ENTRANCE EXAMINATION FOR ADMISSION, MAY 2012.

M.Tech. (COMPUTER SCIENCE & ENGINEERING)

COURSE CODE : 376

Register Number :

Signature of the Invigilator
(with date)

COURSE CODE : 376

Time : 2 Hours   Max : 400 Marks

Instructions to Candidates :

1. Write your Register Number within the box provided on the top of this page and fill in the page 1 of the answer sheet using pen.

2. Do not write your name anywhere in this booklet or answer sheet. Violation of this entails disqualification.

3. Read each of the question carefully and shade the relevant answer (A) or (B) or (C) or (D) or (E) in the relevant box of the ANSWER SHEET using HB pencil.

4. Avoid blind guessing. A wrong answer will fetch you −1 mark and the correct answer will fetch 4 marks.

5. Do not write anything in the question paper. Use the white sheets attached at the end for rough works.

6. Do not open the question paper until the start signal is given.

7. Do not attempt to answer after stop signal is given. Any such attempt will disqualify your candidature.

8. On stop signal, keep the question paper and the answer sheet on your table and wait for the invigilator to collect them.

9. Use of Calculators, Tables, etc. are prohibited.

1. Which objective is most difficult to achieve?
    (A) Execute every statement of a program at least once
    (B) Execute every branch statement of a program at least once
    (C) Execute every path of a program at least once
    (D) Execute every condition of a branch statement of a program at least once
    (E) None of the above

2. Behavioral specifications are required for
    (A) Modeling
    (B) Verification
    (C) Validation
    (D) Testing
    (E) None of the above

3. How much percentage of cost is generally consumed in software testing with reference to software development cost?
    (A) 10 – 20
    (B) 40 – 50
    (C) 80 – 90
    (D) 70 – 80
    (E) None of the above

4. One weakness of boundary value analysis is
    (A) It is not effective
    (B) It does not explore combinations of inputs
    (C) It explores combinations of inputs
    (D) All of the above
    (E) None of the above

5. Which is not a basic notation used in a cause-effect graph?
    (A) NOT
    (B) OR
    (C) AND
    (D) NAND
    (E) None of the above

6. Length of a path is equal to
    (A) The number of edges in a graph
    (B) The number of nodes in a graph
    (C) The number of nodes in a path
    (D) The number of edges in a path
    (E) None of the above

7. In a system using paged Memory Management. The size of Logical Address spaces is 32MB. The page table entry size is 4 Bytes. What is the optimum page size?
    (A) 16 KB
    (B) 32 KB
    (C) 256 KB
    (D) 512 KB
    (E) None of the above

8. What is the condition for minimum size of the token ring?
    (A) Propagation delay in the ring/Transmission delay of the packet < 1
    (B) Propagation delay in the ring/Transmission delay of the packet > 1
    (C) Transmission delay in the packet/Propagation delay in the ring < 1
    (D) All of the above
    (E) None of the above

9. What is IAC in the context of TELNET?
    (A) Interpret As Command
    (B) Interrupt As Command
    (C) Insert As Command
    (D) All of the above
    (E) None of the above

10. What is the minimum space utilization for a B+ tree index with the exception of the root?
    (A) 0%
    (B) 100%
    (C) 50%
    (D) All of the above
    (E) None of the above

11. Primary clustering occurs in
    (A) Linear probing
    (B) Quadratic probing
    (C) Separate chaining
    (D) All of the above
    (E) None of the above

12. Which traversal computes the total size of each directory in the UNIX system?
    (A) In Order
    (B) Pre Order
    (C) Post Order
    (D) All of the above
    (E) None of the above

13. The Daisy Chaining is useful for
    (A) Connecting the serial inputs
    (B) Connecting the serial outputs
    (C) Implementing the priority interrupts
    (D) All of the above
    (E) None of the above

14. A web server incorporates
    (A) Business logic
    (B) Database storage
    (C) Web browser
    (D) All of the above
    (E) None of the above

15. Which one is not web usability metric?
    (A) Total links on a page
    (B) Response time
    (C) Word count
    (D) Number of graphics
    (E) None of the above

16. Which of the following memory management's schemes may result in minimum external fragmentation?
    (A) MFT
    (B) MVT
    (C) Overlays
    (D) Segmentations
    (E) None of the above

17. In a network that has a maximum packet size of 128 bytes, maximum packet life time of 30 seconds and an 8 bit sequence number. What is the maximum data rate per connection?
    (A) 5.7 KBPS
    (B) 10 KBPS
    (C) 9.5 KBPS
    (D) 8.7 KBPS
    (E) None of the above

18. Which following set are countable?

    (A) The class of all languages not accepted by any Turing Machine

    (B) The class of all languages that are not recursive

    (C) The class of all languages that is not finite

    (D) All of the above

    (E) None of the above

19. The checksum in IP must be recomputed at every router because of change in _____ fields.

    (A) TTL, options, Identification, fragment offset

    (B) TTL, options, Datagram length, fragment offset

    (C) TTL, header length, fragment offset, TOS

    (D) All of the above

    (E) None of the above

20. Which of the following degree sequence represent a simple non directed graph?

    (A) (2, 3, 3, 4, 4, 5)

    (B) (2, 3, 4, 4, 5)

    (C) (3, 3, 3)

    (D) (3, 3, 3, 3)

    (E) None of the above

21. Two 2's complement number having sign bits x and y are added and the sign bit of the result is z. then the occurrence of overflow is indicated by the Boolean function

    (A) xyz

    (B) $x'y'z'$

    (C) $x'y'z + yz'$

    (D) $xy + yz + zx$

    (E) None of the above

22. Which indices search key defines the sequential order of file and which indices search key specifies an order different from sequential order of file?

    (A) Primary, clustering

    (B) Clustering, primary

    (C) Non – clustering, secondary

    (D) Clustering, Secondary

    (E) None of the above

23. Single source shortest path problems can be implemented by Greedy method using
    (A) Red – Black tress
    (B) Min Heap
    (C) AVL trees
    (D) All of the above
    (E) None of the above

24. The Performance of memory is given by hit ratio which in turn majorly depend on
    (A) Granularity of data transfer
    (B) Memory management policy
    (C) Size of memory
    (D) All of the above
    (E) None of the above

25. Which of the following statement is correct with respect to the number of the tag bits?
    I. Direct Mapping II. Associate Mapping III. Set Associate Mapping
    (A) I < II < III
    (B) I < III < II
    (C) II < I < III
    (D) All of the above
    (E) None of the above

26. Which of the following suffices to convert an arbitrary unambiguous context free grammar to an LL (1) grammar
    (A) Removal of left recursion
    (B) Factoring the grammar alone
    (C) Removing left recursion and factoring the grammar
    (D) All of the above
    (E) None of the above

27. Consider the grammar
    $S \rightarrow aS \mid Sa \mid a$

    The number of parse trees the grammar generates for an input string 'aaaa' is
    (A) 1
    (B) 2
    (C) 8
    (D) 4
    (E) None of the above

28. Strongly connected graph will always be
    (A) Weakly connected
    (B) Large in size
    (C) Small in size
    (D) Loosely connected
    (E) None of the above

29. Source code coverage measurement is
    (A) A partial measure of test effectiveness
    (B) Not related to testing
    (C) Easily achievable in practice
    (D) All of the above
    (E) None of the above

30. Any variable in a use case has
    (A) At least one valid value and one invalid value
    (B) At most one valid value
    (C) At most one invalid value
    (D) At most one valid value and one invalid value
    (E) None of the above

31. Binary partitioning is related to
    (A) Cause élimination
    (B) Brute force
    (C) Backtracking
    (D) Trial and error method
    (E) None of the above

32. An activity diagram represents the flow of activities through the
    (A) Classes
    (B) Methods
    (C) Objects
    (D) Programs
    (E) None of the above

33. Trap is used
    (A) to shift protected mode to Non-Supervisory mode
    (B) to shift Non-privileged mode to privileged mode
    (C) Both (A) & (B)
    (D) in Real Time Operating System for indication of arrival of Response
    (E) None of the above

34. In a certain computer system, suppose threads arrive at a rate of 10 threads per minute. The average service time for each thread is 3 seconds. The system load is
    (A) 30%
    (B) 40%
    (C) 50%
    (D) All of the above
    (E) None of the above

35. In which of the following protocol, the client uses HELLO command
    (A) TFTP
    (B) SMTP
    (C) TELNET
    (D) All of the above
    (E) None of the above

36. Which data link layer function answers the question: who should send now?
    (A) Line Discipline
    (B) Flow Control
    (C) Error Control
    (D) All of the above
    (E) None of the above

37. What is the output of the program?
    ```
    main()
    {
    int i = 5;
    i = (++i) / (i++);
     printf("%d", i);
    }
    ```
    (A) 2
    (B) 5
    (C) 1
    (D) 6
    (E) None of the above

38. A literal in Boolean algebra is a
    (A) Primed and unprimed Boolean variable
    (B) Primed Boolean variable only
    (C) Unprimed Boolean variable only
    (D) All of the above
    (E) None of the above

39. ABCD counter has
    (A) 3 distinct states
    (B) 8 distinct states
    (C) 10 distinct states
    (D) 16 distinct states
    (E) None of the above

40. Dynamic RAM can be fabricated using
    (A) MOS
    (B) TTL
    (C) ECL
    (D) IIL
    (E) None of the above

41. A storage device used to compensate the differences in flow of data is known as
    (A) Auxiliary storage
    (B) Buffer
    (C) Latch
    (D) All of the above
    (E) None of the above

42. A variable P is called pointer if
    (A) P contains the address of an element in DATA.
    (B) P points to the address of first element in DATA
    (C) P contain the DATA and the address of DATA
    (D) All of the above
    (E) None of the above

43. Which of the following data structure store the homogeneous data elements?
    (A) Arrays
    (B) Records
    (C) Pointers
    (D) All of the above
    (E) None of the above

44. Which of the following statement is false?
    (A) Arrays are dense lists and static data structure
    (B) data elements in linked list need not be stored in adjacent space in memory
    (C) pointers store the next data element of a list
    (D) All of the above
    (E) None of the above

45. The situation when in a linked list START = NULL is
    (A) underflow
    (B) overflow
    (C) houseful
    (D) All of the above
    (E) None of the above

46. Which of the following is two way list?
    (A) grounded header list
    (B) circular header list
    (C) linked list with header and trailer nodes
    (D) All of the above
    (E) None of the above

47. The space factor when determining the efficiency of algorithm is measured by
    (A) Counting the maximum memory needed by the algorithm
    (B) Counting the minimum memory needed by the algorithm
    (C) Counting the average memory needed by the algorithm
    (D) All of the above
    (E) None of the above

48. The Average case occur in linear search algorithm
    (A) When Item is somewhere in the middle of the array
    (B) When Item is not in the array at all
    (C) When Item is the last element in the array
    (D) All of the above
    (E) None of the above

49. The complexity of the average case of an algorithm is
    (A) Much more complicated to analyze than that of worst case
    (B) Much simpler to analyze than that of worst case
    (C) Sometimes more complicated and some other times simpler than that of worst case
    (D) All of the above
    (E) None of the above

50. The complexity of Binary search algorithm is
    (A) O (n)
    (B) O (log)
    (C) O (n2)
    (D) All of the above
    (E) None of the above

51. The complexity of Bubble sort algorithm is

    (A) O (n)

    (B) O (log n)

    (C) O (n2)

    (D) All of the above

    (E) None of the above

52. Which of the following data structure is not a linear data structure?

    (A) Array

    (B) Linked list

    (C) Queue

    (D) All of the above

    (E) None of the above

53. Which of the following data structure is linear type?

    (A) String

    (B) List

    (C) Queue

    (D) All of the above

    (E) None of the above

54. To represent hierarchical relationship between elements, which data structure is suitable?

    (A) Deque

    (B) Priority

    (C) Tree

    (D) All of the above

    (E) None of the above

55. When converting binary tree into extended binary tree, all the original nodes in binary tree are

    (A) internal nodes on extended tree

    (B) external nodes on extended tree

    (C) vanished on extended tree

    (D) All of the above

    (E) None of the above

56. The post order traversal of a binary tree is DEBFCA. Find out the pre order traversal
    (A) ABFCDE
    (B) ADBFEC
    (C) ABDECF
    (D) All of the above
    (E) None of the above

57. In a graph if e = (u, v) means
    (A) u is adjacent to v but v is not adjacent to u
    (B) e begins at u and ends at v
    (C) both (A) and (B)
    (D) All of the above
    (E) None of the above

58. IBM 1401 is
    (A) First Generation Computer
    (B) Second Generation Computer
    (C) Third Generation Computer
    (D) All of the above
    (E) None of the above

59. The capacity of 3.5 inch floppy disk is
    (A) 1.40 MB
    (B) 1.44 GB
    (C) 1.44 MB
    (D) All of the above
    (E) None of the above

60. Access time is
    (A) seek time + latency time
    (B) seek time
    (C) seek time – latency time
    (D) All of the above
    (E) None of the above

61. Binary circuit elements have
    (A) One stable state
    (B) Two stable state
    (C) Three stable state
    (D) All of the above
    (E) None of the above

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62. Which statement is valid about interpreter?

    (A) It translates one instruction at a time

    (B) Object code is saved for future use

    (C) Repeated interpretation is not necessary

    (D) All of the above

    (E) None of the above

63. The difference between memory and storage is that memory is _____ and storage is _____.

    (A) Temporary, permanent

    (B) Permanent, temporary

    (C) Slow, fast

    (D) All of the above

    (E) None of the above

64. Which of the following registers is loaded with the contents of the memory location pointed by the PC?

    (A) Memory address registers

    (B) Memory data registers

    (C) Instruction register

    (D) All of the above

    (E) None of the above

65. Where was India's first computer installed and when?

    (A) Indian Institute of Technology, Delhi, 1977

    (B) Indian Institute of Science, Bangalore, 1971

    (C) Indian Statistical Institute, Calcutta, 1955

    (D) All of the above

    (E) None of the above

66. Which of the following is not true for a magnetic disk?

    (A) It is expensive relative to magnetic tape

    (B) It provides only sequential access to stored data

    (C) Users can easily update records by writing over the old data

    (D) All of the above

    (E) None of the above

67. The word processing task associated with changing the appearance of a document is
    (A) Editing
    (B) Writing
    (C) Formatting
    (D) All of the above
    (E) None of the above

68. What is the number of read-write heads in the drive for a 9-trac magnetic tape?
    (A) 9
    (B) 16
    (C) 18
    (D) All of the above
    (E) None of the above

69. Which is considered a direct entry input device?
    (A) Optical scanner
    (B) Mouse and digitizer
    (C) Light pen
    (D) All of the above
    (E) None of the above

70. Which of the following is used only for data entry and storage, and never for processing?
    (A) Mouse
    (B) Dumb terminal
    (C) Micro computer
    (D) All of the above
    (E) None of the above

71. A 32 bit microprocessor has the word length equal to
    (A) 2 byte
    (B) 32 byte
    (C) 4 byte
    (D) All of the above
    (E) None of the above

72. The number of records contained within a block of data on magnetic tape is defined by the

   (A) Block definition

   (B) Record contain clause

   (C) Blocking factor

   (D) All of the above

   (E) None of the above

73. Maximum length of DOS command using any optional parameter is

   (A) 26 characters

   (B) 87 characters

   (C) 127 characters

   (D) All of the above

   (E) None of the above

74. CHKDSK command is used to

   (A) Analyze the hard disk error

   (B) Diagnose the hard disk error

   (C) Report the status of files on disk

   (D) All of the above

   (E) None of the above

75. Which statement is valid about "TIME" command?

   (A) Time command is used to display and allow changes to the system time

   (B) Time format can be changed by changing in country setting in config.sys file

   (C) MS DOS displays the time in 12-hour or 24-hour format

   (D) All of the above

   (E) None of the above

76. Which command in DOS can be used to recover accidentally deleted files?

   (A) UNDELETE

   (B) DELETE/CANCEL

   (C) RESTORE

   (D) All of the above

   (E) None of the above

77. What is the name of the latest server operating system developed by Microsoft?

(A) Windows NT

(B) Windows 2003

(C) Windows 2008

(D) Windows 2010

(E) None of the above

78. MSD.exe does not have information on

(A) Cache

(B) Video

(C) Operating System

(D) All of the above

(E) None of the above

79. Which of the following is an example of problem oriented language?

(A) BASIC

(B) PL/1

(C) FORTRAN

(D) All of the above

(E) none of the above

80. A factor in the selection of a source language is

(A) programmer skill

(B) language availability

(C) program compatibility with other software

(D) All of the above

(E) None of the above

81. The branch logic that provides decision making capabilities in the control unit is known as

(A) Controlled transfer

(B) Conditional transfer

(C) Unconditional transfer

(D) All of the above

(E) None of the above

82. A block comment can be written by

(A) Starting every line with double slashes (//)

(B) Starting with /* and ending with */

(C) Starting with //* and ending with *//

(D) All of the above

(E) None of the above

83. Which of the following is selection statement in C++?

(A) Break

(B) Goto

(C) Switch

(D) All of the above

(E) None of the above

84. Overloaded functions are

(A) Very long functions that can hardly run

(B) One function containing another one or more functions inside it.

(C) Two or more functions with the same name but different number of parameters or type.

(D) All of the above

(E) None of the above

85. Consider the following statements:

1. A total of about one million bytes can be directly addressed by the 8086 micro-processor.

2. The 8086 has thirteen 16-bit registers.

3. The 8086 has eight flags.

4. Compared to 8086 the 80286 provides a high degree of memory protection.

In these statements

(A) 1, 3 and 4 are correct

(B) 1, 2 and 3 are correct

(C) 2, 3 and 4 are correct

(D) 1, 2 and 4 are correct

(E) None of the above

86. Which RAID level does not incorporate fault tolerance?

    (A) RAID 1

    (B) RAID 0

    (C) RAID 5

    (D) RAID 3

    (E) All of the above

87. The binary equivalent of the octal Number 11.54 is

    (A) 1011.1110

    (B) 1001.1110

    (C) 1101.1110

    (D) 1001.1111

    (E) None of the above

88. The main disadvantage of indexed sequential file is

    (A) Insertion & deletion are difficult

    (B) large seek time for huge files

    (C) performance degradation when file grows

    (D) All of the above

    (E) None of the above

89. If a bucket is full, records are inserted in some other buckets as the number of buckets is fixed, refers to

    (A) Closed hashing

    (B) Overflow chaining

    (C) Open hashing

    (D) All of the above

    (E) None of the above

90. How many bits are required for High color Super-VGA adapter?

    (A) 8 Bits

    (B) 16 Bits

    (C) 24 Bits

    (D) 32 Bits

    (E) None of the above

91. How many hard disks can be connected in a SCSI interface?

(A) 4

(B) 8

(C) 12

(D) 16

(E) None of the above

92. Basic elements of product ciphers

(A) P-box

(B) S-box

(C) Product

(D) All of the above

(E) None of the above

93. Thunder bird is a

(A) Spreadsheet application

(B) Debugging tool

(C) Testing Tool

(D) E-mail client

(E) None of the above

94. A statement that is executed automatically when the database is modified is called as

(A) Triggers

(B) Assertion

(C) Stored procedure

(D) All of the above

(E) None of the above

95. If R=(A,B,C,D,E) with AB as the primary key and F=(B→F, A→C, AB→DE, AB→F), Then the relation is in _____ normal form.

(A) First

(B) Second

(C) Third

(D) All of the above

(E) None of the above

96. Sanity testing refers to the
    (A) Testing the software for checking the possibility of testing the software.
    (B) Testing the comments of the software
    (C) Testing the garbage output values of the Software.
    (D) All of the above
    (E) None of the above

97. The network traffic density will be more in
    (A) Shortest path routing
    (B) Flooding
    (C) Multipath routing
    (D) Linked state routing
    (E) None of the above

98. In case of Circular Queue, which is time consuming?
    (A) Keeping one Empty space
    (B) Introduction of Flag variable
    (C) Elimination of Queue status checking
    (D) All of the above
    (E) None of the above

99. What is the order of each of the following tasks?
    (i) Inserting a single item into a binary search tree containing n items, in the average case
    (ii) Performing a Towers of Hanoi algorithm with n disks
    (A) $O(2^n)$ & $O(Log_2 n)$
    (B) $O(Log\ n_2)$ & $O(2^n)$
    (C) $O(n^2)$ & $O(n^2)$
    (D) $O(2n)$ & $O(n^2)$
    (E) $O(2n^2)$ & $O(n)$

100. An algorithm in which many decision sequences may be generated is
    (A) Greedy technique
    (B) Dynamic
    (C) Backtracking
    (D) All of the above
    (E) None of the above