

Name of Post:	Junior Manager (Electrical/IT) in Assam Power Distribution Company Limited (APDCL)
Advt. No.	08/2023 dated 30.03.2023
Date of Screening Test	24.09.2023

JM/APDCL/II/23

ASKED TO DO SO

Series



00364

TEST BOOKLET
Paper—I
(INFORMATION TECHNOLOGY)

Time Allowed : 2 Hours

Full Marks : 150

Read the following instructions carefully before you begin to answer the questions :

1. The name of the Subject, Roll Number as mentioned in the Admission Certificate, Test Booklet No. and Series are to be written legibly and correctly in the space provided on the Answer-Sheet with Black/Blue ballpoint pen.
2. **Answer-Sheet without marking Series as mentioned above in the space provided for in the Answer-Sheet shall not be evaluated.**
3. All questions carry equal marks.

The Answer-Sheet should be submitted to the Invigilator.

Directions for giving the answers : Directions for answering questions have already been issued to the respective candidates in the 'Instructions for marking in the OMR Answer-Sheet' along with the Admit Card and Specimen Copy of the OMR Answer-Sheet.

Example :

Suppose the following question is asked :

The capital of Bangladesh is

- (A) Chennai
- (B) London
- (C) Dhaka
- (D) Dhubri

You will have four alternatives in the Answer-Sheet for your response corresponding to each question of the Test Booklet as below :



In the above illustration, if your chosen response is alternative (C), i.e., Dhaka, then the same should be marked on the Answer-Sheet by blackening the relevant circle with a Black/Blue ballpoint pen only as below :



The example shown above is the only correct method of answering.

4. Use of eraser, blade, chemical whitener fluid to rectify any response is prohibited.
5. Please ensure that the Test Booklet has the required number of pages (16) and 100 questions immediately after opening the Booklet. In case of any discrepancy, please report the same to the Invigilator.
6. No candidate shall be admitted to the Examination Hall/Room 20 minutes after the commencement of the examination.
7. **No candidate shall leave the Examination Hall/Room** without prior permission of the Supervisor/Invigilator. No candidate shall be permitted to hand over his/her Answer-Sheet and leave the Examination Hall/Room before expiry of the full time allotted for each paper.
8. No Mobile Phone, Electronic Communication Device, etc., are allowed to be carried inside the Examination Hall/Room by the candidates. Any Mobile Phone, Electronic Communication Device, etc., found in possession of the candidate inside the Examination Hall/Room, even if on off mode, shall be liable for confiscation.
9. No candidate shall have in his/her possession inside the Examination Hall/Room any book, notebook or loose paper, except his/her Admission Certificate and other connected papers permitted by the Commission.
10. Complete silence must be observed in the Examination Hall/Room. No candidate shall copy from the paper of any other candidate, or permit his/her own paper to be copied, or give, or attempt to give, or obtain, or attempt to obtain irregular assistance of any kind.
11. This Test Booklet can be carried with you after answering the questions in the prescribed Answer-Sheet.
12. Noncompliance with any of the above instructions will render a candidate liable to penalty as may be deemed fit.
13. No rough work is to be done on the OMR Answer-Sheet. You can do the rough work on the space provided in the Test Booklet.

N.B. : There will be negative marking @ 0.25 per 1 (one) mark against each wrong answer.

/131-D

[No. of Questions : 100]

SEAL

1. When a relation contains an atomic value, it is a _____ relation.
- (A) 1NF
(B) 2NF
(C) 3NF
(D) BCNF
2. In SQL, the statement "Select * from R, S" is equivalent to
- (A) Select * from R natural join S
(B) Select * from R cross join S
(C) Select * from R union join S
(D) Select * from R inner join S
3. Assume transaction A holds a shared lock R. If a transaction B also requests for a shared lock on R
- (A) it will occur in deadlock situation
(B) it will immediately be granted
(C) it will be rejected
(D) it will be granted as soon as it will be released
4. An advantage of views is
- (A) data security
(B) derived columns
(C) hiding of complex queries
(D) All of the above
5. System call used to create process is
- (A) fork()
(B) signal()
(C) wait()
(D) return()
6. The scheduling policy that is most suitable for time-sharing operating system is
- (A) FCFS
(B) shortest job first
(C) priority based
(D) round-robin
7. The major part of the time taken when accessing data on the disk is
- (A) settle time
(B) rotational latency
(C) seek time
(D) waiting time
8. Banker's algorithm for resource allocation deals with
- (A) deadlock prevention
(B) deadlock avoidance
(C) deadlock recovery
(D) circular wait

9. A page fault occurs when
- (A) a page gives inconsistent data
 - (B) a page cannot be accessed due to its absence from memory
 - (C) a page is invisible
 - (D) All of the above
10. Locality of reference implies that the page reference being made by a process
- (A) will always be to the page used in the previous page reference
 - (B) will always be one of the pages existing in memory
 - (C) is likely to be one of the pages used in the last few page references
 - (D) will always lead to page faults
11. In LRU page replacement policy, LRU stands for
- (A) Last Replaced Unit
 - (B) Last Restored Unit
 - (C) Least Recently Used
 - (D) Least Required Unit
12. A program in execution is called
- (A) process
 - (B) procedure
 - (C) instruction
 - (D) function
13. Worst time complexity of binary search algorithm is
- (A) $O(n)$
 - (B) $O(n^2)$
 - (C) $O(\log n)$
 - (D) $O(n \log n)$
14. Which of the following algorithm design techniques is used in the quick-sort algorithm?
- (A) Dynamic multiprogramming
 - (B) Backtracking
 - (C) Divide and conquer
 - (D) Greedy method
15. When _____ traversal is applied on binary search tree, it prints all the data of the binary tree in the ascending order.
- (A) post-order
 - (B) in-order
 - (C) pre-order
 - (D) None of the above

16. Consider the following operation performed on a stack of size 5 :

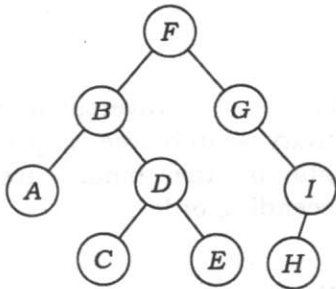
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push(1);
pop( );
push(2);
push(3);
pop( );
push(4);
pop( );
pop( );
push(5);

```

After the completion of all operations, the number of elements present in the stack is

- (A) 1
 (B) 2
 (C) 3
 (D) 4
17. The post-order traversal of the following binary tree



is

- (A) ABCDEFGHI
 (B) ACEDBHGIF
 (C) FBADCEGIH
 (D) FABCDEHIG

18. Sorting algorithm to sort a random list in shortest time is

- (A) insertion sort
 (B) quicksort
 (C) heapsort
 (D) merge sort

19. A graph is a tree if and only if the graph

- (A) is directed graph
 (B) contains no cycle
 (C) is planar
 (D) is completely connected

20. The asymptotic time complexity to add a node at the end of singly linked list when the pointer is at the head of the list is

- (A) $O(1)$
 (B) $O(n)$
 (C) $\theta(n)$
 (D) $\theta(1)$

21. Suppose a complete binary tree has height $h > 0$. The minimum number of leaf nodes possible in terms of h is

- (A) $2^h - 1$
 (B) $2^{h-1} + 1$
 (C) 2^{h-1}
 (D) $2^h + 1$

22. The size of registers of 8086 is
- (A) 8 bits
 - (B) 12 bits
 - (C) 16 bits
 - (D) 20 bits
23. The direction flag is used with
- (A) stack instructions
 - (B) string instructions
 - (C) arithmetic instructions
 - (D) branch instructions
24. Ready pin of a microprocessor is used to
- (A) provide direct memory access
 - (B) introduce wait states
 - (C) indicate that the microprocessor is ready to receive inputs
 - (D) indicate that the microprocessor is ready to receive outputs
25. The DEN pin of Intel 8086 microprocessor is for
- (A) direct enable
 - (B) data entered
 - (C) data enable
 - (D) data encoding
26. In 8086 microprocessor, which one of the following is **not** true?
- (A) Coprocessor is interfaced in max mode
 - (B) Coprocessor is interfaced in min mode
 - (C) I/O can be interfaced in min/max mode
 - (D) Supports pipelining
27. Which flag of flag register is set to 1 when the result of arithmetic or logical operation is zero?
- (A) Binary bit
 - (B) Zero flag
 - (C) Sign flag
 - (D) Overflow flag
28. AX, BX, CX and DX are known as
- (A) segment registers
 - (B) general-purpose registers
 - (C) index registers
 - (D) special-purpose registers
29. In assembly language programming, DS stands for
- (A) Direct Segment
 - (B) Declare Segment
 - (C) Divide Segment
 - (D) Data Segment

30. The alternate way of writing the instruction ADD#5, R1 is
- (A) ADDI 5, R1
 - (B) ADD [5], [R1]
 - (C) ADDIME 5, [R1]
 - (D) None of the above
31. The protocol primarily used for browsing data is
- (A) FTB
 - (B) HTTP
 - (C) TCP
 - (D) SMTP
32. Which of the following layers of OSI model is **not** present in the TCP/IP model?
- (A) Transport layer
 - (B) Application layer
 - (C) Session layer
 - (D) Network layer
33. The length of IPv4 address is
- (A) 16 bits
 - (B) 32 bits
 - (C) 64 bits
 - (D) 128 bits
34. The device used to connect two dissimilar types of network is
- (A) switch
 - (B) bridge
 - (C) gateway
 - (D) modem
35. BNC connector is generally used in
- (A) ring topology
 - (B) bus topology
 - (C) tree topology
 - (D) mesh topology
36. The data link layer takes the packet from _____ and breaks it into frames.
- (A) network layer
 - (B) data link layer
 - (C) application layer
 - (D) transport layer
37. Packet in the IP layer is called as
- (A) datagram
 - (B) segment
 - (C) fragment
 - (D) frame
38. TCP/IP layer is equivalent to combined session, presentation and
- (A) network layer
 - (B) application layer
 - (C) transport layer
 - (D) physical layer

39. Which of the following services use TCP?
- I. DHCP
 - II. SMTP
 - III. HTTP
 - IV. TFTP
 - V. FTP
- (A) I and II
(B) II, III and V
(C) I, II and IV
(D) I, III and IV
40. The file format that uses a shorthand representation of musical notes and durations stored in numeric form is
- (A) AIF
 - (B) WAV
 - (C) MIDI
 - (D) TIFF
41. Expand JPEG.
- (A) Joint Photo Expert Gross
 - (B) Joint Photographic Experts Group
 - (C) Joint Processor Experts Group
 - (D) Joint Photographic Expression Group
42. A 4-bit color image can have _____ different colors.
- (A) 4
 - (B) 8
 - (C) 16
 - (D) 32
43. The color model used for printing is
- (A) CMYK
 - (B) YUV
 - (C) RGB
 - (D) additive
44. Dynamic web pages are not generated using
- (A) CSS
 - (B) PHP
 - (C) JSP
 - (D) ASP.NET
45. There are _____ levels of heading in HTML.
- (A) three
 - (B) four
 - (C) five
 - (D) six

46. HTML attribute used to define the inline styles is
- (A) class
 - (B) type
 - (C) style
 - (D) None of the above
47. Common gateway interface is used to
- (A) generate web pages
 - (B) generate executable files from web content
 - (C) stream videos
 - (D) download media files
48. The HTML tags used to add rows in a table are
- (A) <td> and </td>
 - (B) <th> and </th>
 - (C) <tr> and </tr>
 - (D) <tb> and </tb>
49. The decoded instructions are stored in the
- (A) accumulator
 - (B) memory address register
 - (C) general-purpose register
 - (D) instruction register
50. Memory that requires to be refreshed many times per second is
- (A) static RAM
 - (B) dynamic RAM
 - (C) ROM
 - (D) EPROM
51. Cache memory acts between
- (A) ROM and RAM
 - (B) CPU and ROM
 - (C) CPU and RAM
 - (D) CPU and hard disk
52. Floating-point representation is used to store
- (A) real integers
 - (B) whole numbers
 - (C) Boolean values
 - (D) integers
53. The circuit that converts binary data to decimal is
- (A) encoder
 - (B) multiplexer
 - (C) decoder
 - (D) code converter

54. The I/O devices are connected to CPU by
- (A) control circuit
 - (B) BUS
 - (C) signal
 - (D) memory

55. The operand is specified in the instruction itself in _____ mode of addressing.
- (A) register
 - (B) immediate
 - (C) implied
 - (D) indexed

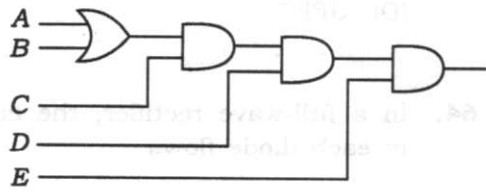
56. Convert 187_{10} to binary.
- (A) 10111011_2
 - (B) 11011101_2
 - (C) 10111101_2
 - (D) 10111100_2

57. The addressing mode of the instruction
`MOV CX, [BX + SI + 20 H]`
 is
- (A) immediate addressing mode
 - (B) relative-based index addressing mode
 - (C) implicit addressing mode
 - (D) register relative addressing mode

58. How many two-input AND and OR gates are required to realize $Y = CD + EF + G$?
- (A) 2, 2
 - (B) 2, 3
 - (C) 3, 3
 - (D) 3, 2

59. If one of the inputs to a gate suddenly becomes low but still the output is high, the gate is
- (A) AND
 - (B) NAND
 - (C) NOR
 - (D) OR

60. Boolean expression for the given logic circuit



- is
- (A) $(A + B * C)DE$
 - (B) $C(A + B)DE$
 - (C) $A + BCDE$
 - (D) $ABCDE$

61. According to Boolean law, $A + 1 =$

- (A) 1
- (B) A
- (C) 0
- (D) A'

62. A D flip-flop is transparent when

- (A) the output is low
- (B) the output follows clock
- (C) the output follows input
- (D) the output is high

63. Logic family with minimum power dissipation is

- (A) ECL
- (B) CMOS
- (C) TTL
- (D) JFET

64. In a full-wave rectifier, the current in each diode flows

- (A) for complete cycle of the input signal
- (B) for half-cycle of the input signal
- (C) for less than half of the input signal
- (D) only for the positive half-cycle of the input signal

65. In a *p-n-p* transistor, the current carriers are

- (A) acceptor ions
- (B) donor ions
- (C) free electrons
- (D) holes

66. Which device is used to back up the data?

- (A) Optical disc
- (B) Tape
- (C) Network drive
- (D) All of the above

67. Which of the following is **not** correct model in software development paradigm?

- (A) Waterfall model
- (B) P-model
- (C) Spiral model
- (D) V-model

68. Which of the following is also known as 'behavioral' testing?

- (A) Black-box testing
- (B) White-box testing
- (C) Grey-box testing
- (D) Green-box testing

69. Alpha testing is done at
- (A) developer's end
 - (B) user's end
 - (C) developer's and user's end
 - (D) None of the above
70. Which of the following is **not** a phase of prototyping model?
- (A) Quick design
 - (B) Coding
 - (C) Prototype refinement
 - (D) User requirement
71. Functional testing is also known as
- (A) white-box testing
 - (B) black-box testing
 - (C) grey-box testing
 - (D) glass-box testing
72. Checking quality of software in both simulated and live environments is known as
- (A) verification
 - (B) correctness
 - (C) validation
 - (D) confirmation
73. In the spiral model, 'risk analysis' is performed
- (A) in the first loop
 - (B) in the first and second loop
 - (C) in every loop
 - (D) It is performed before using spiral model
74. Identify the term **not** related to testing.
- (A) Failure
 - (B) Error
 - (C) Test case
 - (D) Test bot
75. Structure chart is a product of
- (A) requirements gathering
 - (B) requirements analysis
 - (C) design
 - (D) coding
76. Identify which of these is/are **not** input device(s).
- (A) OMR, OCR, MICR
 - (B) Biometric sensor
 - (C) Scanner, microphone
 - (D) Projector, plotter

77. VGA stands for
- (A) Visual Graphics Adapter
 - (B) Video Graphics Adapter
 - (C) Video Graphics Array
 - (D) Visual Graphics Array
78. Hardware testing and loading of OS is known as
- (A) self-testing
 - (B) POST
 - (C) booting
 - (D) operation testing
79. SMPS stands for
- (A) Switched Mode Power Supply
 - (B) Start Mode Power Supply
 - (C) Store Mode Power Supply
 - (D) Single Mode Power Supply
80. A personal computer uses a number of chips mounted on a circuit board called
- (A) microprocessor
 - (B) system board
 - (C) daughterboard
 - (D) motherboard
81. The example of an impact printer is
- (A) dot-matrix printer
 - (B) inkjet printer
 - (C) laser printer
 - (D) thermal printer
82. RS-232 is a standard which applies for
- (A) parallel port
 - (B) serial port
 - (C) network port
 - (D) game port
83. Valid I/O address for configuring a new network interface card is
- (A) 356
 - (B) 360
 - (C) 2F8
 - (D) 3F8
84. Computer component that is environmentally recycled easily is
- (A) CMOS battery
 - (B) motherboard
 - (C) cathode-ray tube
 - (D) toner cartridge

85. Operator overloading is an example of
- (A) simple inheritance
 - (B) compile-time polymorphism
 - (C) run-time polymorphism
 - (D) multiple inheritance
86. The operator that cannot be overloaded in C++ is
- (A) ::
 - (B) --
 - (C) +
 - (D) ++
87. The private and protected members of a class can be accessed by
- (A) friend of a class
 - (B) member function of a derived class
 - (C) Both (A) and (B)
 - (D) Neither (A) nor (B)
88. The destructor in inheritance of C++ is executed
- (A) from base class to the derived class
 - (B) from derived class to the base class
 - (C) only in the base class
 - (D) only in the derived class
89. In C++, virtual function is used in
- (A) function overloading
 - (B) function overriding
 - (C) constructor overloading
 - (D) operator overloading
90. The index number of the last element of an array with 9 elements is
- (A) 0
 - (B) 1
 - (C) 8
 - (D) 9
91. A non-member function that can access the private data of a class is called
- (A) pure member function
 - (B) library function
 - (C) static function
 - (D) friend function
92. In C++, the class variables are called as
- (A) functions
 - (B) constants
 - (C) objects
 - (D) methods

93. Which of the following is the correct identifier?
- (A) \$var_name
 - (B) VAR_123
 - (C) varname@
 - (D) None of the above
94. Identify the odd one out.
- (A) Default constructor
 - (B) Friend constructor
 - (C) Parameterized constructor
 - (D) Copy constructor
95. Instance and schemas are parts of
- (A) data definition
 - (B) data manipulation
 - (C) data models
 - (D) data redundancy
96. A foreign key is a/an
- (A) primary key of a relation which is an attribute in another relation
 - (B) superkey of a relation which is an attribute in more than one other relation
 - (C) attribute of a relation that is a primary key of another relation
 - (D) primary key of a relation that does not occur anywhere else in the schema
97. _____ is based on the concept of full functional dependency.
- (A) 1NF
 - (B) 2NF
 - (C) 3NF
 - (D) BCNF
98. Which of the following is an aggregate function in SQL?
- (A) GROUP BY
 - (B) UNION
 - (C) COUNT
 - (D) GRANT
99. Transaction state that makes changes to the database is
- (A) partially commit state
 - (B) abort state
 - (C) ready state
 - (D) commit state
100. Lost update and dirty read problems are associated with
- (A) normalization
 - (B) transaction processing
 - (C) database recovery
 - (D) concurrency control