ENTRANCE EXAMINATION FOR ADMISSION, MAY 2012.

M.Sc. (COMPUTER SCIENCE)

COURSE CODE : 370

Register Number :

Signature of the Invigilator
(*with date*)

COURSE CODE : 370

Time : 2 Hours   Max : 400 Marks
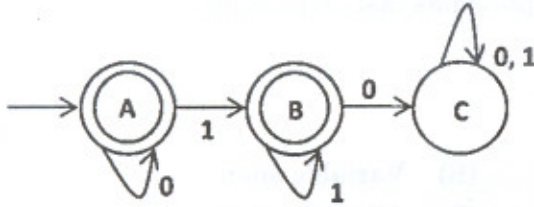
Instructions to Candidates :

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. Program is
   (A) Subset of software
   (B) Superset of software
   (C) Set of software
   (D) Union of software
   (E) None of the above

2. Which is not an infrastructure software?
   (A) Compiler
   (B) Operating system
   (C) Testing tools
   (D) Result management software
   (E) None of the above

3. A reliable software is one which is
   (A) Liked by its users
   (B) Delivered on time and with budget
   (C) Unlikely to cause failures
   (D) Very easy to use
   (E) None of the above

4. You cannot control what you cannot
   (A) Define
   (B) Measure
   (C) Improve
   (D) Change
   (E) None of the above

5. Quality assurance activities concentrate on
   (A) Software design
   (B) Software performance
   (C) Software processes
   (D) All of the above
   (E) None of the above

6. Which is not a user manual?
   (A) Reference guide
   (B) Beginner's guide
   (C) Sequence diagrams
   (D) System overview
   (E) None of the above

7. Which is not a documentation manual?
   (A) SRS document
   (B) SDD document
   (C) Source code
   (D) Installation guide
   (E) None of the above

8. How many portions are available in a decision table?
   (A) 8
   (B) 4
   (C) 2
   (D) 1
   (E) None of the above

9. Which of the following is FALSE?
   (A) The size of the disk sector equals the size of file system logical block
   (B) When the page fault occurs, there is no valid copy of the page in the main memory
   (C) A reference bit is used to implement page replacement algorithms
   (D) A real time process should be completed as fast as possible
   (E) None of the above

10. Choose a data structure metric
    (A) Number of live variables
    (B) Variable span
    (C) Module weakness
    (D) All of the above
    (E) None of the above

11. A web application depicts
    (A) Two-tier architecture
    (B) Three-tier architecture
    (C) N-tier architecture
    (D) One-tier architecture
    (E) None of the above

12. The purpose of objective function is
    (A) Function minimization
    (B) Function maximization
    (C) Function optimization
    (D) Function execution
    (E) None of the above

13. The Eigen values of the matrix are $\begin{bmatrix} 5 & 0 & 1 \\ 0 & -2 & 0 \\ 1 & 0 & 5 \end{bmatrix}$
    (A) $-2, -4, 5$
    (B) $-2, 4, 6$
    (C) $-2, -5, 3$
    (D) All of the above
    (E) None of the above

14. Convey effect in FCFS results in
    (A) Lower CPU and device utilization
    (B) Higher CPU and device utilization
    (C) A preemptive approach
    (D) Decrease of average waiting time
    (E) None of the above

15. How many anti symmetric relations are there on a set with 3 elements?
    (A) 64
    (B) 512
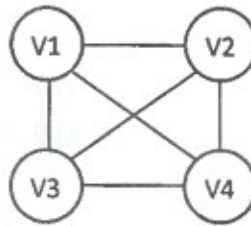   (C) 128
    (D) 216
    (E) None of the above

16. What is the probability that a bit string of length six contains at least four 1's?
    (A) 11/32
    (B) 15/64
    (C) 3/8
    (D) 5/16
    (E) None of the above

17.

The language accepted by the above DFA is
    (A) 0* 1*
    (B) 0* 1
    (C) 0 1
    (D) 0 1 1
    (E) None of the above

18. How many spanning trees are possible?

    (A) 10
    (B) 12
    (C) 14
    (D) 16
    (E) None of the above

19. What is the output of the following program?

```
main( )
{
        char *s[ ] = {"abcd", "efg", "hijkl"};
        char**p[3] = {s + 2, s + 1, s};
        char ***ptr = p;
        printf("%s", **++ptr +1);
}
```

    (A) cd
    (B) fg
    (C) hijkl
    (D) ijkl
    (E) None of the above

20. If the disk system has the rotational speed of 3000 rpm. What is the (approximately) average access time? (seek time = 11.5 ms)

    (A)   21.5 ms   (B)   31.5 ms

    (C)   41.5 ms   (D)   11.5 ms

    (E)   None of the above

21. Which of the following Hazards occurs when the following two instructions are in pipeline?

                         ADD R4, R2, R8
                         ADD R4, R7, R4

    (A)   RAW   (B)   WAR

    (C)   WAW   (D)   Both (A) & (C)

    (E)   None of the above

22. Choose the correct statement

    (A)   The minimal finite automata accepting (0+1+2+#)* has 4 states

    (B)   The minimal finite automata accepting the empty string has 5 states

    (C)   The minimal finite automata accepting the empty set is not unique

    (D)   All of the above

    (E)   None of the above

23. The grammar $S \rightarrow (S) \mid [S] \mid SS \mid \varepsilon$ is

    (A)   Left recursive   (B)   Right recursive

    (C)   Ambiguous   (D)   Unambiguous

    (E)   None of the above

24. Program slicing was introduced by

    (A)   Mark Weiser   (B)   Victor Basili

    (C)   L. Briand   (D)   Mc Cabe

    (E)   None of the above

25. What is not included in the cost of performing inspection?

    (A)   Setting up forms and databases

    (B)   Statistical analysis of various metrics

    (C)   Time spent on documenting outside meeting

    (D)   Writing the documents to be inspected

    (E)   None of the above

26. Quality assurance methods are usually considered as
    (A) Defective   (B) Preventive
    (C) Corrective   (D) Perfective
    (E) None of the above

27. Software quality is determined by
    (A) The number of bugs only
    (B) The sales level of the software
    (C) How well the software meets the needs of the business
    (D) All of the above
    (E) None of the above

28. In reviews, the moderator's job is to
    (A) Prepare minutes of the meeting   (B) Prepare documents for review
    (C) Mediate between participants   (D) Guide the users about quality
    (E) None of the above

29. Every use case may have
    (A) at least one actor   (B) at most one actor
    (C) no test case   (D) all of the above
    (E) none of the above

30. Use cases and use case diagrams are used to define
    (A) Complexity of a system   (B) Criticality of a system
    (C) Stability of a system   (D) Behavior of a system
    (E) None of the above

31. Risk should include
    (A) Probability of occurrence of a problem (B) Impact of that problem
    (C) Test cases   (D) Both (A) and (B)
    (E) None of the above

32. Choose the worst type of coupling
    (A) Stamp coupling   (B) Content coupling
    (C) Common coupling   (D) Control coupling
    (E) None of the above

33. Which is not cohesion metric?
    (A) Lack of cohesion in methods (B) Tight class cohesion
    (C) Response for a class   (D) Information flow based cohesion
    (E) None of the above

34. Higher is the cyclomatic complexity
    (A) More is the testing effort   (B) Less is the testing effort
    (C) Infinite is the testing effort   (D) All of the above
    (E) None of the above

35. Which is not the object oriented metric given by chidamber and kemerer?
    (A) Coupling between objects   (B) Lack of cohesion of methods
    (C) Response for a class   (D) Number of branches in a trees
    (E) None of the above

36. Suppose the page size in a computing environment is 1 KB. The page number and offset for the Logical Address 899 is
    (A) 0, 899   (B) 8, 99
    (C) 18, 0   (D) All of the above
    (E) None of the above

37. Recursion in program
    (A) Enhances logical clarity   (B) Complicate the coding
    (C) Makes debugging easier   (D) All of the above
    (E) None of the above

38. The use of macro in the place of function
    (A) Reduces execution time and code size
    (B) Increases execution time and reduces code size
    (C) Increases execution time and increases code size
    (D) Reduces execution time and increases code size
    (E) None of the above

39. Which of the following characteristics of a programming language is best specified using a context-free grammar?
    (A) Identified length   (B) Maximum level of nesting
    (C) Operator Precedence   (D) Type Compatibility
    (E) None of the above

40. What is true about Thomas's write rule?
    (A) Thomas's write rule provides lesser concurrency than time stamp order protocol
    (B) Thomas's write rule and time stamp order protocol provides same concurrency
    (C) No comparison between Thomas's write rule time stamp order protocol
    (D) Thomas's write rule provides greater concurrency than time stamp order protocol
    (E) None of the above

41. Why do we emphasize conflict serializability rather than view serializability?

   (A) View serializability is less powerful

   (B) All view serializable schedules are also conflict serializable

   (C) Most of the concurrent protocols used in practice are not based on conflict serializability

   (D) Most of the concurrent protocols used in practice are based on conflict serializability

   (E) None of the above

42. The default permission bits of a file when it is created for the first time, is controlled by

   (A) chmod value   (B) fmask value

   (C) umask value   (D) all of the above

   (E) none of the above

43. Choose the correct statement

   (A) C programs can directly make system calls

   (B) System calls are functions used by the shell

   (C) Library functions don't use system calls

   (D) All of the above

   (E) None of the above

44. The main memory of the computer occupies _____ position in the memory hierarchy.

   (A) Top   (B) Bottom

   (C) Central   (D) Last but one

   (E) None of the above

45. Which of the following data structure can't store the non-homogeneous data elements?

   (A) Arrays   (B) Records

   (C) Pointers   (D) All of the above

   (E) None of the above

46. The memory address of the first element of an array is called

   (A) floor address   (B) foundation address

   (C) base address   (D) all of the above

   (E) none of the above

47. Which of the following data structures are indexed structures?

    (A) Linear arrays   (B) Linked list
    (C) Either (A) or (B)   (D) All of the above
    (E) None of the above

48. Two dimensional arrays are also called

    (A) Tables arrays   (B) Matrix arrays
    (C) Nested arrays   (D) All of the above
    (E) None of the above

49. Which of the following name does not relate to stacks?

    (A) FIFO lists   (B) LIFO list
    (C) Piles   (D) All of the above
    (E) None of the above

50. The term "push" and "pop" is related to the

    (A) Array   (B) Lists
    (C) Stacks   (D) All of the above
    (E) None of the above

51. Two main measures for the efficiency of an algorithm are

    (A) Processor and memory   (B) Complexity and capacity
    (C) Time and space   (D) All of the above
    (E) None of the above

52. Which of the following case does not exist in complexity theory?

    (A) Best case   (B) Worst case
    (C) Null case   (D) All of the above
    (E) None of the above

53. The Worst case occur in linear search algorithm when

    (A) Item is somewhere in the middle of the array
    (B) Item is not in the array at all
    (C) Item is the last element in the array or is not there at all
    (D) All of the above
    (E) None of the above

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

55. The indirect change of the values of a variable in one module by another module is called
   (A) Internal change   (B) Inter-module change
   (C) Side effect   (D) All of the above
   (E) None of the above

56. The operation of processing each element in the list is known as
   (A) Sorting   (B) Merging
   (C) Traversal   (D) All of the above
   (E) None of the above

57. Arrays are best data structures
   (A) for relatively permanent collections of data
   (B) for the size of the structure and the data in the structure are constantly changing
   (C) for both of above situation
   (D) All of the above
   (E) None of the above

58. Linked lists are best suited
   (A) for relatively permanent collections of data
   (B) for the size of the structure and the data in the structure are constantly changing
   (C) for both of above situation
   (D) all of the above
   (E) none of the above

59. The elements of an array are stored successively in memory cells because
   (A) by this way computer can keep track only the address of the first element and the addresses of other elements can be calculated
   (B) the architecture of computer memory does not allow arrays to store other than serially
   (C) Either (A) or (B)
   (D) all of the above
   (E) none of the above

60. Which data structure allows deleting data elements from front and inserting at rear?
    (A) Stack   (B) Queue
    (C) Deque   (D) All of the above
    (E) None of the above

61. An algorithm that calls itself directly or indirectly is known as
    (A) Sub algorithm   (B) Recursion
    (C) Polish notation   (D) All of the above
    (E) None of the above

62. The in order traversal of tree will yield a sorted listing of elements of tree in
    (A) Binary trees   (B) Binary search trees
    (C) Heaps   (D) All of the above
    (E) None of the above

63. UNIVAC is
    (A) Universal Automatic Computer (B) Universal Array Computer
    (C) Unique Automatic Computer   (D) All of the above
    (E) None of the above

64. VGA is
    (A) Video Graphics Array   (B) Visual Graphics Array
    (C) Volatile Graphics Array   (D) All of the above
    (E) None of the above

65. MICR stands for
    (A) Magnetic Ink Character Reader (B) Magnetic Ink Code Reader
    (C) Magnetic Ink Cases Reader   (D) All of the above
    (E) None of the above

66. Artificial Intelligence is associated with which generation?
    (A) First Generation   (B) Second Generation
    (C) Fifth Generation   (D) All of the above
    (E) None of the above

67. Central Processing Unit is combination of
    (A) Control and storage   (B) Arithmetic logic and input unit
    (C) Arithmetic logic and control unit (D) All of the above
    (E) None of the above

68. Which statement is valid?
    (A) 1 KB = 1024 bytes   (B) 1 MB = 2048 bytes
    (C) 1 MB = 1000 kilobytes   (D) All of the above
    (E) None of the above

69. The translator program used in assembly language is called
    (A) Compiler   (B) Interpreter
    (C) Assembler   (D) All of the above
    (E) None of the above

70. Offline device is
    (A) a device which is not connected to CPU
    (B) a device which is connected to CPU
    (C) a direct access storage device
    (D) all of the above
    (E) none of the above

71. How many address lines are needed to address each machine location in a 2048 × 4 memory chip?
    (A) 10   (B) 11
    (C) 8   (D) All of the above
    (E) None of the above

72. Who is credited with the idea of using punch cards to control patterns in a waving machine?
    (A) Pascal   (B) Hollerith
    (C) Jacquard   (D) All of the above
    (E) None of the above

73. The first machine to successfully perform a long series of arithmetic and logical operations was:
    (A) ENIAC   (B) Mark I
    (C) Analytic engine   (D) All of the above
    (E) None of the above

74. The primary advantage of key-to-tape data entry system is
    (A) a large percentage of editing can be performed at the time of data entry
    (B) key verification is easily performed
    (C) the tape is reusable
    (D) all of the above
    (E) none of the above

75. The arranging of data in a logical sequence is called
    (A) Sorting
    (B) Classifying
    (C) Reproducing
    (D) All of the above
    (E) None of the above

76. CAD stands for
    (A) Computer Aided Design
    (B) Computer Algorithm for Design
    (C) Computer Application in Design
    (D) All of the above
    (E) None of the above

77. What is the name of the batch file that is automatically run when MSDOS is booted?
    (A) Run.bat
    (B) Config.sys
    (C) Autoexec.bat
    (D) All of the above
    (E) None of the above

78. Which among the following are the best tools for fixing errors on disks?
    (A) Fdisk
    (B) Scandisk
    (C) Chkdsk
    (D) All of the above
    (E) None of the above

79. While working with MS-DOS, which command is used to more file from one directory to another?
    (A) Rename
    (B) Copy
    (C) Move
    (D) All of the above
    (E) None of the above

80. Multiprogramming system
    (A) are easier to develop than single programming system
    (B) execute each job faster
    (C) execute more jobs in the same time period
    (D) all of the above
    (E) none of the above

81. The startup routine runs, when machine boots up is known as
    (A) POST
    (B) BOOT up
    (C) Operating routine
    (D) All of the above
    (E) None of the above

82. To display the list of all the file of the disk you would type
    (A) DIR   (B) COPY
    (C) DIR FILES   (D) All of the above
    (E) None of the above

83. A micro-program is sequencer perform the operation
    (A) read   (B) write
    (C) read and execute   (D) all of the above
    (E) none of the above

84. In OSI network architecture, the routing is performed by
    (A) Network layer   (B) Data link layer
    (C) Transport layer   (D) All of the above
    (E) None of the above

85. Which of the following performs modulation and demodulation?
    (A) Fibre optics   (B) Satellite
    (C) Modem   (D) All of the above
    (E) None of the above

86. Translating the algorithm into a programming language occurs at the ——————
    step of the PDLC.
    (A) Debugging   (B) Coding
    (C) Testing and Documentation   (D) All of the above
    (E) None of the above

87. Which of the following is not a correct variable type?
    (A) float   (B) real
    (C) int   (D) all of the above
    (E) none of the above

88. WiMax is
    (A) Wireless Maximization
    (B) Wireless Mac eXtension
    (C) Worldwide Interoperability for Microwave Access
    (D) Wireless Media access eXtension
    (E) None of the above

89. RSS means
   (A) Read only System Shell
   (B) Random System Sockets
   (C) Rigid System Security
   (D) Really Simple Syndication
   (E) None of the above

90. HSAM stands for ——————.
   (A) Hierarchic Sequential Access Method
   (B) Hierarchic Standard Access Method
   (C) Hierarchic Sequential and Method
   (D) Hierarchic Standard and Method
   (E) None of the above

91. Bucket sort is also referred to as
   (A) Radix sort
   (B) Quick sort
   (C) Merge sort
   (D) Bubble sort
   (E) None of the above

92. Which of the following is a law is used in parallel computing to predict the theoretical maximum speedup using multiple processors?
   (A) Moore's Law
   (B) Prescos Law
   (C) Amdahl's Law
   (D) Richies Law
   (E) None of the above

93. Which of the following is the optimum data structure, if you want to go to first record from the last and vice versa?
   (A) Circular linked list
   (B) Doubly linked list
   (C) Dynamic list
   (D) Doubly linked circular list
   (E) None of the above

94. A scheduling policy may attempt to optimize on:
   (A) CPU utilization
   (B) Average wait time
   (C) Average turnaround time
   (D) All of the above
   (E) None of the above

95. Choose the Odd Man Out: 10, 14, 16, 18, 21, 24, 26
   (A) 26
   (B) 24
   (C) 21
   (D) 18
   (E) None of the above

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96. Choose the Odd Man Out: 41, 43, 47, 53, 61, 71, 73, 81

   (A) 61   (B) 71
   (C) 73   (D) 81
   (E) None of the above

97. Choose the correct answer:

   Quantity A: $(3 \times 4 \times 17) / (121 \times 100)$

   Quantity B: $(4 \times 5 \times 19) / (1000 \times 121)$

   (A) Quantity A is greater
   (B) Quantity B is greater
   (C) The two quantities are equal
   (D) The relationship cannot be determined from the information given
   (E) None of the above

98. If, $yz < 0$, then

   Quantity A: $(y - z)^2$

   Quantity B: $y^2 + z^2$

   (A) Quantity A is greater
   (B) Quantity B is greater
   (C) Quantity A equals Quantity B
   (D) The relationship cannot be determined from the information given
   (E) None of the above

99. If 1 cm on a map corresponds to an actual distance of 40 km and the distance on the map between Bombay and Calcutta is 37.5 cm then the actual distance between them is

   (A) 375 kms   (B) 3750 kms
   (C) 1500 kms   (D) 1375 kms
   (E) None of the above

100. If the area of two circles are in the ratio 169 : 196 then the ratio of their radii is

   (A) 10 : 11   (B) 11 : 12
   (C) 12 : 13   (D) 13 : 14
   (E) None of the above