# Computer Science and Applications
## Paper II

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

**Note :** This Paper contains **Fifty (50)** multiple-choice questions, each question carrying **Two (2)** marks. Attempt *All* of them.

1. What is the least value of *r* that can be used to represent any non-negative integer *n* in radix-*r* system ?
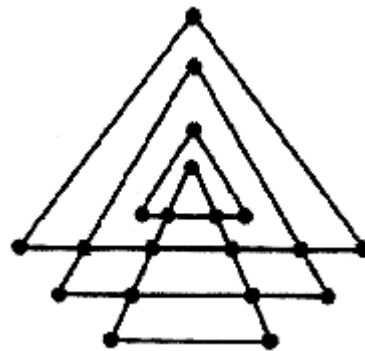
   (A) 0

   (B) 1

   (C) 10

   (D) n

2. In the absence of a comparator, the time complexity of a generate-and-test type of algorithm to sort *n* numbers would be of the order :

   (A) log n

   (B) $n^2$

   (C) n

   (D) n!

3. In CRC, which of the following could be the polynomial, if the code is 11001 ?

   (A) 100

   (B) 101

   (C) 110

   (D) 111

4. The graph in the figure is a portion of the Shri Chakra.

   

   Is it :

   (1) a Planar graph ?

   (2) a Hamiltonian graph ?

   (3) an Eulerian graph ?

   (A) 1 and 2

   (B) 2 and 3

   (C) 1 and 3

   (D) 1, 2 and 3

5. Which of the following is a valid word of the language (1*(01*01*)*) U (0*(10*10*)*) ?

   (A) 10110010101

   (B) 1010101010

   (C) 000101010000

   (D) 001010001010

6. The number of 2-input NOR gates required to produce a 2-input AND function is :

    (A) 1

    (B) 2

    (C) 3

    (D) 4

7. Which of the following logic families consumes the least power ?

    (A) TTL

    (B) DTL

    (C) ECL

    (D) MOS

8. $(121)_5 + (121)_4 =$

    (A) 57

    (B) 59

    (C) 61

    (D) 63

9. The largest decimal number that can be represented by 12 bits is :

    (A) 2047

    (B) 2048

    (C) 4095

    (D) 4096

10. The function $f(x, y, z) = \Sigma(3, 5, 7)$ is :

    (A) $xy + yz$

    (B) $x'y + y'z$

    (C) $xy' + yz$

    (D) $xz + yz$

11. main ( )
    {
        static int var = 5;
        printf(%d", var--);
        if (var)
            main( );
    }
    The output is :
    (A) 43210
    (B) 54321
    (C) 0
    (D) 5

12. main ( )
    {
        struct xx
        {
            int x = 3;
            char name[ ] = "hello"
        };
        struct xx *s;
        printf("%d", s->x);
        printf("%s", s->name);
    }
    The output is :
    (A) 3hello
    (B) 104ello
    (C) 104hello
    (D) Compiler error

13. The following is a built in data type in C++ :

    (A) struct

    (B) array

    (C) void

    (D) enum

14. Compile time polymorphism is also known as :

    (A) late binding

    (B) dynamic binding

    (C) static binding

    (D) place holder

15. Which of the statements below are *true* ?

    (i) default constructor does not accept a parameter

    (ii) constructor can accept a reference to its own class as parameter

    (iii) copy constructor is known as copy initialization

    (iv) destructor accepts any type of value as parameter

    (A) i and iii

    (B) i, ii and iii

    (C) ii and iii

    (D) All of the above

16. The purpose of the Entity-Relationship model is :

    (A) To provide a conceptual schema for database programming

    (B) To provide a conceptual schema for object oriented programming

    (C) To provide a conceptual schema for object oriented databases

    (D) To provide a conceptual schema for relational databases

17. Which database normal form contains no repeating elements or groups of elements ?

    (A) 1 NF

    (B) 2 NF

    (C) 3 NF

    (D) 4 NF

18. CREATE TABLE table_1(id INT);

    The above SQL statement belongs to which of the following languages ?

    (A) DDL

    (B) DCL

    (C) DML

    (D) None of the above

19. UPDATE statement in SQL is used to :

    (A) Change the table parameters in a database

    (B) Change the field parameters in a table

    (C) Change the field names in a table

    (D) Change the field values in a table

20. Which of the following statements is *not* applicable to VIEW in a database ?

    (A) A VIEW is a stored query

    (B) A VIEW is another name for a table in a database

    (C) A VIEW can represent subset of a table

    (D) A VIEW can represent a join of multiple tables.

21. If $h$ is any hashing function and is used to hash $n$ keys into a table of size $m$, where $n<=m$, the expected number of collisions involving a particular key $x$ is :

    (A) less than 1

    (B) less than $n$

    (C) less than $m$

    (D) less than $n/2$

22. A mathematical model with a collection of operations defined on that model is called :

    (A) Data Structure

    (B) Abstract Data Type

    (C) Primitive Data Type

    (D) Algorithm

23. Minimum number of compansons for merging 4 sorted files containing 50, 10, 25 and 15 records will be :

    (A) 100

    (B) 200

    (C) 175

    (D) 125

24. A binary tree of depth "$d$" is an almost complete binary tree, if :

    (A) Each leaf in the tree is either at level "$d$" or at level "$d–1$"

    (B) For any node "$n$" in the tree with a right descendant at level "$d$", all the left descendants of "$n$" that are leaves, are also at level "$d$"

    (C) Both (A) and (B)

    (D) None of the above

25. Which of the following operations is performed more efficiently by doubly linked lists than by singly linked lists ?

   (A) Deleting a node whose location is given

   (B) Searching an unsorted list for a given item

   (C) Inserting a node after a given node

   (D) Traversing a list to process each node

26. Which of the following is used to establish the source-to-destination virtual circuit in a connection-oriented packet network ?

   (A) Virtual set up packet

   (B) Call set up packet

   (C) Wireless set up packet

   (D) Optical set up packet

27. Which method increases the signal for spread spectrum radio by transmitting data over several frequencies simultaneously ?

   (A) Frequency hopping

   (B) Infrared sequencing

   (C) Direct sequencing

   (D) Latent sequencing

28. Which of the following is *not* a physical layer encoding scheme ?

   (A) Manchester encoding

   (B) X.210

   (C) 4B5B

   (D) NRZI (non-return to zero with invert to ones)

29. If there are 10 nodes on a token ring with a message transmit time of 15 milliseconds, and a token passing time of 5 milliseconds, what is the maximum time a token ring station must wait to transmit a message ?

   (A) 20 milliseconds

   (B) 15 milliseconds

   (C) 180 milliseconds

   (D) 200 milliseconds

30. Which of the following is used to trick intruders into thinking that they have reached a real network resource ?

    (A) Honeypots

    (B) Trapper

    (C) Eradication

    (D) Server authentication

31. Real time systems are :

    (A) primarily used on main-frame computers

    (B) used to monitor the events as they occur

    (C) used for program analysis

    (D) used for real-time interactive users

32. Assembler language :

    (A) is usually the primary user interface

    (B) requires fixed format command

    (C) is a mnemonic form of machine language

    (D) none of the above

33. The table which is created in pass 2 of an assembler is :

    (A) Literal table

    (B) Base table

    (C) Symbol table

    (D) None of the above

34. Macro-operations enable :

    (A) Standardization

    (B) Object code generation

    (C) (A) and (B)

    (D) None of the above

35. Which of the following is *not* an entry in Symbol table ?

    (A) Symbol

    (B) Value

    (C) Length

    (D) None of the above

36. The turnaround time for computer work is intuitively defined as the time from when the work is given to the computer to the time the work is completed. In a batch system, the turnaround time is :

(A) The time from when the job is submitted, until the time the first command in the job specification is completed

(B) The time from when the medium term scheduler allocates memory until the time the job vacates memory

(C) The time from when the job is submitted, until the time the results of the job are returned to the user

(D) The time from when the job is submitted, until the time the processor is allocated to the first job

37. Suppose a workstation has a clock cycle of 750 MHz. What is the time duration of one cycle ?

(A) 1.33 microseconds

(B) 1.33 nanoseconds

(C) 750 microseconds

(D) 750 nanoseconds

38. Let $n$ be the number of general registers in a CPU, $m$ be the number of status registers, $b$ be the number of store operations to save a single register, and K be the amount of time to perform a store instruction. How long does it take to perform a context switch ?

(A) (n+mb)K

(B) $(n+m)b$*K

(C) K + $nb$ + $mb$

(D) K$nb$ + $m$

39. The wait time for a process is :

   (A) The amount of time a process needs to be in the running state before it is completed

   (B) The amount of time the process spends waiting in the ready state before its first transition to the running state

   (C) The amount of time between the moment a process first enters the ready state and the moment the process exits the running state for the last time

   (D) The time the process waits for all resources to be allocated to it.

40. Which symbol will be used with grep command to match the pattern pat at the beginning of a line ?

   (A) ^pat

   (B) $pat

   (C) pat$

   (D) pat^

41. Most modern software applications enable you to customize and automate various features using small custom built "miniprograms" called :

   (A) Macros

   (B) Code

   (C) Routines

   (D) Subroutines

42. The make or buy decision is associated with the .......................... step in the SDLC.

   (A) Problem identification

   (B) Design

   (C) Analysis

   (D) Development and Documen-tation

43. Coding is done during the ..................... step in the SDLC.

   (A) Maintenance

   (B) Design

   (C) Analysis

   (D) Implementation

44. The model that can be used when staffing is unavailable for complete implementation by the established dead line is :

   (A) Sequential model

   (B) Spiral model

   (C) Prototype model

   (D) Incremental model

45. One of the drawbacks of waterfall model is :

   (A) Customer gets opportunity to review the product very late

   (B) It does not help the project manager for proper planning

   (C) Partial product is built in the initial stages

   (D) Poor documentation

46. Parallel Virtual Machine is a tool to perform :

   (A) Parallel Computing

   (B) Virtual Computing

   (C) Cloud Computing

   (D) None of the above

47. Which of the following is relatively new Operating System in mobile domain ?

   (A) Android

   (B) Symbian

   (C) MeeGo

   (D) Chrome

48. Consider the following attributes of electronic payment systems :

   (1) Strict security policies

   (2) Customers' online accounts

   (3) Transactions over secure servers.

   Which of the attributes above are mandatory ?

   (A) 1 and 2

   (B) 1 and 3

   (C) 2 and 3

   (D) 1, 2 and 3

49. A Data Warehouse contains :

   (A) Transactional Data

   (B) Operational Data

   (C) Summary Data

   (D) Real Time Data

50. A message in Windows programming is actually in the form of :

   (A) A character string

   (B) A character constant

   (C) An integer constant

   (D) A float constant.

**ROUGH  WORK**