Test Paper	: **II**	Test Booklet Serial No. : _____

Test Paper : **II**

Test Subject : **COMPUTER SCIENCE AND APPLICATIONS**

Test Subject Code : **K-2414**

Test Booklet Serial No. : _____

OMR Sheet No. : _____

Roll No.

(Figures as per admission card)

Name & Signature of Invigilator/s

Signature : _____

Name : _____

Signature : _____

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**

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.

1. 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

   (A) $f^{-1}(x, y) = \left[\dfrac{1}{x + y}, \dfrac{1}{x - y}\right]$

   (B) $f^{-1}(x, y) = (x - y, x + y)$

   (C) $f^{-1}(x, y) = \left[\dfrac{x + y}{2}, \dfrac{x - y}{2}\right]$

   (D) $f^{-1}(x, y) = \left[2(x - y), 2(x + y)\right]$

2. 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

   (A) 0   (B) 2
   (C) 1   (D) −1

3. 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 ?
   (A) Both assertions are true
   (B) Assertion I is true but assertion II is not true
   (C) Assertion II is true but Assertion I is not true
   (D) Neither I nor II is true

4. If $L_1, L_2 \subseteq \Sigma^*$, $L_1 \in P$ and L_2 is neither 0 nor Σ^* then
   (A) $L_1 \leq PL_2$
   (B) $L_2 \leq PL_1$
   (C) Both (A) and (B) of above
   (D) None of the above

5. The Language
   $L = \left\{ a^n b^m c^n b^m / n \geq 1, m \geq 1 \right\}$
   (A) Is context free
   (B) Is not context free
   (C) Abstract problem of checking number of formal and actual parameters
   (D) Both (B) and (C) of above

6. Which of the following consume minimum power ?
   (A) TTL
   (B) CMOS
   (C) DTL
   (D) RTL

7. 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
   (A) By applying J = 0, K = 0 and using a clock
   (B) By applying J = 1, K = 0 and using a clock
   (C) By applying J = 1, K = 1 and using a clock
   (D) 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) $F = \overline{A} + B\,C$ (ii) $F = A + \overline{B}\,\overline{C}$

(iii) $F = \overline{(A \square \overline{\overline{BC}}}$ (iv) $F = (A \square \overline{BC})$

(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 very 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×n, the address of element a(i, j) is obtained by the general equation

(A) base address + (j∗m∗size) + (i∗n∗size)

(B) base address + (i∗n∗size) + (j∗m∗size)

(C) base address + (i∗n∗size) + (j∗size)

(D) base address + (i∗size) + (j∗m∗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 slnolist that begin with a number
    (A) $ grep *[0 – 9] slnolist
    (B) $ grep @[0 – 9] slnolist
    (C) $ grep ![0 – 9] slnolist
    (D) $ grep ∧ [0 – 9] slnolist

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