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

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Test Subject : **COMPUTER SCIENCE AND APPLICATIONS**

Test Subject Code : **K-2416**

Test Booklet Serial No. : _____

OMR Sheet No. : _____

Roll No. ☐☐☐☐☐☐☐☐☐☐

(Figures as per admission card)

Name & Signature of Invigilator/s

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**

ಅಭ್ಯರ್ಥಿಗಳಿಗೆ ಸೂಚನೆಗಳು	**Instructions for the Candidates**

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COMPUTER SCIENCE AND APPLICATIONS
Paper – II

Note : This paper contains **fifty (50)** objective type questions. **Each** question carries **two (2)** marks. **All** questions are **compulsory**.

1. The probability that a randomly selected number that is between 100 and 999 (both inclusive) will not contain the digit 7 is

   (A) 16/25   (B) 20/25

   (C) 18/25   (D) 22/25

2. Out of 100 students, 10 students used to eat Bread(B), Jam(J) and Butter (BT), 20 eats Bread and Jam, 30 eats Jam and Butter, 25 Bread and Butter, 12 Bread only, 5 Jam only and 8 Butter only. The number of students who did not eat any of these is

   (A) 15   (B) 20

   (C) 25   (D) 30

3. In the interval $[0, \pi]$, the equation $x = \cos(x)$ has

   (A) No solution

   (B) One solution

   (C) Two solution

   (D) Infinite number of solution

4. What is the maximum number of different Boolean functions involving n Boolean variables ?

   (A) $2n$ (B) 2^n

   (C) n^n (D) n^2

5. Let L be a language and $\bar{L}$ be its complement. Which of the following is NOT a viable possibility ?

   (A) Neither L and $\bar{L}$ is recursively enumerable

   (B) One of L and $\bar{L}$ is recursively enumerable, but not recursive, the other is not recursive enumerable

   (C) Both L and $\bar{L}$ are recursively enumerable, but not recursive

   (D) Both L and $\bar{L}$ are recursive

6. The minimum number of JK flip-flops required to construct a synchronous counter with the count sequence $(0, 0, 1, 1, 2, ,2, 3, 3, 0, 0...)$ is

   (A) 1   (B) 2

   (C) 3   (D) 10

7. Consider the following Boolean expression for F

   $F(P, Q, R, S) = PQ + \bar{P}QR + \bar{P}Q\bar{R}S$

   The minimal sum-of-products form of F is

   (A) $PQ + QR + QS$

   (B) $\bar{P} + \bar{Q} + \bar{R} + \bar{S}$

   (C) $P + Q + R + S$

   (D) $\bar{P}R + \bar{P}\bar{R}S + P$

8. Consider the equation $(123)_5 = (x8)_y$ with x and y as unknown. The number of possible solutions is

(A) 2   (B) 3

(C) 4   (D) 6

9. The minimum number of D flip-flops needed design and a mod-258 counter is

(A) 8   (B) 9

(C) 258   (D) 512

10. $(1217)_8$ is equivalent to

(A) $(1217)_{16}$ (B) $(3317)_{10}$

(C) $(0ABC)_{16}$ (D) $(028F)_{16}$

11. What is the output of the following 'C' snippet ?

```
int a = 10, b = 20, c = 30;
if (c > b > a)
printf ("TRUE");
else
printf ("FALSE");
```

(A) TRUE   (B) FALSE

(C) Compile error (D) Runtime error

12. Assume a = 10, b = 20 and c = 0 of integer type variables. To find the addition of a and b without using arithmetic operators. Which of the following 'C' code is correct ?

(A) while (b++) a++;

(B) while (b– –) a++;

(C) b – –; while (a++)

(D) a++; while (b– –)

13. Function overloading is done at

(A) Run time

(B) Compile time

(C) Linking time

(D) Switching from function to function

14. Which of the following vector class functions adds an element at the end of the vector ?

(A) push( )   (B) insert( )

(C) push_back( ) (D) insert_end( )

15. Which of the following header file in C++ contains macros and information for adding diagnostics that aid program debugging ?

(A) stdio.h   (B) iostream.h

(C) ctype.h   (D) assert.h

16. Consider the join of a relation R with relation S. If R has m tuples and S has n tuples, then the maximum size of join is

(A) mn   (B) m + n

(C) $\dfrac{(m+n)}{2}$ (D) 2(m + n)

17. A logical schema

(A) is the entire database

(B) is a standard way of organizing information into a accessible part

(C) describe how data is actually stored on disk

(D) is a design-centric database structure built to meet business requirements

18. 'AS' clause is used in SQL for

(A) Selection operation

(B) Rename operation

(C) Join operation

(D) Projection operation

19. A primary key is combined with foreign key creates

(A) Parent-child relationship between the tables that connect them

(B) Many to many relationship between the tables that connect them

(C) Network model between the tables that connect them

(D) One to many relationship between the tables that connect them

20. A relation is _____ if every field contains only atomic values that is, no lists or sets.

(A) 1NF   (B) 2NF

(C) 3NF   (D) BCNF

21. The process of accessing data stored in a tape is similar to manipulating data on a

(A) Stack   (B) Queue

(C) Tree   (D) Heap

22. If each node in a tree has value greater than every value in its left subtree and has value less than every value in its right subtree, the tree is called

(A) Complete tree

(B) Full binary tree

(C) Threaded tree

(D) Binary search tree

23. The number of nodes in a complete binary tree of level 5 is

(A) 10   (B) 20

(C) 63   (D) 71

24. 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

(A) 3   (B) 4

(C) 5   (D) 6

25. The maximum number of binary trees that can be formed with three unlabeled node is

(A) 2   (B) 3

(C) 4   (D) 5

26. In a packet switching network, packets are routed from source to destination along a single path having two intermediate nodes. If the message size is 24 bytes and each packet contains a header of 3 bytes, then the optimum packet size is

(A) 4   (B) 6

(C) 7   (D) 9

27. Computer A uses 32 byte packets to transmit messages to computer B using a sliding window protocol. The round trip delay between A and B is 80 milliseconds and the bottleneck bandwidth on the path between A and B is 128 kbps. What is the optimal window size that A should use ?

(A) 30   (B) 40

(C) 64   (D) 48

28. The address of a class B host is to be split into subnets with a 6 bit subnet number. What is the maximum number of subnets and the maximum number of hosts in each subnet ?

(A) 62 subnets and 2048 hosts

(B) 64 subnets and 1024 hosts

(C) 62 subnets and 1022 hosts

(D) 64 subnets and 2048 hosts

29. In Ethernet when Manchester encoding is used, the bit rate is

(A) Half the baud rate

(B) Twice the baud rate

(C) Same as the baud rate

(D) Eight times the baud rate

30. The minimum frame size required for a CSMA/CD based computer network running at 1 Gbps on a 200 m cable with a link speed of 2×10^8 m/s is

(A) 125 bytes

(B) 250 bytes

(C) 500 bytes

(D) 512 bytes

31. Which data structure in a compiler is used for managing information about variables and their attributes ?

(A) Semantic stack

(B) Parse table

(C) Symbol table

(D) Abstract syntax tree

32. Consider the grammar
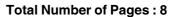
$S \rightarrow (S)|a$

Let the number of states in SLR(1), LR(1) and LALR(1) parsers for the grammar be n_1, n_2 and n_3 respectively. The following relationship holds good

(A) $n_1 < n_2 < n_3$

(B) $n_1 = n_3 < n_2$

(C) $n_1 = n_2 = n_3$

(D) $n_1 \geq n_3 \geq n_2$

33. Consider the grammar

$E \rightarrow E + n \mid E \times n \mid n$

For a sentence $n + n \times n$, the handler in the right-sentential form of the reduction are

(A) n, E + n and E + n × n

(B) n, E + n and E + E × n

(C) n, n + n and n + n × n

(D) n, E + n and E × n

34. A top-down parser generates

(A) Right-most derivation

(B) Left-most derivation

(C) Right-most derivation in reverse

(D) Left-most derivation in reverse

35. Assume register C holds 93H and accumulator holds 15H. After executing CMA instruction in 8085 yields in accumulator and status of sign and carry flags are

(A) EA, No flags are modified

(B) EA, 0, 1

(C) EA, 1, 0

(D) EA, 1, 1

36. Consider a computer with 8 M bytes of main memory and a 128 K cache. The cache block size is 4 K. It uses a direct mapping scheme for Cache Management. How many different main memory blocks can map onto a given physical cache block ?

(A) 2048   (B) 256

(C) 64   (D) 98

37. Kernel is

(A) Considered as the critical part of the operating systems

(B) The software which monitors the operating system

(C) The set of primitive functions upon which the rest of operating system functions are built up

(D) A set of instructions that access common shared resources

38. Which of the following statements are true ?

  a) Shortest remaining time first scheduling may cause starvation

  b) Preemptive scheduling may cause starvation

  c) Round robin is better than FCFS in terms of response time

(A) a) only

(B) a) and c) only

(C) b) and c) only

(D) a), b) and c)

39. The default permission bits of a file when it is created for the first time, is controlled by

(A) chmod value

(B) fmask value

(C) Umask value

(D) f value

40. A process executes the following code

for (i = 0; i < n; i + +)

for K ( );

The total number of child process created is

(A) n (B) $2^n - 1$

(C) 2^n (D) $2^{n+1} - 1$

41. In the maintenance phase the product must be tested against previous test cases. This is known as _____ testing.

(A) Unit   (B) Integration

(C) Regression   (D) Module

42. The degree of interaction between two modules is known as

(A) Cohesion   (B) Strength

(C) Inheritance   (D) Coupling

43. RAD model was proposed by

(A) IBM

(B) Motorola

(C) Microsoft

(D) Lucent Technologies

44. Given a source code with 10 operators includes 6 unique operators and 6 operand including 2 unique operands. The program volume is

(A) 48   (B) 120

(C) 720   (D) 24

45. Changes are made to the system to reduce the future system failure chance is called

(A) Preventive maintenance

(B) Adaptive maintenance

(C) Corrective maintenance

(D) Perfective maintenance

46. The practice of forging a return address on an e-mail so that the recipient is fooled into revealing private information is termed

(A) Hacking   (B) Cracking

(C) Dumpster diving   (D) Spoofing

47. The output of Knowledge Discovery Database (KDD) is

(A) Data

(B) Information

(C) Query

(D) Useful information

48. Which of the following versions of Windows O.S. contain built-in partition manager which allows us to shrink and expand pre-defined drives ?

(A) Windows Vista

(B) Windows 2000

(C) Windows NT

(D) Windows 98

49. The following are the eight different technologies under

a) Analog cellular

b) Analog cordless

c) Digital cellular and

d) Digital cordless categories

  i) CTO   ii) NMT

iii) DCS 1800   iv) GSM

 v) JCT   vi) AMPS

vii) PHS   viii) DECT

Group these technologies respectively to the four categories a, b, c and d.
Pick the correct one.

(A) a) vi, viii   b) v, vii

     c) i, iii   d) ii, iv

(B) a) iii, iv   b) v, vii

     c) i, viii   d) ii, vi

(C) a) ii, vi   b) i, v

     c) iii, iv   d) vii, viii

(D) a) iii, vi   b) v, viii

     c) iv, vii   d) i, ii

50. The advantage of hoarding or caching in mobile databases is that it provides

(A) Protection from frequent disconnections of mobile devices in a wireless network

(B) The facility to distribute new data records at periodic intervals

(C) No access latency and delay in retrieving the queried record from the server

(D) Synchronization of server database with the mobile device database.

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ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work

ಚಿತ್ತು ಬರಹಕ್ಕಾಗಿ ಸ್ಥಳ
Space for Rough Work