TBC : 17/17/ET

Booklet Sr. No. 170649

Roll No.

COMPUTER SCIENCE AND APPLICATIONS

PAPER II

Time Allowed : $1\frac{1}{4}$ Hours]

[Maximum Marks : 100

Instruction for the Candidates

1. Write your Roll Number in the space provided on the top of this page. Do not write anything else on the Test Booklet except in the space provided for rough work.
2. This paper consists of *fifty* (50) multiple-choice type of questions. *All* questions carry equal marks.
3. At the commencement of the 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 :
   (i) **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.**
   (ii) **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.**
4. Each item has four alternatives response marked (A), (B), (C) and (D). You have to darken the circle as indicated below on the correct response against each item completely with **Blue/Black ball point pen** as shown below. H.B. Pencil should not be used in blackening the circle to indicate responses on the answer sheet.

   Example : (A) ● (C) (D)   Where (B) is correct response.

5. Your responses to the each item are to be indicated in the **OMR** Sheet provided to you only. If you mark your response at any place other than in the circle in the OMR Sheet, it will not be evaluated.
6. Read instructions given inside carefully.
7. Rough work is to be done in the end of this booklet.
8. **If you write your Name, Roll Number, Phone Number or put any mark on any part of the OMR Sheet, except for the space allotted for the relevant entries, which may disclosed your identity, or use abusive language or employ any other unfair means, such as change of response by scratching or using white fluid, you will render yourself liable to disqualification.**
9. You have to return the original OMR Sheet to the invigilators at the end of the examination compulsorily and must not carry it with you outside the Examination Hall. You are however, allowed to carry original question booklet and duplicate copy of OMR Sheet on conclusion of examination.
10. **Use of any calculator or log table etc., is prohibited.**
11. **There are no negative marks for incorrect answers.**
12. **CARRYING AND USE OF ELECTRONICS/COMMUNICATION DEVICES IN EXAMINATION HALL ARE NOT ALLOWED.**

COMPUTER SCIENCE AND APPLICATIONS

Paper II

Time Allowed : $1\frac{1}{4}$ Hours]   [Maximum Marks : 100

Note :— This paper contains *fifty* (50) multiple choice questions. Each question

carrying *two* (2) marks. Attempt *all* questions.

1. Let P and Q be two statements then P ↔ Q is logically equivalent to :

    (A) ~ P ↔ Q   (B) ~ P ↔ ~ Q

    (C) P ↔ ~ Q   (D) ~ P + Q → O

2. If $n(A \times B) = n(B \times A)$ where A and B are non-empty sets, then :

    (A) $n(A) = 2, n(B) = 18$ (B) $n(A) = 4, n(B) = 9$

    (C) $n(A) = 6, n(B) = 6$ (D) $n(A) = 3, n(B) = 12$

3. In a linear code C if upto t symbol errors in a code word are to be corrected

    the minimum distance of the code d must satisfy :

    (A) $d \le 2t + 1$ (B) $d \ge t + 1$

    (C) $d \ge 2t + 1$ (D) $d \ge 2(t + 1)$

4. Let G the grammar with start symbol S and set of terminals T = {0, 1}. The productions of G are given by set P = {S → |1| S S → 0}. The language generated by G is :

(A) {0, 1110, 1111110, ...}

(B) {1110, 1110, 1110, ...}

(C) {0, 1110, 1110111, 11101110111, ...}

(D) {0, 0111, 01110111, 01110111, ...}

5. How many paths of length 4 are there from *a* to *d* in the graph given below :
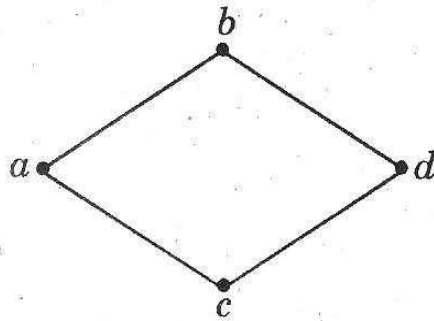
(A) 2   (B) 4

(C) 6   (D) 8

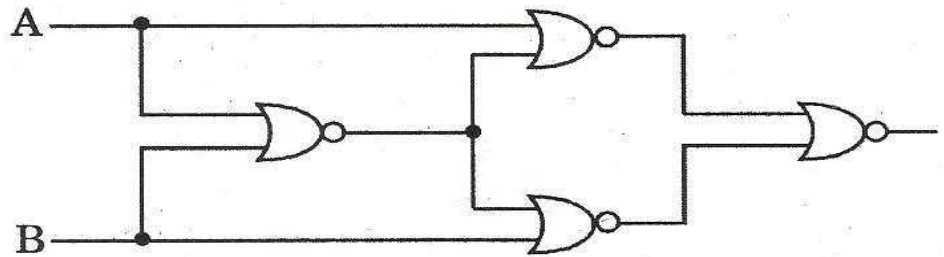6. If $F = x'y + xyz'$, the value of $F.F'$ and $F + F'$ is :

(A) 0, 0

(B) 0, 1

(C) 1, 0

(D) 1, 1

7. What is the output of the following combinational circuit :

(A) $A.B + \bar{A}.\bar{B}$

(B) $\bar{A}.B + A.\bar{B}$

(C) $(\bar{A} + \bar{B})$

(D) $A + B$

8. The excitation table of SR flip-flop is given below :

Q(t)	Q(t + 1)	S	R
0	0	S_1	R_1
0	1	1	0
1	0	0	1
1	1	X	0

where (S_1, R_1) is :

(A) (X, 0)

(B) (0, 1)

(C) (1, 0)

(D) (0, X)

9. A boolean function of n variables will have, when expressed as a truth table, ... minterms.

   (A) n (B) 2^n

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

10. The ECL gate has two outputs available one for .... function and other for ....

    (A) NAND, AND   (B) NAND, OR

    (C) NOR, OR   (D) NOR, AND

11. The declaration, in C/C++, int (*f) (* int) means :

    (A) Pointer to an array of integers

    (B) Function taking pointer to integer as an argument and returning an integer

    (C) Pointer array

    (D) Pointer to a function that takes pointer to integer as an argument and returns an integer

12. In C++, there are .... types of inheritance.

    (A) 5   (B) 4

    (C) 3   (D) 2

13. How many constructors can be present in a class , in C++ ?

    (A) single only   (B) two only

    (C) multiple   (D) none of these

14. What is the default visibility mode for members of a class, in C++ ?

    (A) Public   (B) Protected

    (C) Private   (D) Depends on compiler

15. Given the following code segment in C language :

```
typdef struct p *q;

struct p

    {

        int x;

        char y;

        q z;

    };

struct p p={1, 2, & p};
```

What will be the value of p.z → x ?

    (A) 1   (B) 2

    (C) syntax error   (D) none of these

16. In SQL, which command is used to change the storage structure of the table ?

   (A) Alter   (B) Modify

   (C) Create   (D) DROP

17. Referential integrity is concerned with :

   (A) Foreign Key Only

   (B) Primary Key Only

   (C) Alternate Key Only

   (D) Only (B) and (C)

18. A query language should have the following :

   (A) only data manipulation

   (B) only integrity constraints

   (C) only authorisation

   (D) all of the above

19. An employee table has the attribute salary and name. Which of the following query display all the tuples having salary greater than "sarita" ?

   (A) SELECT * from Employee where salary > (SELECT salary from employee where name = 'sarita')

   (B) SELECT * from Employee where name = 'sarita'

   (C) SELECT salary from Employee where name = 'sarita'

   (D) SELECT name from Employee where salary = salary . sarita

20. Removing more than one independent multivalued dependency from relation by spliting relation is related with :

   (A) 4NF   (B) BCNF

   (C) 5NF   (D) 3NF

21. An array A of size 50×50 is defined as follows :

$$A[i, j] = i - j \text{ for all } i, j, \ 1 \le i \le 50, \ 1 \le j \le 50$$

   The sum of the elements of the array A is :

   (A) 49   (B) 2352

   (C) 63750   (D) 0

22. A non-planar graph with minimum number of vertices has :

    (A) 6 edges, 4 vertices   (B) 9 edges, 5 vertices

    (C) 9 edges, 6 vertices   (D) 10 edges, 5 vertices

23. Linked lists are not suitable data structures of which one of the following

    problems ?

    (A) Polynomial manipulation   (B) Radix sort

    (C) Binary search   (D) Insertion sort

24. The following postfix expression with single digit operands is evaluated using

    a stack :

    $$8 \ 2 \ 3 \ \wedge \ / \ 2 \ 4 \ * \ + \ 6 \ 2 \ * \ -$$

    Note that $\wedge$ is the exponentiation operator. The top two elements of the stack,

    after the first * is evaluated, are :

    (A) 8, 1   (B) 5, 9

    (C) 9, 5   (D) 3, 2

25. In balanced binary tree in the figure given below, how many nodes will become unbalanced when a node is inserted as a child of the node "G" ?

(A) 1

(B) 2

(C) 3

(D) 7

26. If a network designer wants to connect 5 routers as point-to-point simplex line, then the total number of lines required would be :

(A) 5

(B) 10

(C) 20

(D) 32

27. Propagation delay depends on :

   (A) Packet length

   (B) Transmission rate

   (C) Distance between the routers

   (D) Size of data

28. Which of the following performs modulation and demodulation ?

   (A) Satellite   (B) Multiplexer

   (C) Fibre optics   (D) Modem

29. Which of the following signals is *not* standard RS-232-C signal ?

   (A) CTS   (B) DSR

   (C) RTS   (D) VDR

30. The loss in signal power as light travels down the fibre is called :

   (A) Attenuation   (B) Propagation

   (C) Scattering   (D) Interruption

31. Which of the following suffices to convert an arbitrary CFG to an LL(1) grammar ?

(A) Removing left recursion alone

(B) Removing left recursion and factoring the grammar

(C) Factoring the grammar alone

(D) None of the above

32. In some programming languages an identifier is permitted to be a letter followed by any number of letters or digits. If L and D denotes the sets of letters and digits respectively, which of the following expressions defines an identifier ?

(A) $(L + D)^*$

(B) $(L + D)^+$

(C) $L(L + D)^*$

(D) $L(L.D)^*$

33. Which one of the following is a top-down parser ?

(A) An LR(k) parser

(B) An LALR(k) parser

(C) Operator precedence parser

(D) Recursive descent parser

34. Consider the following *two* statements :

S_1 : Every regular grammar is LL(1)

S_2 : Every regular set has LR(1) grammar

Which of the following is *correct* ?

(A) Only S_1

(B) Only S_2

(C) Both S_1 and S_2

(D) Neither S_1 nor S_2

35. Which languages necessarily need heap allocation in the runtime environment ?

(A) Languages that support recursion

(B) Languages that use dynamic scoping

(C) Languages that allow dynamic data structure

(D) Languages that use global variables

36. The following is a function of the dispatcher :

(A) Switching context

(B) Switching to user mode

(C) Jumping to proper location in the user program to restart that program

(D) All of the above

37. Which cf the following is *not* the state of a process ?

(A) Terminated

(B) Waiting

(C) Running

(D) Blocking

38. Which of the following is (are) main challenge(s) in programming for multicore systems ?

(A) Dividing activities

(B) Data splitting

(C) Data dependency

(D) All of these

39. If a process terminates, then all its children must also be terminated, this phenomenon is referred as :

(A) Cascading termination

(B) Process children termination

(C) Random termination

(D) None of the above

40. The next CPU burst is generally predicted as :

(A) Mean of the measured lengths of previous CPU bursts

(B) Exponential average of the measured lengths of previous CPU bursts

(C) Mode of the measured lengths of previous CPU bursts

(D) Median of the measured lengths of previous CPU bursts

41. For effort estimation in project management COCOMO model provides :

(a) Global constant values

(b) Estimated from past data

(c) This model does not need any constant value

Which of the following options is correct ?

(A) (a) and (c) only   (B) (b) and (c) only

(C) (a), (b) and (c)   (D) (a) and (b) only

42. The distribution of error occurrences by different phases of SDLC are :

(A) Requirements (20%), Design (30%), Coding (50%)

(B) Requirements (30%), Design (50%), Coding (20%)

(C) Requirements (50%), Design (20%), Coding (30%)

(D) Requirements (10%), Design (10%), Coding (80%)

43. The main strengths of waterfall model is :

(A) Very short delivery cycle   (B) Reduce risk

(C) Leads to better system   (D) Easy to execute

44. Match the following :

	List I		List II
(a)	Client needs	(i)	Unit testing
(b)	Requirements	(ii)	System testing
(c)	Design	(iii)	Acceptance testing
(d)	Code	(iv)	Integration testing

Codes :

	(a)	(b)	(c)	(d)
(A)	(iii)	(i)	(ii)	(iv)
(B)	(i)	(ii)	(iii)	(iv)
(C)	(iv)	(ii)	(i)	(iii)
(D)	(iii)	(ii)	(iv)	(i)

45. Main weakness of prototyping model is :

(A) Disallows later changes   (B) Cycle time too long

(C) Large team size   (D) Reduces risk

46. Which of the following involves data cleaning, data integration and data consolidations ?

(A) Data Base System

(B) Management Information System

(C) Data Warehousing

(D) Formatted file

47. A software agent ....

(A) Cannot conduct targeted internet searches

(B) Can synchronize social networking profiles

(C) Cannot test new computer games

(D) Cannot fill e-forms

48. Which of the following is *true* ?

(A) MDI allows one to create an application that maintains forms within a single container form

(B) OLE does not allow an editing application to export of a document to another editing document and then import it with additional content

(C) Mobile phones are different from cell phones

(D) Management of COM types is part of ATL

49. In a Windows program which of the following parameters has no meaning, it was used in 16-bit Windows, but is now always zero ?

(A) hinstance

(B) pCmdLine

(C) hPrevinstance

(D) nCmdShow

50. Parallel Virtual Machine is designed to allow network of :

(A) Unix machines only

(B) Window machines only

(C) Unix and Windows machines only

(D) Unix and/or Windows machines

to be used as a single distributed parallel processor.