

ENTRANCE EXAMINATION FOR ADMISSION, MAY 2008.

M.Tech. (Computer Science and Engineering)

COURSE CODE : 376

Register Number :

*Signature of the Invigilator
(with date)*

COURSE CODE : 376

Time : 2 Hours

Max : 360 Marks

Instructions to Candidates :

1. Follow the instructions given in the question paper and page 1 of the answer sheet.
2. Write your Register Number within the box provided on the top of this page and fill the same in the page 1 of the answer sheet using pen.
3. Do not write your name anywhere in this booklet or answer sheet. Violation of this entails disqualification.
4. For each question, a correct answer will fetch you 4 marks and the wrong answer will fetch -1 (Minus one) mark.
5. Read each 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.
6. Do not write anything in the question paper. Use the white sheets attached at the end for rough works.
7. Do not open the question paper until the start signal is given.
8. Do not attempt to answer after stop signal is given. Any such attempt will disqualify your candidature.
9. On stop signal, keep the question paper and the answer sheet on your table and wait for the invigilator to collect them.
10. Use of Calculators, Tables, etc. are prohibited.

1. ILLIAC is a
 - (A) Super Computer
 - (B) Mini Computer
 - (C) Mainframe computer
 - (D) Micro computer
 - (E) None of the above

2. Which of the following bus types are used by the Apple Macintosh Computer?
 - (A) ISA
 - (B) NuBus
 - (C) EISA
 - (D) MCA
 - (E) PCI

3. Which of the following languages is more suited to a structured program
 - (A) ASCAL
 - (B) FORTRAN
 - (C) BASIC
 - (D) COBOL
 - (E) PL/I

4. A system in which logic actions are not confined to the central processor is
 - (A) I
 - (B) Distributed logic
 - (C) KIPS
 - (D) Optical Computer
 - (E) None of the above

5. What is the latest write-once optical storage media?
 - (A) Digital paper
 - (B) Magneto-optical disk
 - (C) WORM disk
 - (D) CD-ROM disk
 - (E) None of the above

6. Exploratory programming is
 - (A) An advanced form of prototype-based development
 - (B) The naive "code-compile-recode-recompile-recode-..." technique used by novice programmers
 - (C) A form of programming where the system explores a "solution space" using genetic algorithms
 - (D) Implementing a solution in a variety of languages and then comparing them for efficiency.
 - (E) None of the above

7. Upper CASE tools help
- (A) Analysts
 - (B) Analyst & designers
 - (C) Designers & programmers
 - (D) Analyst, designers & programmers
 - (E) None of the above
8. Which of the following operating system(s) uses a message passing interface rather than a system call interface?
- (A) Mach
 - (B) Linux
 - (C) Windows NT/2000
 - (D) All of the above
 - (E) None of the above
9. Automated data dictionaries
- (A) Allow necessary program changes to all programs sharing a common element
 - (B) Important for large systems
 - (C) Are valuable for their capacity to cross-reference data-items
 - (D) All of the above
 - (E) None of the above
10. A memory word is defined by
- (A) the "width" of the memory.
 - (B) the size of the target datum in the machine.
 - (C) the size of the data path between the CPU and memory.
 - (D) the size of the general registers in the machine.
 - (E) all the above
11. Convert the following infix expression to postfix notation
- $$Z-(((X+1)*2)-5)/Y$$
- (A) ZX-1+*25-/Y
 - (B) ZX-1+2*5-Y/-
 - (C) ZX1+2*5-Y/-
 - (D) ZX1+25*-Y/-
 - (E) None of the above

12. Binding time
- (A) is a non recursive exit from the recursive routine
 - (B) is a path that includes a recursive call to the routine, to solve a smaller version of the original problem
 - (C) is a structure that keeps track of the activation records at run time, in order to preserve the values of parameters, return addresses, registers, and so on.
 - (D) refers to the point in the compiler / execution cycle when variable names are associated with addresses in memory
 - (E) none of the above
13. When the compiler places a copy of a small function's statements directly into a program, the function is said to be
- (A) Overloaded
 - (B) Mangled
 - (C) Inline
 - (D) Redundant
 - (E) None of the above
14. The weakest form of cohesion is
- (A) Coincidental
 - (B) Functional
 - (C) Logical
 - (D) Communicational
 - (E) None of the above
15. Storing a class definition in a separate file is an example of
- (A) Polymorphism
 - (B) Naming
 - (C) Implementation hiding
 - (D) Inheritance
 - (E) None of the above
16. A major advantage of inheritance is
- (A) reducing the time it takes to create new objects
 - (B) not having to think about how objects will be used
 - (C) reducing the amount of memory required to execute a program
 - (D) enabling people who have not studied programming to create useful applications.
 - (E) None of the above

17. In the avoidance strategy,
- (A) state transitions are permitted only when the system is certain that a deadlock cannot occur due to subsequent requests
 - (B) the system is only allowed to transition to safe states
 - (C) each process must provide its maximum claim when it is created
 - (D) all of the above
 - (E) none of the above
18. The biggest advantage of manipulator is
- (A) Shorter code
 - (B) Faster compile time
 - (C) All manipulators are already coded
 - (D) Clarity of intention
 - (E) None of the above
19. Example(s) of $O(1)$ algorithm(s) is (are)
- (A) Printing a character to the screen
 - (B) Incrementing a variable
 - (C) Adding two numbers together
 - (D) All the above
 - (E) None of the above
20. What data structure would you most likely to see in a non recursive implementation of a recursive algorithm?
- (A) Linked list
 - (B) Queue
 - (C) Stack
 - (D) Tree
 - (E) Trie
21. The expert system developed at MIT to solve mathematical problems is known as
- (A) RAND
 - (B) ISIS
 - (C) MACSYMA
 - (D) MOLGEN
 - (E) CMU
22. The field that investigates the mechanics of human intelligence is;
- (A) history
 - (B) cognitive Science
 - (C) psychology
 - (D) sociology
 - (E) none of the above
23. A search method that examines the values associated with the immediate successor nodes and goes to the node with the highest value, is
- (A) Sequential search
 - (B) Minimax search
 - (C) Hill-climbing search
 - (D) Heuristic search
 - (E) None of the above

24. In a rule based system, procedural domain knowledge is in the form of:
- (A) production rules (B) rule interpreters
 (C) meta rules (D) control rules
 (E) none of the above
25. The first AI programming language was called:
- (A) BASIC (B) FORTRAN
 (C) IPL (D) LISP
 (E) None of the above
26. Demorgan's second theorem says that NAND gate is equivalent to a bubbled gate
- (A) AND (B) XAND
 (C) XOR (D) OR
 (E) None of the above
27. Suppose we have a file system based on the indexed allocation strategy for managing blocks. Assume each file has a directory entry (loaded in primary memory). If we are currently at logical block 1650 and want to access logical block 947, how many physical blocks must be read from the disk?
- (A) 1 (B) 3
 (C) 947 (D) 1650
 (E) None of the above
28. FETs are used in linear ICs to
- (A) increase input resistance (B) provide large resistance
 (C) increase device complexity (D) both (A) and (B)
 (E) none of the above
29. Which TTL sub-family has maximum speed?
- (A) Standard TTL (B) Schottky-clamped TTL
 (C) High speed TTL (D) Low power TTL
 (E) None of the above
30. Which of the following is the first integrated logic family?
- (A) TL (B) DTL
 (C) TTL (D) MOS
 (E) None of the above

31. A criticism of indexed allocation is that
- (A) Seek operations are slow
 - (B) A sequential read pass over the file is slow
 - (C) It suffers from table fragmentation
 - (D) All of the above
 - (E) None of the above
32. When an inverter is placed between both inputs of an SR flip flop, the resulting flip flop is
- (A) JK flip flop
 - (B) D flip flop
 - (C) T flip flop
 - (D) Master slave JK flip flop
 - (E) None of the above
33. The clock signals are used in sequential logic circuits
- (A) to tell the time of the day
 - (B) to tell how much time has elapsed since the system was turned on
 - (C) to carry serial data signals
 - (D) to synchronize events in various parts of the system
 - (E) none of the above
34. A multiplexer is also known as
- (A) Coder
 - (B) Secoder
 - (C) Data selector
 - (D) Multivibrator
 - (E) None of the above
35. Parallel adders are
- (A) Combinational logic circuits
 - (B) Sequential logic circuits
 - (C) Both (A) and (B)
 - (D) Encoder
 - (E) None of the above
36. Which of the following is an example of bounded medium?
- (A) Coaxial cable
 - (B) Wave guide
 - (C) Fiber optic cable
 - (D) All of the above
 - (E) None of the above

37. The gray code for decimal 7 is
- (A) 0111 (B) 1011
(C) 0100 (D) 0101
(E) None of the above
38. Which of the following is not a valid character constant?
- (A) '\n' (B) '\\'
(C) '\0' (D) All of the above
(E) None of the above
39. The problem of thrashing is affected significantly by:
- (A) program structure (B) program size
(C) primary storage size (D) all of the above
(E) none of the above
40. Which of the following statements is/are incorrect?
- (A) declared outside a function in which they are to be utilized
(B) created when the function is called and destroyed automatically when the function is exited.
(C) private to the function in which they are declared
(D) all of the above
(E) none of the above
41. A computer system having 64 K memory will have its last address as
- (A) 65536 (B) 64000
(C) 65535 (D) 65530
(E) None of the above
42. The purpose of declaring a structure is
- (A) to specify a list of structure elements
(B) to define a new data type
(C) to set aside the appropriate amount of memory
(D) all of the above
(E) none of the above

43. Enumeration is
- (A) a set of numbers
 - (B) a list of strings
 - (C) a set of legal values possible for a variable
 - (D) a list of operators
 - (E) none of the above
44. A C program contains the following declarations and initial assignments
- ```
int i= 8, j=5
float x=0.0005, y=-0.01
char c='c', d='d'
```
- what would be the value of the following expression:
- $$(3*i - 2*j) \% (2*d - c)$$
- (A) 14
  - (B) 18
  - (C) 1
  - (D) 0
  - (E) None of the above
45. Which of the following is(are) invalid string constant(s)?
- (A) '7.15 pm'
  - (B) " I like C"
  - (C) "7.3 e 12"
  - (D) "1234e12"
  - (E) None of the above
46. The first argument of a scanf() function is
- (A) control string
  - (B) address of a variable
  - (C) escape sequence
  - (D) keyword
  - (E) none of the above
47. The cast operator for the float type is
- (A) float
  - (B) (float)
  - (C) %f
  - (D) %t
  - (E) none of the above
48. The string HELLO WORLD needs
- (A) 11 bytes
  - (B) 12 bytes
  - (C) 10 bytes
  - (D) 8 bytes
  - (E) None of the above

49. The bit fields are the members of an array  
(A) circular array (B) structure  
(C) union (D) intersection  
(E) none of the above
50. A long type of int needs  
(A) two bytes of memory (B) four bytes of memory  
(C) eight bytes of memory (D) sixteen bytes of memory  
(E) none of the above
51. If a piece of data is stored in two places in the database, then  
(A) storage space is wasted  
(B) changing the data in one spot will cause data inconsistency  
(C) it can be more easily accessed  
(D) both (A) and (B)  
(E) none of the above
52. A compound key  
(A) is made up of several pieces of information  
(B) uniquely identifies an item in a list  
(C) both (A) and (B)  
(D) is a combination of each unique key  
(E) none of the above
53. Which of the following is not a characteristic of a relational database model  
(A) tables (B) treelike structure  
(C) complex logical relationships (D) records  
(E) none of the above
54. Characteristic(s) of a distributed MIS structure is  
(A) interactive sharing of the workload  
(B) a Multiprocessing environment  
(C) computers supporting local DP operations  
(D) all of the above  
(E) none of the above

55. The data dictionary tells the DBMS
- (A) What files are in the database
  - (B) What attributes are possessed by the data
  - (C) What these files contain
  - (D) All of the above
  - (E) None of the above
56. The physical location of a record is determined by a mathematical formula that transforms a file key into a record location in
- (A) a tree file
  - (B) an indexed file
  - (C) a hashed file
  - (D) a sequential file
  - (E) none of the above
57. Which of the following is true of a network structure?
- (A) It is a physical representation of the data
  - (B) It allows a many-to-many relationship
  - (C) It is conceptually simple
  - (D) It will be the dominant database of the future
  - (E) None of the above
58. In order to use a DBMS, it is important to understand
- (A) the physical schema
  - (B) all subschemas that the system supports
  - (C) one subschema
  - (D) both (A) and (B)
  - (E) none of the above
59. Data security threats include
- (A) hardware failure
  - (B) privacy invasion
  - (C) fraudulent manipulation of data
  - (D) all of the above
  - (E) none of the above
60. Report generators are used to
- (A) store data input by a user
  - (B) retrieve information from files
  - (C) answer queries
  - (D) both (B) and (C)
  - (E) none of the above

61. The amount of uncertainty in a system of symbol is called
- (A) Bandwidth
  - (B) Entropy
  - (C) Loss
  - (D) Quantum
  - (E) None of the above
62. The main difference between synchronous and asynchronous transmission is
- (A) the clocking is derived from the data in synchronous transmission
  - (B) the clocking is mixed with the data in asynchronous transmission
  - (C) the pulse height is different
  - (D) the bandwidth required is different
  - (E) none of the above
63. Device on one network can communicate with devices on another network via a
- (A) File Server
  - (B) Utility server
  - (C) Printer server
  - (D) Gateway
  - (E) None of the above
64. The communication mode that supports data in both direction at the same time is
- (A) Simplex
  - (B) Half-duplex
  - (C) Full duplex
  - (D) Multiplex
  - (E) None of the above
65. An error detecting code inserted as a field in a block of data to be transmitted is known as
- (A) Frame check sequence
  - (B) Error detecting code
  - (C) Checksum
  - (D) Flow control
  - (E) None of the above
66. The 32-bit internet address 10000000 00001010 00000010 00011110 will be written in dotted decimal notation as
- (A) 148.20.2.30
  - (B) 164.100.9.61
  - (C) 210.20.2.64
  - (D) 128.10.2.30
  - (E) None of the above

67. Which of the following TCP/IP protocol is used for remote terminal connection service?
- (A) TELNET (B) FTP  
(C) RARP (D) UDP  
(E) None of the above
68. In which laboratory modem is invented?
- (A) Wang Laboratories Ltd (B) AT and Information Systems, USA  
(C) Apple Computers Inc (D) Digital Equipment Corpn  
(E) None of the above
69. What is the name given to the exchange of control signals which is necessary for establishing a connection between a modem and a computer at one end of a line and another modem and a computer at the other end?
- (A) Handshaking (B) Modem Options  
(C) Protocol (D) Duplexing  
(E) None of the above
70. Identify the odd term amongst the following group:
- (A) Coaxial cable (B) Optical fibre  
(C) Twisted pair wire (D) Microwaves  
(E) None of the above
71. Object code is
- (A) is ready to execute  
(B) is the output of compilers, but not assemblers  
(C) must be "loaded" before execution  
(D) must be rewritten before execution  
(E) none of the above
72. System maintenance
- (A) is usually not necessary  
(B) is necessary on all systems regardless of how good  
(C) is not required if the system is well written  
(D) always requires several programs  
(E) none of the above

73. Real time systems are
- (A) primarily used on mainframe computers
  - (B) used for monitoring events as they occur
  - (C) used for program analysis
  - (D) used for real time interactive users
  - (E) none of the above
74. Access time is the highest in the case of
- (A) Floppy disk
  - (B) Cache
  - (C) Swapping devices
  - (D) Magnetic disk
  - (E) None of the above
75. Which of the following refers to the associative memory?
- (A) the address of the data is generated by the CPU
  - (B) the address of the data is supplied by the users
  - (C) there is no need for an address i.e the data is used as an address
  - (D) the data are accessed sequentially
  - (E) none of the above
76. Poor response times are caused by
- (A) Processor busy
  - (B) High I/O rate
  - (C) High paging rates
  - (D) Any of the above
  - (E) None of the above
77. Page map table is
- (A) A data file
  - (B) A directory
  - (C) Used for address translation
  - (D) All of the above
  - (E) None of the above
78. The dispatcher
- (A) actually schedules the tasks into the processor
  - (B) puts tasks in I/O wait
  - (C) is always small and simple
  - (D) never changes task priorities
  - (E) none of the above

79. Trojan-Horse programs
- (A) are legitimate programs that allow unauthorized access
  - (B) do not usually work
  - (C) are hidden programs that do not show up on the system
  - (D) usually are immediately discovered
  - (E) none of the above
80. The memory allocation scheme subject to "external" fragmentation is
- (A) Segmentation
  - (B) Swapping
  - (C) Pure demand paging
  - (D) Multiple contiguous fixed partitions
  - (E) None of the above
81. Which of the following statement is wrong?
- (A) Recursive languages are closed under union
  - (B) Recursive languages are closed under complementation
  - (C) If a language and its compliment are both regular, then the language must be recursive
  - (D) A language is accepted by a finite automation if and only if it is recursive
  - (E) None of the above
82. Which of the following statement is wrong?
- (A) A turing Machine can't solve halting problem
  - (B) Set of recursive enumerable language is closed under union
  - (C) An finite state machine with 3 stacks is more powerful than an Finite state Machine with 2 stacks
  - (D) Context sensitive grammar can be recognized by a linearly bounded memory machine.
  - (E) None of the above
83. The "big picture" diagram of a system is the
- (A) Logic diagram
  - (B) Block diagram
  - (C) System Flowchart
  - (D) Program flow chart
  - (E) None of the above
84. Topdown design does not require:
- (A) Stepwise refinement
  - (B) Loop variant
  - (C) Flow charting
  - (D) Modularity
  - (E) None of the above

85. In a consistent language
- (A) similar situations are handled in a similar way
  - (B) larger program chunks can be broken into smaller modules
  - (C) multiplication is always performed before addition in all expressions
  - (D) all the above
  - (E) none of the above
86. Nonmodifiable procedures are called
- (A) serially usable procedures
  - (B) concurrent procedures
  - (C) reentrant procedures
  - (D) topdown procedures
  - (E) None of the above
87. Which of the following is the greatest advantage of the spreadsheet?
- (A) what-if
  - (B) cross footing
  - (C) variable entry
  - (D) database entry
  - (E) none of the above
88. Which of the following memory is an optical memory?
- (A) Hard Disk
  - (B) Floppy disk
  - (C) Bubble memory
  - (D) Core memory
  - (E) None of the above
89. Producer consumer problem can be solved using
- (A) semaphores
  - (B) event counters
  - (C) monitors
  - (D) all of the above
  - (E) none of the above
90. Which of the following is the application study?
- (A) Cost study of the system design
  - (B) Documentation of the system design
  - (C) Feasibility study
  - (D) Documentation of systems analysis
  - (E) None of the above