AUG - 37211/II

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. How many elements are there in the set $\{\Phi, \{\Phi\}\}$?

   (A) Φ

   (B)   1
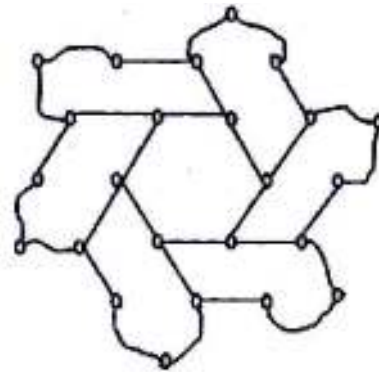
   (C)   2

   (D)   Power set of 2

2. You are given an array of integers and asked to reverse it without using any additional memory. How many assignments would be required in your algorithm ?

   (A) $n/2$ or $(n + 1)/2$

   (B) $3n/2$

   (C) $n(n + 1)/2$

   (D) ∞

3. You are to convey a message to your friend whether your mission is successful or not. What is the redundancy if you employ a single error detection code while transmitting the message ?

   (A) -1

   (B) $\frac{1}{2}$

   (C)   1

   (D)   2

4. The *nabhi kamal* graph (see figure) is :

   (A)   A bipartite graph

   (B)   A semi-Hamiltonian graph

   (C)   Both A and B

   (D)   Neither A nor B

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5. Which of the following is *not* a valid word of the language ((00)*(10)*(01)*(11)*) U ((11)*(01)*(10)*(00)*) :

   (A) 110011010100

   (B) 010110011010

   (C) 0010101101

   (D) 101010111

6. A' + B' + C' is the combinational function for :

   (A) OR gate

   (B) NOR gate

   (C) AND gate

   (D) NAND gate

7. Which of the following logic families is the fastest ?

   (A) TTL

   (B) DTL

   (C) ECL

   (D) MOS

8. $(123)_4 + (211)_3 =$

   (A) 45

   (B) 47

   (C) 49

   (D) 51

9. The largest decimal number that can be represented by 11 bits is :

   (A) 1023

   (B) 1024

   (C) 2047

   (D) 2048

10. The function $f(x, y, z) = \Sigma(2, 6, 7)$ is :

    (A) $xy + yz'$

    (B) $xz + yz'$

    (C) $xy' + yz$

    (D) $xy + yz'$

11. main( )

    {

    　　int i=–1, j=–1, k=0, l=2,m;

    　　m=i++&&j++&&k++||l++;

    　　printf("%d%d%d%d%d",

    　　　　　　　　　　i,j,k,l,m);

    }

    (A)　00130

    (B)　00121

    (C)　00131

    (D)　00120

12. Give the output of

    main( )

    {

    　signed char i = 0;

    　for(; i>=0; i++);

    　　　printf("%d",i);

    }

    (A)　infinite loop

    (B)　–128

    (C)　0

    (D)　32767

13. Give the output of

    #include<stdio.h>

    main( )

    {

    char s[ ]={'a','b','c','\n','c','\0'};

    char *p, *str, *strl;

    p=&s[3];

    str=p;

    strl=s;

    printf("%d",++*p+ ++*

    　　　　　　　　strl–32);

    }

    (A)　75

    (B)　74

    (C)　77

    (D)　76

14. Virtual function is useful to achieve.................. .

    (A)　early binding

    (B)　static binding

    (C)　static linking

    (D)　run time polymorphism

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

   (*i*) Template functions can be overloaded.

   (*ii*) Traits of one class may be overloaded.

   (*iii*) The friend functions cannot directly access private data of a class.

   (*iv*) In multilevel inheritance, the constructors are executed in the reverse order of inheritance.

   (A) Only (*i*)

   (B) (*i*) and (*ii*)

   (C) (*i*) and (*iii*)

   (D) All of the above

16. Which of the following provides the conceptual schema for a relational database ?

   (A) Entity Relationship Diagram

   (B) Data Flow Diagram

   (C) State Diagram

   (D) Data Dictionary

17. Which database normal form contains no partial dependencies on a concatenated key ?

   (A) 1 NF

   (B) 2 NF

   (C) 3 NF

   (D) 4 NF

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18. DROP TABLE table_1;

The above SQL statement corresponds to which of the following language ?

(A) DDL

(B) DCL

(C) DML

(D) None of the above

19. DELETE statement in SQL is used to :

(A) Remove a database

(B) Remove a table from a database

(C) Remove a record from a table

(D) Remove a field from a table

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

(A) It needs increased storage space

(B) It improves the speed of data retrieval

(C) It reduces the speed of data write

(D) It improves the speed of data updation

21. Ackerman's function is defined on the non-negative integers as follows

$a(m,n) = n+1$ if m=0

$= a(m-1, 1)$ if $m > 0$, n=0

$= a(m-1, a(m, n-1))$ if $m > 0$, $n > 0$

The value of (1, 3) is :

(A) 4

(B) 5

(C) 6

(D) 7

22. A sort which relatively passes through a list to exchange the first element with any element less than it and then repeats with a new first element is called :

(A) insertion sort

(B) selection sort

(C) heap sort

(D) quick sort

23. Which of the following sorting algorithms does *not* have a worst case running time of O(n^2) ?

(A) Insertion sort

(B) Merge sort

(C) Quick sort

(D) Bubble sort

24. What data structure would you most likely see in a non-recursive implementation of a recursive algorithm ?

(A) Stack

(B) Linked list

(C) Queue

(D) Tree

25. A B-tree of minimum degree t can have maximum................pointers in a node.

(A) t—1

(B) $2t$—1

(C) $2t$

(D) T

26. The IP address 129.10.52.1 is contained in which class ?

    (A) A

    (B) B

    (C) C

    (D) D

27. The most common protocol for dynamically assigning Internet addresses is the :

    (A) Dynamic Internet Configuration Protocol

    (B) Static Internet Configuration Protocol

    (C) Dynamic Host Configuration Protocol

    (D) Static Host Configuration Protocol

28. Which standard specifies how to create a directory system to maintain e-mail user names and their network addresses ?

    (A) X.400

    (B) X.500

    (C) X.600

    (D) X.700

29. Which of the following is *not* part of the frame relay frame format ?

    (A) Address

    (B) Device location

    (C) Frame check sequence

    (D) Flag

30. How many possible unique pairings of letters are available with mono-alphabetic ciphers ?

 (A) 10^2

 (B) 10^{26}

 (C) 10^{260}

 (D) 10^{2600}

31. Table created during Lexical analysis :

 (A) Terminal table

 (B) Identifier table

 (C) Literal table

 (D) All of the above

32. Find out the odd one :

 (A) Tokens

 (B) Scanner

 (C) Syntactic analyzer

 (D) Code template

33. Parsing is....................stage of translation.

 (A) First

 (B) Second

 (C) Third

 (D) None of the above

34. For lexical analysis automaton used is :

 (A) Turing Machine

 (B) Push Down Automaton

 (C) Finite Automaton

 (D) None of the above

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35. Interpreter is also called as :

(A) Abstract Machine

(B) Absolute Machine

(C) Virtual Machine

(D) None of the above

36. How is a file characterized in an operating system ?

(A) The underlying storage mechanism for a database management system

(B) A DOS mechanism for referencing BIOS information

(C) A Unix mechanism that allows users to protect their persistent data

(D) A named, linear sequence of bytes

37. In a processor with a mode bit, privileged instructions are executed :

(A) Independently of the mode bit setting

(B) Only by a system administrator program

(C) Only when the mode bit is set to supervisor

(D) Only when the mode bit is set to user

38. A memory word is defined by :

(A) the "width" of the memory

(B) the size of the data path between the CPU and memory

(C) the size of the target datum in the machine

(D) the size of the general registers in the machine

39. Assume that a system has a single CPU system with a mean inter-arrival time of 20 jobs/minute, and each job has a mean service time of 2 seconds. What is the expected fraction of the time the CPU will be busy ?

(A) 40%

(B) 66.7%

(C) 83.3%

(D) 87.5%

40. Which command is used to sort the lines of data in a file in reverse order ?

(A) Sort

(B) Sh

(C) St

(D) Sort–r

41. The scale for cohesion is :

(A) Linear

(B) Random

(C) Non-linear

(D) Both (A) and (B)

42. The measure of software complexity is based on :

(A) Number of Man years

(B) Number of Lines of Code (LOC)

(C) Number of function points

(D) All of the above

43. A pathological connection indicates :

   (A) Lose coupling

   (B) Control coupling

   (C) Tight coupling

   (D) None of the above

44. An iterative process through which requirements are translated into a *blue print* for developing the software is :

   (A) Requirement analysis

   (B) Software design

   (C) Software coding

   (D) Software requirement specification

45. Modularity and concept of abstraction enables the engineer to :

   (A) Re-use the software components

   (B) Increase interdependencies among the modules

   (C) Increase highest possible coupling

   (D) Lower the cohesion

46. Message Passing Interface is a tool to perform :

   (A) Parallel Computing

   (B) Virtual Computing

   (C) Cloud Computing

   (D) None of the above

47. Digital radio signals were introduced in which generation of cellular telecom networks ?

 (A) 1G

 (B) 2G

 (C) 3G

 (D) 4G

48. Which card allows its holder to buy goods and services based on the holder's promise to pay for these goods and services ?

 (A) Credit Card

 (B) Debit Card

 (C) Credit and Debit Cards

 (D) None of the above

49. Which Data Mining technique attempts to find a function which models the data with least error ?

 (A) Association Rule Learning

 (B) Clustering

 (C) Classification

 (D) Regression

50. Which of the following is *not* considered as a resource in Windows programming ?

 (A) Images

 (B) Source code

 (C) Menu bars

 (D) Tool bars

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