

M.Tech
5

ENTRANCE EXAMINATION FOR ADMISSION, MAY 2011.

M.Tech. (COMPUTER SCIENCE AND 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 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. RAID 1 offers what type of fault tolerance?
(A) Mirroring (B) Stripping
(C) Stripping with parity (D) Hot swap
(E) None of the above
2. How many bits does the original ASCII code contains, reserving that last bit for error checking?
(A) 5 (B) 6 (C) 7 (D) 8
(E) None of the above
3. Which standard divides the data link layer into the LLC and the MAC sublayers?
(A) 802.1 (B) 802.2 (C) 802.3 (D) 802.4
(E) None of the above
4. Symbolic logic was discovered by
(A) George Boole (B) Herman Hollerith
(C) Van Neumann (D) Basic Pascal
(E) None of the above
5. Which are the IIS services that can use SSL communication?
(A) News (B) Mail
(C) WWW (D) All of the above
(E) None of the above
6. Which type of computers uses the 8-bit code called EBCDIC?
(A) Minicomputers (B) Microcomputers
(C) Mainframe computers (D) Super computer
(E) None of the above
7. The complexity of Binary search algorithm is
(A) $O(n)$ (B) $O(\log n)$ (C) $O(n^2)$ (D) $O(n \log n)$
(E) None of the above

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(A) $O(n)$ (B) $O(\log n)$ (C) $O(n^2)$ (D) $O(n \log n)$
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8. The complexity of Bubble sort algorithm is
(A) $O(n)$ (B) $O(\log n)$ (C) $O(n^2)$ (D) $O(n \log n)$
(E) None of the above
9. In the Analysis phase, the development of the _____ occurs, which is a clear statement of the goals and objectives of the project.
(A) documentation (B) flowchart
(C) program specification (D) design
(E) none of the above
10. Terminals are required for
(A) real-time, batch processing & time-sharing
(B) real time, time-sharing & distributed message processing
(C) real time, distributed processing & manager inquiry
(D) real-time, time sharing & message switching
(E) none of the above
11. Microprocessor 8085 can address locations upto
(A) 32K (B) 128K (C) 64K (D) 1M
(E) None of the above
12. The ALU and control unit of most of the microcomputers are combined and manufacture on a single silicon chip. What is it called?
(A) Monochip (B) Microprocessor
(C) ALU (D) Control unit
(E) None of the above
13. Which of the following is not an advantage of the database approach?
(A) Elimination of data redundancy (B) Ability of associate deleted data
(C) Program/data independence (D) All of the above
(E) None of the above
14. The time required for a gate to change its state is defined as
(A) rise time (B) decay time
(C) down time (D) charging time
(E) none of the above

15. In the DBMS approach, application programs perform the
- (A) storage function (B) processing functions
 (C) access control (D) all of the above
 (E) none of the above
16. Which of the following file organization is most efficient for a file with a high degree of file activity?
- (A) Sequential (B) ISAM (C) VSAM (D) B-Tree
 (E) All of the above
17. The disadvantage(s) of a direct access file is/are
- (A) the delay in computing the storage address
 (B) duplication of address locations
 (C) unused, but available, storage locations
 (D) all of the above
 (E) none of the above
18. The continue statement
- (A) resumes the program if it is hanged
 (B) resumes the program if it was break was applied
 (C) skips the rest of the loop in current iteration
 (D) all of the above
 (E) none of the above
19. Observe the following block of code and determine what happens when $x=2$?
- ```
switch (x){
 case 1:
 case 2:
 case 3:
 cout<< "x is 3, so jumping to third branch";
 goto thirdBranch;
 default:
 cout<<"x is not within the range, so need to say Thank You!";
}
```
- (A) Program jumps to the end of switch statement since there is nothing to do for  $x = 2$   
 (B) The code inside default will run since there is no task for  $x=2$ , so, default task is run  
 (C) Will display x is 3, so jumping to third branch and jumps to thirdBranch.  
 (D) All of the above  
 (E) None of the above

20. In order to use a DBMS, it is important to understand
- (A) The physical schema
  - (B) One subschema
  - (C) All subschemas that the system supports
  - (D) All of the above
  - (E) None of the above
21. A computer file contains several records. What does each record contain?
- (A) Bytes
  - (B) Words
  - (C) Database
  - (D) Fields
  - (E) None of the above
22. The activity of a file
- (A) is a low percentages of number of records added or deleted from a file
  - (B) if high, reduces processing efficiency for a sequential and non-sequential files
  - (C) is a measure of the percentage of existing records updated during a run
  - (D) all of the above
  - (E) none of the above
23. Regular expression  $(x/y)(x/y)$  denotes the set
- (A)  $\{xy, xy\}$
  - (B)  $\{xx, xy, yx, yy\}$
  - (C)  $\{x,y\}$
  - (D)  $\{x,y,xy\}$
  - (E) None of the above
24. Regular expressions  $x/y$  denotes the set
- (A)  $\{x,y\}$
  - (B)  $\{xy\}$
  - (C)  $\{x\}$
  - (D)  $\{y\}$
  - (E) None of the above
25. The regular expressions denote zero or more instances of an  $x$  or  $y$  is
- (A)  $(x/y)$
  - (B)  $(x,y)^*$
  - (C)  $x^*/y$
  - (D)  $(xy)^*$
  - (E) None of the above
26. Which of the following network devices sends packets from a central point based upon MAC addresses?
- (A) Repeater
  - (B) Switch
  - (C) Bridge
  - (D) Router
  - (E) None of the above



27. Choose the correct statement from the following :
- (A) PROM contains a programmable AND array and a fixed OR array.
  - (B) PLA contains a fixed AND array and a programmable OR array.
  - (C) PROM contains a fixed AND array and a programmable OR array.
  - (D) PLA contains a programmable OR array and a programmable OR array.
  - (E) None of the above
28. In an 8085 microprocessor with memory mapped I/O,
- (A) I/O devices have 8 bit addresses.
  - (B) I/O devices are accessed using IN and OUT instructions
  - (C) There can be a maximum of 256 input and 256 output devices
  - (D) Arithmetic and logic with the I/O data directly performed with the I/O data.
  - (E) None of the above
29. Which of the following is a transport-layer protocol?
- (A) NetBEUI
  - (B) NetBIOS
  - (C) NDOS
  - (D) All of the above
  - (E) None of the above
30. A streaming protocol
- (A) provides error detection
  - (B) does not provide error detection
  - (C) uses 64-byte blocks
  - (D) requires a manual setup
  - (E) none of the above
31. Which of these protocols is a sliding window protocol?
- (A) XMODEM
  - (B) YMODEM
  - (C) YMODEM - G
  - (D) WXMODEM
  - (E) None of the above
32. What does stayInsync denote?
- (A) Status of content record
  - (B) Creates a duplicate record set
  - (C) Indication that a hierarchical record set should stay in contact with the data source
  - (D) All of the above
  - (E) None of the above





36. What will the below sample code produce when executed?

```
void myFunc (int x)
{
 If (x >0)
 myFunc (--x);
 Printf("%d, ", x);
}

int main()
{
 myFunc(5);
 return 0;
}
```

(A) 1, 2, 3, 4, 5, 5,

(B) 4, 3, 2, 1, 0, 0,

(C) 0, 0, 1, 2, 3, 4,

(D) 0, 1, 2, 3, 4, 5,

(E) None of the above

37. What is the Output of the program?

```
int swap(int *a,int *b)
{
 *a=*a+*b;*b=*a-*b;*a=*a-*b;
}

main()
{
 int x=10,y=20;
 swap(&x,&y);
 printf("x= %d y = %d\n",x,y);
}
```

(A) x = 10 y = 10

(B) x = 20 y = 10

(C) x = 20 y = 20

(D) x = 10 y = 20

(E) None of the above

38. Which one of the following statements allocates enough space to hold an array of 10 integers that are initialized to 0?
- (A) `int *ptr = (int *) malloc(10, sizeof(int));`
  - (B) `int *ptr = (int *) calloc(10, sizeof(int));`
  - (C) `int *ptr = (int *) malloc(10*sizeof(int));`
  - (D) `int *ptr = (int *) calloc(10*sizeof(int));`
  - (E) none of the above
39. How is a variable accessed from another file?
- (A) The global variable is referenced via the auto specifier
  - (B) The global variable is referenced via the pointer specifier
  - (C) The global variable is referenced via the ext specifier
  - (D) The global variable is referenced via the extern specifier
  - (E) None of the above
40. Which one of the following will declare a pointer to an integer at address 0x300 in memory?
- (A) `int *x; *x = 0x300;`
  - (B) `int *x =& 0x300;`
  - (C) `int *x = *0x300;`
  - (D) `int *x=0x300;`
  - (E) none of the above
41. Which of the following is the correct way to increment the variable "ptr"?
- ```
void *ptr; myStruct myArray [10]; ptr = myArray;
```
- (A) `ptr = ptr + sizeof(myStruct);`
 - (B) `++(int*)ptr;`
 - (C) `ptr = ptr + sizeof (myArray);`
 - (D) `ptr =ptr + sizeof(ptr);`
 - (E) none of the above

42. How does the number of transistors per chip increase according to Moore's law?
- (A) Quadratically (B) Linearly
(C) Cubically (D) Exponentially
(E) None of the above
43. What time requires for 1000 operations in a pipeline with equal stages and an execution time of 2ns per stage?
- (A) 14 μ s (B) 2.014 μ s (C) 2 μ s (D) 2.012 μ s
(E) None of the above
44. Which processor architecture exploits instruction bundles?
- (A) CISC (B) EPIC (C) RISC (D) VLIW
(E) None of the above
45. The output of `printf("%u", -1)` is
- (A) -1 (B) Minimum int value
(C) Maximum int value (D) Error message
(E) None of the above
46. The binary equivalent of the Hexadecimal number 2D5 is
- (A) 11111001100 (B) 01110010100
(C) 0010110101 (D) 11110110101
(E) None of the above
47. The term VLSI generally refers to a digital IC having
- (A) more than 1000 gates
(B) more than 100 gates
(C) more than 1000 but less than 9999 gates
(D) more than 100 but less than 999 gates
(E) none of the above

48. Global page replacement refers to the
- (A) policy allows any page frame from any process to be replaced
 - (B) the of an incoming page is brought in only to the relevant process address space
 - (C) policy allows only empty page frame can be replaced
 - (D) all of the above
 - (E) none of the above
49. Which of the following register can be used to keep track of address of the memory location where the next instruction is located?
- (A) Memory Address Register
 - (B) Memory Data Register
 - (C) Instruction Register
 - (D) Program Counter
 - (E) None of the above
50. Seek time with respect to disk I/O refers to the
- (A) time it takes for the beginning of the required sector to reach the head
 - (B) time taken to actually transfer a span of data
 - (C) time required to move the disk arm to the required track
 - (D) access time
 - (E) none of the above
51. The operation of processing each element in the list is known as
- (A) Sorting
 - (B) Merging
 - (C) Inserting
 - (D) Traversal
 - (E) None of the above
52. To send a data packet using datagram,
- (A) connection will be established before data transmission.
 - (B) connection is not established before data transmission.
 - (C) no connection is required.
 - (D) all of the above
 - (E) none of the above

53. When a function call is made in 'C', the order in which parameters passed to the function are pushed into the stack is
- (A) left to right
 - (B) right to left
 - (C) bigger variables are moved first than the smaller variables
 - (D) smaller variables are moved first than the bigger ones
 - (E) none of the above
54. The Hexadecimal equivalent of the binary number 1011001 is
- (A) 59
 - (B) B2
 - (C) 131
 - (D) All of the above
 - (E) None of the above
55. The 2's complement of the 110010 is
- (A) 110011
 - (B) 001100
 - (C) 001110
 - (D) All of the above
 - (E) None of the above
56. How many bits are required to encode all twenty six letters, ten symbols, and ten numerals?
- (A) 15
 - (B) 6
 - (C) 12
 - (D) All of the above
 - (E) None of the above
57. In 8085, addressing mode of LHL D instruction is
- (A) Indirect addressing mode
 - (B) Register Addressing mode
 - (C) Direct Addressing mode
 - (D) All of the above
 - (E) None of the above
58. How many flip flops are required for constructing divide by 16 counter?
- (A) 2
 - (B) 4
 - (C) 8
 - (D) All of the above
 - (E) None of the above

59. The addressing mode of LDA instruction is
- (A) Direct Addressing mode
 - (B) Indirect Addressing mode
 - (C) Immediate Addressing Mode
 - (D) All of the above
 - (E) None of the above
60. A microprocessor with 20 address lines is capable of addressing
- (A) 64 K locations
 - (B) 1 M locations
 - (C) 2 M locations
 - (D) All of the above
 - (E) None of the above
61. In order to complement the lower order nibble of the accumulator in 8085, one can use,
- (A) ANI 0Fh
 - (B) ORI 0Fh
 - (C) XRI 0Fh
 - (D) All of the above
 - (E) None of the above
62. Transfer time with respect to disk I/O refers to the
- (A) time it takes for the beginning of the required sector to reach the head
 - (B) time taken to actually transfer a span of data
 - (C) time required to move the disk arm to the required track
 - (D) access time
 - (E) none of the above
63. What is the maximum number of I/O devices that can be connected to the 8085?
- (A) 64
 - (B) 32
 - (C) 256
 - (D) All of the above
 - (E) None of the above
64. Which of the following contains a complete record of all activity that affected the contents of a database during a certain period of time?
- (A) Report writer
 - (B) Query language
 - (C) Data manipulation language
 - (D) Transaction log
 - (E) None of the above

65. In a natural join operation of relations R1 and R2 with n1 and n2 number of tuples respectively, if there are no common attributes between R1 and R2, then the number of tuples in the result is
- (A) Null (B) $n1 + n2$
 (C) $n1 * n2$ (D) All of the above
 (E) None of the above
66. Which of the following algorithm produces the sorted list in ascending order by arranging the elements in descending order ?
- (A) Quick Sort (B) Bubble Sort
 (C) Selection Sort (D) All of the above
 (E) None of the above
67. To delete an element at position 'i' from an integer array,
- (A) Make the element at position i to 0
 (B) Copy the entire contents of array to another array except the element at position i
 (C) Make the element at position i -1
 (D) All of the above
 (E) None of the above
68. Which of the data structure is suitable for implementing a buffer to file?
- (A) File (B) Linked list
 (C) Array (D) All of the above
 (E) None of the above
69. Which data structure is used to implement a request handler in a web server?
- (A) Stack (B) Queue
 (C) Arrays (D) All of the above
 (E) None of the above
70. Which of the data structure is not suitable for building a cache?
- (A) File (B) Linked List
 (C) Array (D) All of the above
 (E) None of the above

71. The efficiency of algorithm can be determined in terms of space factor 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) Counting the maximum disk space needed by the algorithm
 - (E) None of the above
72. Ethernet networks are broadcast domains and collision domains. How the hosts on an Ethernet network will know when to resume transmissions after a collision has occurred?
- (A) The router on the segment will signal that the collision has cleared.
 - (B) The jam signal indicates that the collision has been cleared.
 - (C) The hosts will attempt to resume transmission after a time delay has expired.
 - (D) All of the above.
 - (E) None of the above.
73. At what layer data is split into segments
- (A) Transport
 - (B) LAN
 - (C) Session
 - (D) Data Link
 - (E) None of the above
74. What OSI layer is FRAME-RELAY mapped to?
- (A) Network
 - (B) Transport
 - (C) Data Link
 - (D) Physical
 - (E) None of the above
75. Which routing protocol would allow VLSM support and minimize overhead if the network administrator wants to merge different networks all using routers from multiple vendors?
- (A) OSPF
 - (B) IGRP
 - (C) EIGRP
 - (D) RIP
 - (E) None of the above
76. What is the disadvantage to using bridges in the network?
- (A) Filters by MAC address
 - (B) Stops broadcast storms
 - (C) Doesn't stop broadcast storms
 - (D) All of the above
 - (E) None of the above

77. Which of the following operating systems is designed for servers used in a large enterprise network?
- (A) Windows 2000 Client (B) Windows 2000 Advanced Server
(C) Windows 2000 Server (D) All of the above
(E) None of the above
78. Disk Striping with Parity corresponds to which RAID level?
- (A) RAID 0 (B) RAID 1 (C) RAID 3 (D) RAID 5
(E) None of the above
79. What is a MAC address in an Ethernet network?
- (A) The address assigned by DHCP.
(B) A TCP/IP address.
(C) The physical address assigned by the NIC manufacturer.
(D) A logical address created by the network administrator.
(E) None of the above.
80. Communication ports use
- (A) 9 / 25 pins male connectors (B) 14 / 18 pin female connectors
(C) 14 / 25 pin male connectors (D) edge / parallel connectors
(E) none of the above
81. _____ is the term used to refer to the process of two modems establishing communications with each other.
- (A) Soft / Hard Handoff (B) Handshaking
(C) Pinging (D) Remote connecting
(E) None of the above
82. UART is a type of serial chip. Its letters stand for
- (A) Unidirectional Access Regarding Transmission
(B) Universal Asynchronous Receiver/Transmitter
(C) Upper Advanced Real Transfer
(D) Unable All Restore T-Bits
(E) None of the above

83. RS-232 is a standard that applies to
- (A) serial ports
 - (B) parallel ports
 - (C) game ports
 - (D) networks
 - (E) none of the above
84. UART and RS-232 related to _____ and _____ communications respectively.
- (A) Serial, Serial
 - (B) Serial, Parallel
 - (C) Parallel, Parallel
 - (D) Parallel, Serial
 - (E) None of the above
85. ISDN stands for _____ and it uses _____ technology.
- (A) internal select data nulls, only digital
 - (B) integrated services digital network, only digital
 - (C) integrated services digital network, digital and analog
 - (D) interior sector direct none, digital and analog
 - (E) none of the above
86. What DOS program can we run to see which serial ports are detected?
- (A) Comdiag
 - (B) MSD
 - (C) SDET
 - (D) Serial.chk
 - (E) None of the above
87. TSR refers to _____ and most of TSRs can be loaded in _____
- (A) terminate and stay resident program, autoexec.bat
 - (B) terminate and stay resident program, tsr.sys
 - (C) test status request program, tsr.sys
 - (D) test status request program, autoexec.bat
 - (E) none of the above
88. What DOS command shows which TSRs are loaded?
- (A) TSR-SHOW
 - (B) DOSVIEW
 - (C) LOADVIEW
 - (D) MEM /c
 - (E) None of the above

89. By default, where DOS will load?
- (A) Extended memory (B) Conventional memory
(C) HMA (D) Expanded memory
(E) None of the above
90. In CMOS setup, if we enable Rom Bios Shadowing, what will happen?
- (A) rom memory is minimized (B) rom is used instead of ram
(C) rom memory is maximized (D) a copy of the bios is placed in ram
(E) none of the above
91. Wrapper class means
- (A) A class that has all functionalities of its own.
(B) A class that has no functionality of its own.
(C) A class that has functionality of its derived classes.
(D) All of the above
(E) None of the above
92. Null object may
- (A) be an object of some class whose purpose is to indicate that a real object of that class does not exist.
(B) return value from a member function that is supposed to return an object with some specified properties but cannot find such an object.
(C) not in active usage
(D) all of the above
(E) none of the above
93. Class invariant means
- (A) A condition that defines all valid states for an object.
(B) It is a logical condition to ensure the correct working of a class.
(C) Class invariants must hold when an object is created, and they must be preserved under all operations of the class.
(D) All of the above
(E) None of the above

94. Which of the following acts as a decoy to detect active Internet attacks?
- (A) Honeypots
 - (B) Firewalls
 - (C) Trapdoors
 - (D) Traffic analysis
 - (E) None of the above
95. Objects cloning means
- (A) an object it can set itself to be a copy of another object
 - (B) an object can explore the properties of a derived class's object
 - (C) an object it can return a copy of itself
 - (D) all of the above
 - (E) none of the above
96. In case of object non-persistency,
- (A) A non-persistent object is said to be transient
 - (B) A non-persistent object is said to be ephemeral
 - (C) By default objects are considered as non-persistent
 - (D) All of the above
 - (E) None of the above
97. What is an active object?
- (A) Active objects are one which instigate an interaction which owns a thread and they are responsible for handling control to other objects.
 - (B) Active objects are one which is always available even its life time is over.
 - (C) The first of any class that is known as active object.
 - (D) All of the above
 - (E) None of the above

98. What is the Output of the program?

```
#define prod(a,b) a*b  
  
main()  
{  
  
    int x=3,y=4;  
  
    printf("%d",prod(x+2,y-1));  
  
}
```

- (A) 12
- (B) 15
- (C) 10
- (D) Error
- (E) None of the above

99. Time-stamping refers to the

- (A) technique used to order events in a distributed system without the use of clocks
- (B) technique used to order events in a distributed system with the use of clocks
- (C) technique used to order events in a distributed system without the use of temporal order
- (D) all of the above
- (E) none of the above

100. Which IIS service provides search capabilities to the browsers of the Web site?

- (A) NNTP
- (B) Mail Server
- (C) Index Server
- (D) Transaction Server
- (E) None of the above