Combined Technical Services Examination

(NON – INTERVIEW POSTS)

COMPUTER BASED TEST

DATE OF EXAM : 12.09.2026 A.N.

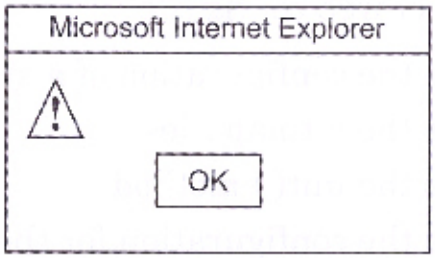
PAPER – II : COMPUTER SCIENCE, INFORMATION TECHNOLOGY, ELECTRICAL, ELECTRONICS AND COMMUNICATION ENGG (DEGREE STD.),

SUB. CODE : 554

1. The servlet container is a part of _____.

(A) Web pages
(B) Web server
(C) Client
(D) Server
(E) Answer not known

2. Identify the popup box shown below which is used to interact with user in java script.



(A) Confirm box
(B) Prompt box
(C) Menu box
(D) Alert box
(E) Answer not known

3. The _____ tag element is used to override a browser's normal white space processing.

(A) <pre>
(B)
(C)
(D) <tt>
(E) Answer not known

4. Which method is typically used to send information collected from a form displayed within a browser, such as an order-entry form back to the webserver?

(A) Head
(B) GET
(C) POST
(D) TRACE
(E) Answer not known

5. What is the use of web config file?

(A) It specifies the configuration of a system
(B) It specifies the bitmap files
(C) It specifies the init( ) method
(D) It specifies the configuration for the web application
(E) Answer not known

6. What are attributes of frameset tag?

(A) Cols, rows, frameborder, name, src
(B) Width, name, src, frame
(C) Size, name, src, width
(D) None of the above
(E) Answer not known

7. How do you write a multiple-line comment in JavaScript?

(A) **
(B) //
(C) /* */
(D) /*
(E) Answer not known

8. Which of the following will produce a value of 22 if $x = 22.9$?

(A) rint(x)
(B) ceil(x)
(C) round(x)
(D) rinteger(x)
(E) Answer not known

9. Exception occurs during the _____ of a method.

(A) declaration
(B) throw
(C) catch
(D) execution
(E) Answer not known

10. The class that cannot be subclassed is called a _____ class.

(A) Abstract
(B) Extends
(C) Super
(D) Final
(E) Answer not known

11. Given file is a file object. Which of the following are legal statements to create a new file?

(i) FileOutputStream fos = new FileOutputStream (file);
(ii) FileWriterOut = new FileWriter (file);
(iii) RandomAccessFile raf = new RandomAccessFile (file);
(iv) file.create( )

(A) (i) and (ii) only
(B) (i), (iii) and (iv) only
(C) (i), (ii) and (iii) only
(D) (i), (ii), (iii) and (iv)
(E) Answer not known

12. Which of the following statement is true for unsigned variables in php?

(i) The unsigned variables are called unbound variables.

(ii) The size is 32 bit.

(iii) The variable consists of Alphanumeric values

(iv) In the expression, if the unbound variable is used, it takes 0 as a value

(A) only (i)
(B) (ii) and (iv)
(C) (i) and (iv)
(D) (ii) and (iii)
(E) Answer not known

13. _____ subclass is used for reading characters from a file.

(A) Input stream
(B) Output stream
(C) FileReader
(D) FileWriter
(E) Answer not known

14. Which of the following exception is thrown when divided by zero statement is executed?

(A) Null pointer exception
(B) Try
(C) Number format exception
(D) Arithmetic exception
(E) Answer not known

15. Data is transmitted across the internet in packets of finite size called

(A) Dayload
(B) Header and payload
(C) Packet size
(D) Datagrams
(E) Answer not known

16. In DatagramSocket, _____ method suggests a number of bytes to use for buffering output on the socket.

(A) getSendBufferSize (int size)
(B) int getBufferSize( )
(C) int getSendBufferSize( )
(D) None of the above
(E) Answer not known

17. _____ allows a Java object that executes on one machine to invoke a method of a Java object that executes in another machine.

(A) Servlets
(B) Remote Procedure Call (RPC)
(C) Remote Method Invocation (RMI)
(D) None of the above
(E) Answer not known

18. _____ is the process of slicing up large collections of data that can be split between multiple MongoDB servers in a cluster.

(A) Sharding
(B) Indexing
(C) Replication
(D) Identifying
(E) Answer not known

19. Which of the following commands lists all available MongoDB databases?

(A) Show dbs
(B) List dbs
(C) Show databases
(D) db.list( )
(E) Answer not known

20. In MongoDB, collection means _____.

(A) A group of tables
(B) A group of documents
(C) A single document
(D) A type 8 index
(E) Answer not known

21. Identify the method which is straight forward and popular to obtain the optimized solutions.

(A) Dynamic programming
(B) Divide and conquer method
(C) Greedy method
(D) Branch and Bound method
(E) Answer not known

22. Choose the correct answer which is not true about dynamic programming.

(A) Solving multistage optimization
(B) Sub problems are independent
(C) Obtain optimal solutions by combining the results of its subproblem
(D) Divide problems into subproblems that are overlapping
(E) Answer not known

23. Choose which is not an application of dynamic programming.

(A) Traveling sales person
(B) 0/1 knapsack problem
(C) All pair shortest path
(D) Process scheduling
(E) Answer not known

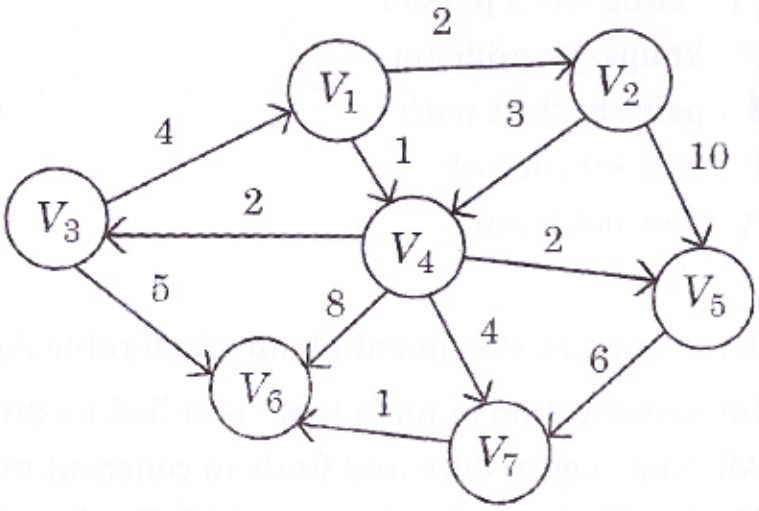
24. Choose the current statement about Hash table ADT.

(A) Implementation of hash table is called hashing
(B) Allowed Insert, date and finds in constant average time
(C) Hash table is similar to array with fixed size
(D) (A), (B) and (C)
(E) Answer not known

25. Choose the correct answer about collisions.

(A) When an element is inserted, it hashes to the same value as already inserted element
(B) Key is set to initial position
(C) Table size is overflow
(D) No two elements are not inserted
(E) Answer not known

26. Find out the shortest path from V_1 to V_6



(A) V_1 to V_2 to V_5 to V_6 to V_7

(B) V_1 to V_4 to V_3 to V_6

(C) V_1 to V_4 to V_6 V_1 to V_4 to V_6

(D) V_1 to V_4 to V_7 to V_6

(E) Answer not known

27. State whether the following function is correct or not based on $O(n^2)$.

$$10n^2 + 4n + 2$$

(A) Correct and true for $n = 1$ and $n = 2$

(B) Correct and true for $n \geq 1$ and $c = 106$

(C) $n = 0$, it is correct

(D) Both (A) and (B)

(E) Answer not known

28. An example for mergeable heaps are _____.

(A) Fibonacci Heaps
(B) Skew Heap
(C) Leftist Heap
(D) Binary Heap
(E) Answer not known

29. The expression $*A+-CDE$ comes under which tree Traversal Technique?

(A) In order
(B) Pre order
(C) Post order
(D) Fix level order
(E) Answer not known

30. Two types of genealogical charts which are used to present the data.

(A) Pedigree and Lineal Chart
(B) Linear Chart & Tree
(C) Bar and Pie Chart
(D) Lineal and Linear Chart
(E) Answer not known

31. Which of the following searching techniques is most suitable for large database?

(A) Hashing
(B) Linear
(C) Binary
(D) List
(E) Answer not known

32. Radix sort comes under which kind of Sorting Algorithm?

(A) Internal sort
(B) External sort
(C) Linear sort
(D) Counting sort
(E) Answer not known

33. _____, works on the principle of identifying the smallest element in the list and moving it to the beginning of the list.

(A) Insertion sort
(B) Selection sort
(C) Bubble sort
(D) Quick sort
(E) Answer not known

34. Tree is one such _____ data structure which stores the data elements in a Hierarchical manner.

(A) Primitive
(B) Non-Primitive
(C) Linear
(D) Non-Linear
(E) Answer not known

35. Choose the situation will occur when you perform pop operation on an empty stack.

(A) Overflow
(B) Stack overflow
(C) Array out of bound
(D) Underflow
(E) Answer not known

36. Consider the following two states of a Queue Q

State 1

Queue (Q)		4	–1	8				
Index	0	1	2	3	4	5	6	7
			F↑		R↑			

State 2

Queue (Q)				8	11	22	33	
Index	0	1	2	3	4	5	6	7
					F↑			R↑

Which of the following sequence operations to be carried out to get State 2 from State 1?

(A) Delete (Q), Delete(Q), insert (33), insert (22) (insert 11)

(B) Delete (Q), Delete(Q), insert (11), insert (22) insert (33)

(C) insert (33), insert (22) insert (11), Delete (Q), Delete(Q)

(D) None of the above

(E) Answer not known

37. Choose the following application which is using FIFO basis data structure

(A) Disk scheduling

(B) Network communication

(C) (A) and (B)

(D) Postfix to prefix conversion

(E) Answer not known

38. A circular linked list contains four nodes {A, B, C, D} NEXT pointer of D is pointed to node A. Choose node pointers should be updated if a new node E is to be inserted at the end of list.

(i) Pointer of E

(ii) Pointer of D

(iii) Pointers of A, E, D

(iv) Pointers of A, B, C, D and E

(A) (ii) and (i)
(B) (iii)
(C) (iv)
(D) (i)
(E) Answer not known

39. Find the number of moves requires in tower of hanoi with 4 disks.

(A) 16
(B) 15
(C) 17
(D) 5
(E) Answer not known

40. If 1, 2, 3, 4 are the Queue contents with element 1 at the front and 4 at the rear, then what will be the queue contents after following operations.

Insert (5), Delete (), Delete (), Delete(), Insert(6), Insert(–1), Delete()

(A) 5, 6, –1
(B) 4, 5, 6, –1
(C) 1, 2, 6
(D) 1, 2, 6, –1
(E) Answer not known

41. ———— offset used to go backward in file by m bytes from the current position.

(A) fin.seekg(–m,ios::cur)
(B) fin.seekg(–m,ios::end)
(C) fin.seekg(+m,ios::cur)
(D) fin.tellg(–m,ios::end)
(E) Answer not known

42. Which operator cannot be overloaded with friend function?

(A) .*(pointer–to–member operator.)
(B) ? conditional operator
(C) → class member access operator
(D) :: scope resolution operator
(E) Answer not known

43. Errors such as "out of range index" and "overflow" belong to the ———— type of exceptions.

(A) Asynchronous mode
(B) Synchronous mode
(C) Hybrid mode
(D) Both (A) and (B)
(E) Answer not known

44. The performance of sequence containers elements such as <vector>, <list>, <queue> in terms of speed of random access elements can be given as

Container	Random Access
<vector>	
<list>	
<queue>	

(A) Fast, Slow, Fast
(B) Slow, Fast, Fast
(C) Fast, Fast, Fast
(D) Slow, Slow, Slow
(E) Answer not known

45. Identify the statements which are true

1. This pointer refers to an object that currently invokes a member function.
2. A constructor can be virtual.
3. A class containing pure virtual function is called an abstract class.
4. A friend function has no access rights to the private members of a class.

(A) 1 and 3 only
(B) 2 and 3 only
(C) 1 and 4 only
(D) 3 and 4 only
(E) Answer not known

46. Which among the following is not the essential condition for constructor?

1. They must contain definition
2. They can have default arguments
3. They cannot be virtual
4. They must not have return types not even void

(A) 2 and 3
(B) 1 and 4
(C) 2 only
(D) 1 only
(E) Answer not known

47. Match the following storage classes

(a)	Automatic	1.	helps to run program faster by storing the variable in CPU registers
(b)	External	2.	once declared inside a function block it does not get destroyed after the function is executed
(c)	Static	3.	Default storage class of any variable
(d)	Register	4.	Also called global variable, its visibility is spread all across the program

	(a)	(b)	(c)	(d)
(A)	3	4	2	1
(B)	4	1	2	3
(C)	2	3	4	1
(D)	1	3	4	2

(E) Answer not known

48. A function declared in a base class that has no definition relative to the base class is termed ————————.

(A) Friend function
(B) Virtual function
(C) Inline function
(D) Pure virtual function
(E) Answer not known

49. Suppose Dict = {'Roll No' : 40, 'Name' : 'Ajax', 'Mark' : 50

To delete the entry for Ajax which command is used

(A) Dict.pop("Ajax" : 40)
(B) Dict.delete ("Ajax")
(C) del Dict ("Ajax" : 40)
(D) del Dict ["Ajax"]
(E) Answer not known

50. Which of the following are immutable?

(1) String
(2) List
(3) Tuple
(4) Dictionary

(A) (1) and (2) only
(B) (3) and (4) only
(C) (1), (3) and (4)
(D) (2) only
(E) Answer not known

51. Assertion [A] : Tuple is an immutable data structure

Reason [R] : Can create a new tuple that has all elements except the ones you don't want

(A) [A] is true [R] is false

(B) [A] is true [R] is true

(C) [A] is true and [R] is true but [R] is not the correct explanation of [A]

(D) [A] is true and [R] is true and [R] is the correct explanation for [A]

(E) Answer not known

52. Match the following

(a)	Binary file	1.	Anonymous functions
(b)	Tuple	2.	Mutable
(c)	List	3.	Not human readable
(d)	Lambda	4.	Sequence of immutable objects

	(a)	(b)	(c)	(d)
(A)	3	4	2	1
(B)	4	3	1	2
(C)	4	1	2	3
(D)	2	3	4	1

(E) Answer not known

53. Identify wrong C keywords

(A) var, float
(B) int, float
(C) float, double
(D) size of, volatile
(E) Answer not known

54. Pointers are built on these three concepts

(A) Pointer value, Pointer arithmetic, Pointer variable
(B) Pointer constants, Pointer values, Pointer variable
(C) Pointer value, Pointer constant, Pointer reference
(D) Pointer value, Pointer variable, Pointer memory
(E) Answer not known

55. _____ is a function that sets the position to desired point in the file.

(A) ftell
(B) fseek
(C) frewind
(D) fptell
(E) Answer not known

56. Identify the wrong one regarding the rules to pass an array to a function.

(A) The function must be called by passing only the name of the array

(B) The function prototype must show that the argument is an array

(C) The function must be called by passing array values

(D) In the function definition the formal parameter must be an array type

(E) Answer not known

57. The function of rewind( ) in C programming is

(A) Moving file pointer to the previous character

(B) Moving file pointer to the beginning of the file

(C) Moving file pointer to the desired point in the file

(D) Moving file pointer to the EOP

(E) Answer not known

58. Which of the following format specifiers can be used to read floating type values?

(A) % e

(B) % f

(C) % k

(D) both (A) and (B)

(E) Answer not known

59. What is not true about C Arrays?

(A) Arrays are variables which contains more element of same data types

(B) The array subscript starts at 0

(C) Arrays can be either single or two dimensional

(D) The initial values of array elements can be declared

(E) Answer not known

60. Which of the listed one is a keyword to be used for a storage class in C programming?

(A) scanf

(B) explicit

(C) external

(D) auto

(E) Answer not known

61. Identify the top-down design steps in the embedded system design process.

(i) Specification

(ii) Requirements

(iii) Components

(iv) Architecture

(v) System Integration

(A) (i) → (ii) → (iii) → (v) → (iv)

(B) (ii) → (i) → (iv) → (iii) → (v)

(C) (i) → (ii) → (iv) → (v) → (iii)

(D) (ii) → (i) → (iii) → (v) → (iv)

(E) Answer not known

62. The special variable and mechanism helps in mutual exclusion of one task with respect to another by a scheduler in multitasking operations is ————————.

(A) Mailbox
(B) Pipe
(C) Signal
(D) Mutex
(E) Answer not known

63. ———————— is the length of the timer period and it is the smallest increment in which the user can control CPU activity.

(A) Kernel
(B) Time quantum
(C) Period
(D) Record
(E) Answer not known

64. Several types of relationships exists between objects and classes of unified modeling language are

1. Association
2. Aggregation
3. Composition
4. Generalization

(A) 1 and 2 only
(B) 2 and 3 only
(C) 1, 2 and 3 only
(D) 1, 2, 3 and 4
(E) Answer not known

65. How many optimum number of ARM registers are required for the given C–Code?

```
W = a+b ;     //statement 1
X = c+w ;     //statement 2
Y = c+d;      //statement 3
```

(A) 4 registers
(B) 5 registers
(C) 6 registers
(D) 7 registers
(E) Answer not known

66. The term little-endian mode states that

(A) Lowest order byte residing in the low order bits of the word
(B) Lowest order byte residing in the high order bits of the word
(C) Highest order byte residing in the low order bits of the word
(D) Highest order byte residing in both low and high order bits of the word
(E) Answer not known

67. Identify the different forms of interprocess communication

1. Shared memory
2. Message passing
3. Signals
4. Mail boxes

(A) 1, 2 and 3 only
(B) 1 and 2 only
(C) 2, 3 and 4 only
(D) 1, 2, 3 and 4
(E) Answer not known

68. In Rate-Monotonic scheduling, find the maximum processor utilization (U) when there are m tasks.

(A) $U = m\left(2^{1/m} - 1\right)$ (B) $U = \left(2^{1/m} + 1\right)$

(C) $U = m\left(2^{1/m} + 1\right)$ (D) $U = \left(2^{1/m} - 1\right)$

(E) Answer not known

69. The set of registers that defines a process is known as its ————.

(A) Multiple process (B) Scheduling

(C) Switching (D) Context

(E) Answer not known

70. Match the following ARM compare instructions.

(a)	CMP	1.	Negated compare
(b)	CMN	2.	Compare
(c)	TST	3.	Bit-wise negated test
(d)	TEQ	4.	Bit-wise test

	(a)	(b)	(c)	(d)
(A)	2	1	4	3
(B)	1	2	4	3
(C)	2	1	3	4
(D)	1	2	3	4

(E) Answer not known

71. Which mode of timer is used to set the baud rate?

(A) Mode 0
(B) Mode 1
(C) Mode 2
(D) Mode 3
(E) Answer not known

72. What is the value of 8051 A – register after executing each of the following instructions?

(i)	(ii)
MOV A, # ABH	MOV A, # ABH
RR A	RL A
RR A	RL A
RR A	RL A
RR A	RL A

(A) (i) ABH and (ii) ABH
(B) (i) BAH and (ii) BAH
(C) (i) ABH and (ii) BAH
(D) (i) BAH and (ii) ABH
(E) Answer not known

73. On executing the 8051 instructions given below:

MOV A, # 02 H

MOV B, # 03 H

MUL AB

Find the values stored in A and B.

(A) A = 06 H ; B = 03 H
(B) A = 02 H ; B = 03 H
(C) A = 00 H ; B = 06 H
(D) A = 06 H ; B = 00 H
(E) Answer not known

74. Identify the 8051 instructions to get the status of P 2.7 and put it on P 2.0

(A) MOV C, P 7 ; MOV P0, C
(B) MOV C, P 0 ; MOV P7, C
(C) MOV C, P 2.0 ; MOV P 2.7, C
(D) MOV C, P 2.7 ; MOV P 2.0, C
(E) Answer not known

75. Find the machine cycle for a crystal frequency of 12 MHz of 8051 microcontroller?

(A) 1 MHz
(B) 1 μs
(C) 2 MHz
(D) 2 μs
(E) Answer not known

76. What is the size of the stack pointer register of 8051 microcontroller?

(A) 8 - bit
(B) 16 - bit
(C) 32 - bit
(D) 64 - bit
(E) Answer not known

77. In the given 8051 instruction set,

(i) ADD A, R2

(ii) MOV A, # 12

(iii) ORG 2000 H

(iv) SJMP HERE

Find the instruction that produces the opcode.

(A) (i) and (ii) only

(B) (i) and (iii) only

(C) (ii) and (iii) only

(D) (i), (ii) and (iv) only

(E) Answer not known

78. 8086 Instruction DIV BL does

(A) Word in AX/byte in BL, Quotient in AL, Remainder in AH

(B) Word in BL/byte in AX, Quotient in AL, Remainder in AH

(C) Word in BL/byte in AX, Quotient in AH, Remainder in AL

(D) Word in AX/byte in BL, Quotient in AH, Remainder in AL

(E) Answer not known

79. Choose the functions of 8086 execution unit suitable for Bus Interface Unit (BIU).

(i) Fetch

(ii) Decode

(iii) Execute

(A) (i) only
(B) (i) and (ii) only
(C) (ii) and (iii) only
(D) (i), (ii) and (iii) only
(E) Answer not known

80. Match the following addressing modes with the corresponding instruction set:

Addressing Mode	Instruction set
(a) Immediate addressing	1. IN/OUT Port #
(b) Register Addressing	2. MOV Rd, Rs
(c) Direct Addressing	3. MOV R, M
(d) Indirect Addressing	4. MVI R, Data

	(a)	(b)	(c)	(d)
(A)	4	3	2	1
(B)	3	4	1	2
(C)	3	2	4	1
(D)	4	2	1	3

(E) Answer not known

81. Name of the open source cloud computing PaaS facility originally developed by VMWare as

(A) VMWare platform
(B) Cloud foundry
(C) VMW – PaaS
(D) Free Cloud Services
(E) Answer not known

82. In free-space management, using bit vector each block is represented by _____.

(A) 1 bit
(B) 2 byte
(C) 4 bytes
(D) 8 bytes
(E) Answer not known

83. Identification and access management plays the vital roles in cloud computing as

(A) Anyone cannot work in cloud
(B) Consumers cannot work outside trusted network boundary
(C) Virtualization brings the vulnerability
(D) Cloud computing cannot share infrastructure
(E) Answer not known

84. Which among the following service can only be accessed by a restricted number of people?

(A) Public Cloud
(B) Community Cloud
(C) Private Cloud
(D) Both (A) & (B)
(E) Answer not known

85. The potential overuse of a single parity disk is avoided in RAID level

(A) 3
(B) 4
(C) 5
(D) 6
(E) Answer not known

86. Type 2 hypervisors are installed over

(A) Physical resource
(B) Host operating system
(C) Virtual resource
(D) Type 1 hypervisor
(E) Answer not known

87. In a hard disk, what rotates about a central spindle

(A) Disk
(B) Platter
(C) Sector
(D) Spindle
(E) Answer not known

88. _____ is a bar chart that illustrates a particular schedule, including the start and finish times of each of the participating process.

(A) Gantt chart
(B) Gyan chart
(C) Smith chart
(D) Flow chart
(E) Answer not known

89. One thread immediately terminates the target thread is referred to as

(A) Target thread cancellation
(B) Deferred cancellation
(C) Synchronous cancellation
(D) Asynchronous cancellation
(E) Answer not known

90. _____ refers to the period of time from the arrival of an interrupt at the CPU to the start of the routine that services the interrupt.

(A) Interrupt latency
(B) Dispatch latency
(C) Distruction latency
(D) Discription latency
(E) Answer not known

91. If the mailbox is full, the sending thread can

1. Wait indefinitely until there is room in the mailbox.
2. Wait atmost n milliseconds.
3. Not wait at all but rather return immediately.
4. Temporarily cache a message

(A) 1 and 2 are correct
(B) 2 and 4 are correct
(C) 1 and 3 are correct
(D) All the above
(E) Answer not known

92. Communication over the named pipe can be accomplished using :

1. Read File( )
2. Create Named Pipe( )
3. Connect Named Pipe( )
4. WriteFile( )

(A) 1 and 2
(B) 2 and 4
(C) 1 and 4
(D) 1 and 3
(E) Answer not known

93. Which among the following are true about the properties of a communication links?

1. A link is established automatically between every pair of processes that want to communicate.
2. A link is associated with two processes.
3. Between each pair of processes, there exists exactly one link.

(A) 1 and 2 only
(B) 2 and 3 only
(C) 1 and 3 only
(D) All the above
(E) Answer not known

94. Which of the following is NOT a typical method of Interprocess Communication (IPC)?

(A) Message passing
(B) Shared memory
(C) CPU scheduling
(D) None of the above
(E) Answer not known

95. Networks are characterized based on the distance between their nodes. They are

1. LAN
2. WAN
3. MAN
4. PAN

(A) 1 and 2 are correct
(B) 2 and 3 are correct
(C) 3 and 4 are correct
(D) All the above
(E) Answer not known

96. A _____ is a hierarchical data structure.

(A) Stack
(B) Queue
(C) Tree
(D) Hash
(E) Answer not known

97. Which of the following activities are responsible for operating system in connection with memory management?

(i) Keeping track of which parts of memory are currently being used and who is using them.

(ii) Deciding which processes and data to move into and out of memory.

(iii) Allocating and deallocating memory space as needed.

(iv) Supporting primitives for manipulating files and directories.

(A) (i) and (iv) only
(B) (i), (ii) and (iv) only
(C) (ii), (iii), (iv) only
(D) (i), (ii) and (iii) only
(E) Answer not known

98. Match the following.

	Storage level		Bandwidth (MB/Sec)
(a)	Register	1.	5,000 – 10,000
(b)	Cache	2.	500
(c)	Main Memory	3.	20,000 – 1,00,000
(d)	SSD	4.	1,000 – 5,000

	(a)	(b)	(c)	(d)
(A)	3	1	4	2
(B)	3	4	1	2
(C)	4	3	1	2
(D)	2	1	4	3

(E) Answer not known

99. Choose the right answer among type. Which of the following statements are true about clustered system?

(i) Clustering is usually used to provide high - availability service.

(ii) Clustered systems results in high performance.

(iii) Clustering can be structured only asymmetrically.

(A) (i) only
(B) (ii) only
(C) (i) & (ii) only
(D) (ii) & (iii) only
(E) Answer not known

100. Which of the following are correct?

Solid-state Disk storage are _____ and _____ then magnetic disks.

(A) Volatile slower
(B) Volatile faster
(C) Nonvolatile slower
(D) Non volatile faster
(E) Answer not known

101. What is the primary difference between MANETs and VANETs?

(A) MANETs are wired; VANETs are wireless

(B) VANETs have highly mobile nodes with road – constrained movement

(C) MANETs require infrastructure; VANETs don't

(D) MANETs use satellite - based routing

(E) Answer not known

102. In Dynamic Source Routing (DSR), route discovery is initiated by

(A) The destination node

(B) The base station

(C) The source node

(D) An intermediate nodes

(E) Answer not known

103. Which of the following is not a characteristic of adhoc network?

(A) Dynamic topologies

(B) Bandwidth constraint

(C) Increased vulnerability

(D) Adaptive data rate control

(E) Answer not known

104. _____ is the context of mobile computing implies the ability of a system to adjust to bandwidth fluctuation without inconveniencing the user.

(A) Ubiquity

(B) Personalization

(C) Broadcast

(D) Adaptation

(E) Answer not known

105. _____ is the ability of a system to hide the differences in data representation on various machines and the mode of access of a particular resource.

(A) Access transparency
(B) Location transparency
(C) Failure transparency
(D) Name transparency
(E) Answer not known

106. Communication between end systems is encrypted using a temporary key, often referred to as a _____.

(A) Master key
(B) Public key
(C) Private key
(D) Session key
(E) Answer not known

107. Each plaintext element or group of elements is uniquely replaced by a corresponding ciphertext element or group of elements.

(A) Permutation
(B) Combination
(C) Substitution
(D) All the above
(E) Answer not known

108. CBR, VBR – RT, VBR – NRT, ABR and UBR are the various service classes comes under _____.

(A) Mobile Network
(B) ATM Network
(C) Virtual Private Network
(D) Ad-Hoc Network
(E) Answer not known

109. _____ is a communication protocol that allows users to move from one Network to another with the same IP address.

(A) IMAP
(B) Mobile IP
(C) HTTP
(D) FTP
(E) Answer not known

110. The values GET, POST, HEAD etc. are specified in _____ of HTTP message.

(A) Request line
(B) Header line
(C) Status line
(D) Entity body
(E) Answer not known

111. Which multiple access technique is used by IEEE 802.11 standard for wireless LAN?

(A) CDMA
(B) CSMA/CA
(C) ALOHA
(D) CSMA/CD
(E) Answer not known

112. A serious problem can arise in the sliding window operation when either sending application program creates data slowly or the receiving application programs consumes data slowly or both. This problem is called the _____.

(A) Silly window syndrome
(B) Unexpected syndrome window
(C) Bug
(D) Expected syndrome window
(E) Answer not known

113. The connection establishment procedure in TCP is susceptible to a serious security problem called _____.

(A) SYN flooding attack
(B) Denial of service attack
(C) Distributed Denial of Service
(D) SQL injection
(E) Answer not known

114. In transport layer, for error control, the sequence numbers are modulo _____, where m is the size of the sequence number field in bits.

(A) 2^m
(B) $2^m - 1$
(C) m
(D) $2^m + 1$
(E) Answer not known

115. The router uses Reverse Path Forwarding (RPF), Reverse Path Broadcasting (RPB) and Reverse Path Multicasting (RPM) in _____ routing protocol.

(A) DVMRP
(B) MOSPF
(C) RIP
(D) PIM
(E) Answer not known

116. A multiple – access method in which the available bandwidth of a link is shared in time, frequency or through code is called _____.

(A) Switching
(B) Bluetooth
(C) Channelization
(D) Bridging
(E) Answer not known

117. _____ is designed to respond new applications that are emerging in the multimedia.

(A) ICMP
(B) UDP
(C) SCTP
(D) DHCP
(E) Answer not known

118. _____ is a bit oriented protocol for communication over point-to point and multipoint links.

(A) HDLC
(B) LCP
(C) IPCP
(D) ARP
(E) Answer not known

119. The probability of successful transmission of the data packet in pure Aloha is _____.

(A) $G \times e^{-2G}$
(B) $G \times e^{-G}$
(C) $2G \times e^{-2G}$
(D) $G \times 2e^{-G}$
(E) Answer not known

120. _____ regulate the rate at which data is transmitted between a sender and a receiver to prevent the receiver from becoming overwhelmed.

(A) Error control
(B) Flow control
(C) Parity check
(D) Check sum
(E) Answer not known

121. Solution to cache coherency problem in a multiprocessor is usually provided through which one of the following?

(A) Bus transmission logic
(B) Cache controller hardware
(C) Cache controller software
(D) Cache controller firmware
(E) Answer not known

122. Which statements are correct?

(i) NAND Flash has faster erase and write times.
(ii) NOR Flash can read data slightly faster than NAND.
(iii) NOR Flash has faster erase and write times.
(iv) NAND Flash can read data slightly faster than NOR.

(A) (i) and (ii)
(B) (i) and (iii)
(C) (i) and (iv)
(D) (ii) and (iv)
(E) Answer not known

123. In DMA transfer of data, which one of the following is referred by the term, "cycle stealing"?

(A) DMA controller takes control of the bus, and completes transfer of data

(B) CPU takes control of the bus, when DMA transfer taking place and transfers the required data

(C) DMA controller takes control of the bus to transfer one word of data over the bus

(D) CPU takes control of the bus when a DMA transfer is taking place and transfer one word data

(E) Answer not known

124. Which one of the following statements most accurately characterizes the responsibility of the Memory Management Unit (MMU) in a processor?

(A) Managing the physical memory of the machine

(B) Managing the translation of virtual into physical address

(C) Managing the interface between main memory and the hard disk

(D) Managing the interface between the processor and the main memory

(E) Answer not known

125. The _____ portion of main memory is needed for storing an initial program called a bootstrap loader.

(A) RAM

(B) Static RAM

(C) Dynamic RAM

(D) ROM

(E) Answer not known

126. Which type of addressing for the given instruction?

PC + AD 8

(A) Direct Addressing
(B) Indirect Addressing
(C) Relative Addressing
(D) Indexed Addressing
(E) Answer not known

127. The basic logic elements that provides memory in many sequential network is _____.

(A) Flip flop
(B) Timer
(C) Counter
(D) RAM
(E) Answer not known

128. Choose the correct system bus for the following statements.

"Bus consists of signal lines over which the computer system transfers information from one device to another".

(A) Address Bus
(B) Data Bus
(C) Control Bus
(D) I/O Bus
(E) Answer not known

129. _____ Register is used as means of addressing in the memory for handling arrays/vectors.

(A) Index Register
(B) Flag Register
(C) Address Register
(D) Program Register
(E) Answer not known

130. Choose the invalid units of CPU.

(A) ALU
(B) Instruction decoder
(C) Timing and control unit
(D) Multi core processor
(E) Answer not known

131. Choose the correct answer for the following Boolean algebra equations

(A + B) (A + C)

(A) A + BC
(B) A + B
(C) AB + C
(D) AC + AB
(E) Answer not known

132. Name the Address mode which is used in conjunction with 2 byte instructions where the first byte is op-code and the second byte is the operand. ADDA is an example for it.

(A) Inherent Address mode
(B) Immediate Address mode
(C) Direct Address mode
(D) Index Address mode
(E) Answer not known

133. Name the logic gates of the following statements

"The Gate produces a High on the output when any of the input is High. The output is Low only when all the inputs are Low"

(A) AND gate
(B) OR gate
(C) NOT gate
(D) XOR gate
(E) Answer not known

134. For two statements, S1 and S2, if an execution path exists from S1 to S2 then they are said to be

(A) Anti dependent
(B) Flow dependence
(C) Output dependence
(D) None of the above
(E) Answer not known

135. Which method of resolving a data hazard by retrieving the missing data element from internal buffers rather than waiting for it to arrive from programmer – visible registers or memory?

(A) Forwarding
(B) Backwarding
(C) Pipelining stall
(D) Pipelining freeze
(E) Answer not known

136. Which one of the following statement is true?

(a) Simple Operation Latency is the clock period of the instruction pipeline.

(b) Simple Operation Latency is the time required between the two adjacent instructions.

(c) Simple Operation Latency is the number of instructions issued per cycle.

(d) Simple Operation Latency is the execution of simple instructions like add, load, etc. have lesser delays in execution than the complex instructions. It's measure in number of cycles.

(A) (a)
(B) (b)
(C) (c)
(D) (d)
(E) Answer not known

137. What is the another term for pipeline stall?

(A) Delayed Branch
(B) Data Hazard
(C) Structural Hazard
(D) Bubble
(E) Answer not known

138. Find the description for the given instruction:

SLL R_S, S_2, R_D

(A) Shift – Left
(B) Shift – Left rotation
(C) Shift – Left Arithmetic
(D) Shift – Right Logical
(E) Answer not known

139. Evaluate the expression in reverse polish notation

(3 * 4) + (5 * 6)

(A) 77
(B) 37
(C) 42
(D) 132
(E) Answer not known

140. _____ allow the programmer to express algorithms more concisely.

(A) Low-Level Languages
(B) High-Level Languages
(C) Large-Language
(D) Machine Language
(E) Answer not known

141. PRINCE2 is a method used for _____.

(A) Project identification
(B) Project monitoring
(C) Project control
(D) Project management
(E) Answer not known

142. People, Product, Process and Project are related to

(A) Software Project Management
(B) Software Process Management
(C) Software Configuration Management
(D) Supply Chain Management
(E) Answer not known

143. _____ attempts to verify the protection mechanisms built into a system will fact protect from improper penetration.

(A) Security testing
(B) Recovery testing
(C) Stress testing
(D) Performance testing
(E) Answer not known

144. Which test is conducted at developers site by end users?

(A) Alpha test
(B) Beta test
(C) Pilot test
(D) Loop test
(E) Answer not known

145. The external view of software testing is called _____.

(A) White box testing
(B) Black box testing
(C) Basis path testing
(D) Glass box testing
(E) Answer not known

146. Which is an activity to evaluating an attribute or capability of a program?

(A) Software Design
(B) Software Coding
(C) Software Maintenance
(D) Software Testing
(E) Answer not known

147. LOC stands for _____.

(A) List Of Code
(B) Lines Of Code
(C) Level Of Code
(D) Law Of Code
(E) Answer not known

148. The sum of the costs of the modules and subsystems that comprise the system are known as _____.

(A) Algorithmic cost estimation
(B) Algorithmic effort estimation
(C) Algorithmic size estimation
(D) Algorithmic analysis estimation
(E) Answer not known

149. Time line chart also called _____.

(A) Bar chart
(B) Pie chart
(C) Life line chart
(D) Gantt chart
(E) Answer not known

150. Which process model is used as a standalone process model?

(A) Water fall model
(B) Incremental process model
(C) Prototyping model
(D) Spiral model
(E) Answer not known

151. Each task must be assigned a start date and a completion date is known as _____.

(A) Time allocation
(B) Effort allocation
(C) Task allocation
(D) Work allocation
(E) Answer not known

152. _____ is a method of developing or producing software.

(A) Software product
(B) Software project
(C) Software process
(D) Software preparation
(E) Answer not known

153. Which approach is to anticipate the possible risks?

(A) Reactive
(B) Proactive
(C) Deactive
(D) Active
(E) Answer not known

154. The broad spectrum of tasks and techniques that lead to an understanding of _____.

(A) Specification
(B) Requirement
(C) Verification
(D) Validation
(E) Answer not known

155. _____ represents the structure of data and program components that are required to build a computer based system.

(A) Structural Design
(B) Conceptual Design
(C) Abstract Design
(D) Architectural Design
(E) Answer not known

156. A set of design steps that allows a DFD with transform flow to be mapped into a specific architectural style is known as _____.

(A) Architectural mapping
(B) Data flow mapping
(C) Transform mapping
(D) Design mapping
(E) Answer not known

157. Which examine the specification looking for error in content or interpretation?

(A) Validation
(B) Negotiation
(C) Identification
(D) Elicitation
(E) Answer not known

158. Which requirements are "blue print" for constructing the software?

(A) Software design
(B) Software coding
(C) Software testing
(D) Software deployment
(E) Answer not known

159. Which one provide the necessary framework for getting right?

(A) Software Coding Concept
(B) Software Testing Concept
(C) Software Design Concept
(D) Software Installation Concept
(E) Answer not known

160. When errors occur at one location and propagate throughout a system is _____.

(A) Ripple effect
(B) Cosmic effect
(C) Dynamic effect
(D) Information hiding
(E) Answer not known

161. Hall effect is present in _____.

(A) Metals only

(B) Semiconductors only

(C) Insulators only

(D) Metals and Semiconductors only

(E) Answer not known

162. The main function of communication module in a smart sensor is

(A) To convert analog signals into digital

(B) To process the sensor's reading

(C) To transmit data to a remote device

(D) To power the sensor's circuitry

(E) Answer not known

163. A resistance strain gauge with a gauge factor of 2 is cemented to a steel member, which is subjected to a strain of 1×10^{-6}. If the original resistance value of the gauge is 130Ω. Calculate the change in resistance.

(A) 260 mΩ

(B) 260 $\mu\Omega$

(C) 65 mΩ

(D) 65 $\mu\Omega$

(E) Answer not known

164. The impedance Z of a series circuit consisting of resistance R and capacitive reactance X_c is given by

(A) $Z = R + jX_c$

(B) $Z = R - jX_c$

(C) $Z = R^2 + X_c^2$

(D) None of the above

(E) Answer not known

165. During three phase power measurement using two wattmeter method, the power factor is unity when

(A) Both the wattmeters will indicate same reading

(B) Wattmeter w_2 will be positive

(C) Wattmeter w_1 will be negative

(D) Wattmeter w_2 is zero

(E) Answer not known

166. Determine the RMS value of current if 300 V sinusoidal AC supply is applied to 50Ω resistor.

(A) 5.4 A

(B) 8.48 A

(C) 6 A

(D) 10 A

(E) Answer not known

167. The primary function of data transmission system is

(A) To store data permanently

(B) To process data quickly

(C) To move data from one place to another

(D) To convert analog signals into digital

(E) Answer not known

168. The power in a 3 phase four wire circuit can be measured by using

(A) 2 watt meters
(B) 4 watt meters
(C) 3 watt meters
(D) 1 watt meter
(E) Answer not known

169. Which of the following instrument is not desirable for measurement of AC values?

(A) Moving Iron repulsion type
(B) Moving Iron attractive type
(C) Dynamometer type
(D) Permanent magnet moving coil type
(E) Answer not known

170. Ratio correction factor of an instrument transformer relates to the

(A) Transformation ratio and nominal ratio
(B) Transformation ratio and turns ratio
(C) Nominal ratio and turns ratio
(D) Nominal ratio and power factor ratio
(E) Answer not known

171. When a synchronous motor is operating at normal excitation, its operating power factor is

(A) Lagging
(B) Leading
(C) Zero
(D) Unity
(E) Answer not known

172. Operating frequency of domestic power supply in India.

(i) 25 Hz
(ii) 50 Hz
(iii) 100 Hz
(iv) 220 Hz

(A) (i) & (iii)
(B) (i) & (ii)
(C) (ii) only
(D) All four frequency
(E) Answer not known

173. If the supply voltage for a DC motor is increased which of the following will decrease?

(A) Starting torque
(B) Operating speed
(C) Full load current
(D) All of the above
(E) Answer not known

174. _____ indicates the deviation of a periodic wave from its ideal waveform characteristics.

(A) Overvoltage
(B) Flicker
(C) Distortion
(D) Electromagnetic Interference
(E) Answer not known

175. A single phase fully controlled bridge converter supplies a load drawing constant ripple free load current. If the firing angle is 30°, the input power factor will be

(A) 0.65
(B) 0.78
(C) 0.85
(D) 0.866
(E) Answer not known

176. The output waveform of a 3 phase square wave inverter contains

(A) only even harmonics
(B) both odd and even harmonics
(C) only odd harmonics
(D) only triplen harmonics
(E) Answer not known

177. The barrier potential developed across PN junction is

(A) 0.3 V for Si and 0.7 V for Ge
(B) 0.7 V for Si and 0.3 V for Ge
(C) 0.3 mV for Si and 0.7 mV for Ge
(D) 0.7 mV for Si and 0.3 mV for Ge
(E) Answer not known

178. In Zener breakdown, the breakdown voltage is primarily determined by

(A) The materials bandgap
(B) The doping concentration of the diode
(C) The temperature of the diode
(D) The applied reverse bias voltage
(E) Answer not known

179. The reverse saturation current of Ge diode is 34 mA at 25°C. What is the value of reverse saturation current at 45°C?

(A) 17 mA
(B) 68 mA
(C) 136 mA
(D) 8.5 mA
(E) Answer not known

180. The input voltage to an op-amp is a large voltage step signal. The output is an exponential waveform that changes to 0.25 V in 0.1 μs. What is the slew rate of the op-amp?

(A) 2.5 V/μs
(B) 2.5 Vμs
(C) 0.025 V/μs
(D) 0.025 Vμs
(E) Answer not known

181. Which key is used for Referential Integrity?

(A) Primary key
(B) Super key
(C) Foreign key
(D) Candidate key
(E) Answer not known

182. Consider the Insurance Database :
Person (driver-id) name, address)
Car (license, model, year)
Accident (report-number, date, location)
Owns (driver-id, license)
Participated (driver-id, car, report-number, damage-amount)
Write a query : To find the total number of people who owned cars that were involved in accidents in 1989.

(A) Select count (distinct name) from accident, participated, person where accident. report number = participated. Report number and participated. driver_id = person. driver_id and date between date '1989-00-00' and date '1989-12-31';

(B) Select count (distinct name) from accident, person where accident. report number = person. driver_id where date between '1989-00-00' and '1989-12-31'

(C) Both (A) and (B) are correct

(D) None of the above

(E) Answer not known

183. Heuristic rules for transforming relational algebra queries includes

(A) Perform selection operations as early as possible

(B) Perform projections early

(C) Cartesian products update

(D) Both (A) and (B)

(E) Answer not known

184. Consider three relations R(A, B, C), S(C, D, E) and T(E, F). If R has 1000 tuples, S has 1500 tuples and T has 750 tuples. Estimate the size of $R \bowtie S \bowtie T$.

(A) 500
(B) 1000
(C) 1500
(D) 750
(E) Answer not known

185. Functional Dependencies sometimes are referred to as _____ generating dependencies and multivalued dependencies are referred to as _____ generating dependencies.

(A) Non-equality and Tuple
(B) Equality and Tuple
(C) Tuple and Non-equality
(D) Tuple and Equality
(E) Answer not known

186. To test relations to see whether they are legal under a given set of functional dependencies. If a relation *r* is legal under a set F of functional dependencies, we conclude that _____

(A) *r* satisfies F
(B) F holds on R
(C) *r* trivial F
(D) F non trivial on R
(E) Answer not known

187. When an ER diagram is mapped to tables the representation is redundant for?

(A) Strong entity sets
(B) Strong relationship sets
(C) Weak entity sets
(D) Weak relationship sets
(E) Answer not known

188. A database index provides _____ to those data items that hold a particular value.

(A) Paths
(B) Data
(C) Memory
(D) Pointers
(E) Answer not known

189. Composite attributes can be handled by creating a separate attributes for each of the component attributes.

Identify the statement below which is true?

(A) A separate attribute for the composite attribute need not be created
(B) A separate attribute for the composite attribute need to be created
(C) Composite attributes need not be partitioned
(D) Each composite attribute should be given a separate attribute and corresponding key
(E) Answer not known

190. The _____ is useful in mapping the meanings and interactions of real world enterprise onto a conceptual schema.

(A) Relational model
(B) Codd's rule
(C) E-R model
(D) Database model
(E) Answer not known

191. _____ is used to represent semi structured data.

(A) SQL
(B) Oracle
(C) XML
(D) Ingres
(E) Answer not known

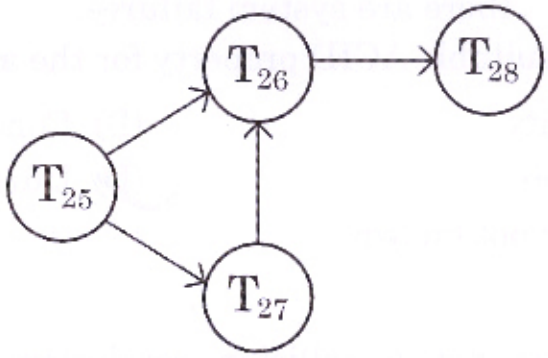
192. Database systems integrity constraints can be tested with _____.

(A) Domain, referential, assertion, authorization
(B) Domain, check points, referential, access rights
(C) Data semantics, rollbacks, assertion authorization
(D) Read, insert, update, delete conditions
(E) Answer not known

193. Which of the following is known as a set of entities of the same type that share same properties or attributes?

(A) ER model
(B) UML model
(C) Tuple set
(D) Entity set
(E) Answer not known

194. Consider the wait-for-graph and identify which transactions will be affected by the deadlock.



(A) Transaction T_{25} is deadlock due to T_{26} and T_{27}

(B) Transaction T_{27} is deadlock due to T_{26}

(C) Transaction T_{26} is deadlock due to T_{28}

(D) No deadlock state

(E) Answer not known

195. Check the statements are valid in two-phase locking protocol.

(i) Growing phase : A transaction may obtain locks, but may release any lock.

(ii) Shrinking phase : A transaction may release locks, but may not obtain any new locks.

(A) (i) – valid ; (ii) – invalid

(B) (i) – invalid ; (ii) – valid

(C) Both (i) and (ii) are valid

(D) Both (i) and (ii) are invalid

(E) Answer not known

196. Statement : After a transaction completed successfully, the changes it has made to the database persist, even if there are system failures.

Identify the suitable ACID property for the above statement.

(A) Atomicity
(B) Consistency
(C) Isolation
(D) Durability
(E) Answer not known

197. Which one is not a collision resolution technique in Hashing method?

(A) Open addressing
(B) Folding
(C) Chaining
(D) Multiple hashing
(E) Answer not known

198. Which protocols that guarantee serializability in executing transactions?

(A) Optimistic protocols
(B) Run time protocols
(C) Concurrency control protocols
(D) None of the above
(E) Answer not known

199. If we change the order of the two operations $r_1(X)$; $w_2(X)$ to $w_2(X)$; $r_1(X)$ then the value of X that is read by transaction T_1 changes, because in the second ordering the value of X is read by $r_1(X)$ after it is changed by $w_2(X)$, whereas in the first ordering the value is read before it is changed. Identify which conflict will occur.

(A) read-write
(B) write-write
(C) write-read
(D) read-read
(E) Answer not known

200. Which failure occurs when hardware crashes (ex. main memory failure)?

(A) Media failures
(B) Transaction error
(C) System error
(D) Local errors
(E) Answer not known
