C) Corrections
  - (D) All of the above
45. Which one is not considered in software quality ?
- (A) Maintenance
  - (B) Feasibility
  - (C) User friendly (usability)
  - (D) Portability
46. In Loopback address, first byte equal to
- (A) 127
  - (B) 128
  - (C) 255
  - (D) 126
47. e-mail auto-replies are created using
- (A) e-mail rules
  - (B) web rules
  - (C) message rules
  - (D) internet rules
48. What does SSL stands for
- (A) System Socket Layer
  - (B) Superuser System Login
  - (C) Secure System Layer
  - (D) Secure Socket Layer
49. DNS is
- (A) The distributed hierarchical naming system
  - (B) The vertical naming system
  - (C) The horizontal naming system
  - (D) The client server system
50. Imagery that you can see in Google Earth.
- (A) Represents one snapshot in time from when the image was acquired
  - (B) Is updated via a live link to a Google Satellite in orbit
  - (C) Represents the current satellite image from when you start Google earth
  - (D) Is not updated – you must use Keyhole viewer program to the current imagery



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Space for Rough Work