COMPUTER SCIENCE & APPLICATION
Paper - II

Signature of Invigilators

1. .....

2. .....

Roll No. ☐☐☐☐☐☐
(In figures as in Admit Card)

JY–06/19

Roll No. .....

.....
(in words)

Name of the Areas/Section (if any).....

Time Allowed : 75 Minutes] **[Maximum Marks : 100**

Instructions for the Candidates

1. Write your Roll Number in the space provided on the top of this page.
2. This paper consists of **fifty (50)** multiple choice type questions. **All questions** are compulsory.
3. Each item has upto four alternative responses marked (A), (B), (C) and (D). The answer should be a capital letter for the selected option. The answer letter should entirely be contained within the corresponding square.

   Correct method **A** Wrong method **A** OR **A**
4. Your responses to the items for this paper are to be indicated on the ICR Answer Sheet under Paper II only.
5. Read instructions given inside carefully.
6. Extra sheet is attached at the end of the booklet for rough work.
7. You should return the test booklet to the invigilator at the end of paper and should not carry any paper with you outside the examination hall.

પરીક્ષાર્થીઓ માટે સૂચનાઓ :

૧. આ પાનાની ટોચમાં દર્શાવેલી જગ્યામાં તમારો રોલ નંબર લખો.

૨. આ પ્રશ્નપત્રમાં કુલ **પચાસ (૫૦)** બહુવૈકલ્પિક ઉત્તરો ધરાવતા પ્રશ્નો આપેલા છે. **બધા જ** પ્રશ્નો ફરજિયાત છે.

૩. પ્રત્યેક પ્રશ્ન વધુમાં વધુ ચાર બહુવૈકલ્પિક ઉત્તરો ધરાવે છે. જે (A), (B), (C) and (D). વડે દર્શાવવામાં આવ્યા છે. પ્રશ્નનો ઉત્તર કેપીટલ સંજ્ઞા વડે આપવાનો રહેશે. ઉત્તરની સંજ્ઞા આપેલ ખાનામાં બરાબર સમાઈ જાય તે રીતે લખવાની રહેશે.

   ખરી રીત : **A** ખોટી રીત : **A** , **A**

૪. આ પ્રશ્નપત્રના જવાબ આપેલ ICR Answer Sheet ના Paper II વિભાગની નીચે આપેલ ખાનાંઓમાં આપવાના રહેશે.

૫. અંદર આપેલ સૂચનાઓ કાળજીપૂર્વક વાંચો.

૬. આ બુકલેટની પાછળ આપેલું પાનું રફ કામ માટે છે.

૭. પરીક્ષા સમય પૂરો થઈ ગયા પછી આ બુકલેટ જે તે નિરીક્ષકને સોંપી દેવી. કોઈપણ કાગળ પરીક્ષા ખંડની બહાર લઈ જવો નહીં.

COMPUTER SCIENCE & APPLICATION
Paper - II

NOTE : This paper contains **Fifty (50)** multiple-choice questions, each question carrying **Two (2)** marks. Mark the correct response in the answer-sheet. All questions are compulsory.

નોંધ : આ પ્રશ્નપત્રમાં પચાસ (૫૦) બહુવિકલ્પ પ્રશ્નો છે. દરેક પ્રશ્નના બે (૨) ગુણ છે. બધા જ પ્રશ્નોના ઉત્તર આપવા ફરજીયાત છે.

1. Let A= {0, 1}. The number of relations which can be defined on A are:
   (A) 2 (B) 4
   (C) 8 (D) 16.

2. Let the function $f(x) = x^2$ from the set of integers to the set of integers. Then
   (A) f is one-one and onto. (B) f is one-one but not onto.
   (C) f is not one-one but onto. (D) f is neither one-one nor onto.

3. A fair coin is flipped five times. Given that first flip came up heads, the conditional probability that exactly 4 heads appear (in five flippings) is
   (A) 1 / 2 (B) 1/4
   (C) 1/8 (D) 1/16.

4. The number of edges in a graph with twelve vertices, each of degree six are:
   (A) 12 (B) 24
   (C) 36 (D) 60

5. The number of edges which must be removed from a connected graph with n vertices and m edges to produce a spanning tree are:
   (A) $m-n$ (B) $m-n+1$
   (C) $n-m$ (D) $n-m-1$

6. Any given Boolean expression can be implemented using
   (A) AND Gates only (B) OR Gates only
   (C) Inverters only (D) NAND gates only

7. The integer represented by one's complement representation of length five for 11001 is
   (A) 4 (B) -4
   (C) 6 (D) -6

8. $(p \wedge q) \rightarrow (p \vee q)$ *is*

(A) tautology (B) only satisfiable

(C) bi-conditional (D) equivalent

9 The simplification of the sum of products Boolean expression

$x\,y\,z + x\,\bar{y}\,\bar{z} + \bar{x}\,y\,z + \bar{x}\,\bar{y}\,\bar{z}$

(A) is independent of variable x (B) is independent of variable y

(C) is independent of variable z (D) contains all the variables x, y, z

10. A flip flop is a_____ element that stores a binary digit as a low or high voltage.

(A) chip (B) bus

(C) I/O (D) Memory.

11. In C++ if we apply more than one inheritance to design single class in a program that is known as:

(A) Multiple inheritance (B) Grand parent inheritance

(C) Hybrid inheritance (D) Interface inheritance

12. Out of the following, which operator can not be overloaded in C++?

(A) : : (B) = =

(C) + = (D) *

13. The name of a destructor in C++ is same as the constructor name but is preceded by

(A) Star (*) (B) Semicolon (;)

(C) Tilde (~) (D) Colon (:)

14. What will be the output of the following C program?

```
main( )
{
        printf ("%p\n", main( ));
}
```

(A) Address of main fuction (B) main( )

(C) Infinite loop (D) none of the above.

15. The number of times *"Hello"* will be printed by the following C program is:

```
main ( )
{
   int i=5;
   while (i)
   {
      i - -:
      if (i= =3)
          continue;
       print f ("\n Hello " );
       }
}
```

(A) Infinite (B) 4
(C) 3 (D) 0

16. Which of the following is not present in a database
(A) Table (B) Memory
(C) Indices (D) Records

17. The overall design of a database is called database _____ :
(A) Schema (B) Tables
(C) Relations (D) Query

18. Which one of the following symbols (components) is not used in E-R diagrams?
(A) Ellipses (B) Squares
(C) Diamonds (D) Rectangles.

19. In C language, an array name in general represents
(A) Index (B) Size
(C) Pointer (D) String

20. Which of the following information is not provided by a data dictionary?
(A) How data is used
(B) Where data is located
(C) Security and privacy limitations
(D) The size on the disc storage device

21. Which of the following is the best description for types such as character, real, integer?

(A) Structured types
(B) Abstract data type
(C) Finite state sequence
(D) Atomic type

22. Consider the following structure definition in C language:

```
# define SHOCK 10
struct sack {
    int count;
    int items [SHOCK]
}
struct sack s;
```

The data type s can be best used to represent which of the following data structures:

(A) Stack
(B) Tree
(C) Linked list
(D) Graph.

23. Which of the following best describes the statement for insertion of an element into a queue implementation as a circular array?

(A) `q -> rear = (q -> rear + 1);`
(B) `(q -> rear) ++;`
(C) `(q -> rear) = (q -> rear + 1) % MAXQUE;`
(D) `(q -> front) = (q -> front + 1) % MAXQUE`

24. Consider the code given below, which is used to traverse a binary tree using a function `Visit`

```
void someorder (TreeNode  *root  void (*Visit) (TreeEntry  x)
{ if (root) {  Visit (root -> entry);
               someorder (root -> left, Visit);
               someorder (root -> right, Visit):
                }
}
```

(A) postorder traversal of a tree.
(B) Breadth-first traversal of a tree.
(C) In-order traversal of a tree
(D) Pre-order traversal of a tree.

25. A max-heap is a heap with the property that for entry at position k, the key is:

(A) At least as large as the keys in position $2k+1$, $2k+2$ (provided they exist).
(B) Larger than its in-order successor at position $2k+2$.
(C) Greater than its preorder successor at position $2k-1$.
(D) The key at position $2k-1$ (left child) is less than k and the key at position $2k+1$ is greater than k.

26. The end-to-end delivery of the entire message being sent from one host to another host is the responsibility of which of the following layers:
(A) Network (B) Transport
(C) Session (D) Presentation

27. Which one of the following international organizations consisting of computer scientists and engineers is well known for the development of LAN standards (wired, as well as wireless)
(A) EIA (B) ITO-T
(C) ANSI (D) IEEE

28. Using the Nyquist theorem the sampling rate for a signal with frequencies in the range of 2-6 KHz is
(A) 4000 Hz (B) 6000 Hz
(C) 8000 Hz (D) 12,000 Hz

29. Protocol conversion is a task that is performed by
(A) Bridge (B) Router
(C) Switch (D) Gateway

30. Which of the following conversions is provided by the DNS service?
(A) From a hierarchical canonical name to an Internet protocol address
(B) From an IP address to a name
(C) From a geographical domain to a logical domain.
(D) From a private IP address to a public IP address

31. A program (software) which converts a high level language program into machine language is known as:
(A) Assembler (B) Linker
(C) Compiler (D) Loader.

32. Assembly language is
(A) Machine independent language
(B) An example of high level language
(C) Machine dependent language
(D) An example of a compiler.

33. The output of a Lexical analyzer is
(A) Syntax tree (B) Set of regular expressions
(C) Set of tokens (D) Terminal table

34. The most powerful parser is
(A) SLR
(B) LALR
(C) Canonical LR
(D) Simple shift reduce

35. Semantics can be defined in terms of _____ behavior of a program
(A) Compilation time
(B) Run-time
(C) Load-time
(D) Relocation-time

36. A virtual memory system is usually associated with systems that employ paging. A typical page table entry (in addition to the present or modified etc. control bits) keeps track of the _____ number.
(A) Offset
(B) Page frame
(C) Odd memory address
(D) Even memory address

37. Which of the following is NOT permitted for a process so that Mutual Exclusion can be supported?
(A) A process remains in its critical section for a finite time only
(B) Only one process at a time is permitted into its critical section
(C) A process can halt in its non-critical section; in which case it must do so without interfering with other processes
(D) A process waiting to enter the critical section can wait for any amount of time to enter the critical section

38. Consider the processes and threads where threads 1, 2, 3 belong to process A and threads 4, 5 are of process B. If the process A gets the time slice and thread 3 gets blocked after some time, which of the following is most true?
(A) Process A cannot schedule any of its other threads
(B) Process B will be scheduled next
(C) Process A can schedule any of its other threads
(D) Process B can schedule any of its threads

39. The inodes in a Unix file system are _____
(A) A linked list of blocks in a file
(B) A file allocation table
(C) Units of disk blocks in one cylinder on the disk
(D) Control structures that store pointers to other disk blocks in addition to file meta data.

40. Consider the command "`grep varname *.c`". Which of the following best describes its function?
(A) This causes the string `*.c` to be searched for variable `'varname'` in the files in current directory
(B) This causes the string `varname` to be matched for in all the files with extension `'.c'` in the current directory
(C) This causes all the files with `'.c'` extension to be displayed on the terminal
(D) This causes all the regular expressions in files with extension `'.c'` to be listed.

41. A feasibility study should focus on
(A) Technical and operational feasibility only
(B) Operational and economic feasibility only
(C) Technical and economical feasibility only
(D) Technical, operational and economic feasibility only

42. Which type of uality factor from the following measures the amount of computing resources and code required by a program to perform its function?
(A) Correctness
(B) Usability
(C) Efficiency
(D) Flexibility

43. Unit testing is simplified when modules are designed with
(A) Low cohesion
(B) High cohesion
(C) Common coupling
(D) Content coupling

44. Which cohesion is present when all processing elements concentrate on one area of a data structure?
(A) Procedural
(B) Communication
(C) Temporal
(D) Coincidental

45. The Spiral Model has been developed to encompass the best features of
(A) Prototyping model only
(B) Classic life cycle model only.
(C) Proto typing and classic life cycle only
(D) Prototyping and classic life cycle along with risk analysis

46. One of the four keywords in the definition of data warehouse is concerned with non-volatility of data. Select the option giving the nearest meaning of non-volatility:
(A) Data should not be lost when power is switched off
(B) A committed transaction represents non-volatility
(C) A closed transaction is non-volatile
(D) A secured data is non-volatile

47. Which one of the following statements is correct regarding learning (training)?
(A) Supervised learning can be used for clustering
(B) Unsupervised learning can be used for clustering
(C) Competitive learning is a supervised learning
(D) Feedback is not essential in supervised learning

48. Which one of the following statements is False with reference to Electronic Data Interchange (EDI)?
(A) The delay associated with making documents is eliminated.
(B) Forms for filling and transmitting data can be different for different organization.
(C) Chances of errors are reduced.
(D) It results in saving of labor cost.

49. Which one of the following statements regarding security of e-business transactions is FALSE?
(A) In Asymmetric cryptography, public key can be used only for encryption (not for decryption) and private key can be used only for decryption (not for encryption).
(B) Digital signature is not the scanned image of signature
(C) Digital signature ensures non-repudiation of the buyer and seller.
(D) In dual digital signature, one digital signature is used for order while the second digital signature is used for payment particulars

50. Which one of the following statements about Windows programming is FALSE?
(A) The user cannot switch between the modal dialog box and another window in a program.
(B) The user can switch to another program while the modal dialog box is still displayed.
(C) `SetScrollRange, SetScrollPos, and SetScrollInfo` are the methods used to set the range and position of a Scroll bar
(D) In addition to the `LISTBOX` class, there is a `COMBOBOX` class also under child window control.

ROUGH WORK

ROUGH WORK