PREVIOUS YEAR PAPER

# DSSSB Manager (IT) 2023 — 23 November 2023, Shift 1

DSSSB Other Posts · 23 November 2023 · Shift 1

141 of the paper's 200 questions · +1 for a correct answer, −0.25 for a wrong one

Left out of the original paper: 59 (any question that needs a figure, a symbol or formatting we cannot show, or whose text did not read back cleanly from the booklet).

Questions from the Delhi Subordinate Services Selection Board's paper of 23 November 2023, Shift 1. Each question is followed by its answer, and the answer key is repeated on the last page.

Take it as a timed practice test: exambharo.com/dsssb-other-posts/previous-year-papers/dsssb-other-posts-2023-manager-it-23-nov-shift-1/

## General

1. Which of the following type of diffraction is called as Fraunhofer diffraction?

(a) Far-field diffraction

(b) Near-filed diffraction

(c) Fresnel diffraction

(d) Low-field diffraction

**Answer: (a)**

2. Ohm's law is NOT applicable to certain circuit under which of the following condition?
I. For arc lamps
II. For electronic valves
III. For metals which are heated by current to a high ...ve

(a) Only I and II

(b) Only I and III

(c) I, II and III

(d) Only II and III

**Answer: (c)**

5. What will the output of following python function? print (len(['maths', 1, 2, 4]))

(a) Error

(b) 2

(c) 5

(d) 4

**Answer: (d)**

7. Which Hadoop distributed file system command is used for copying files to the local life system?

(a) get

(b) mv

(c) cp

(d) chown

**Answer: (a)**

8. Hadoop distributed file system is created for _____.

(a) interactive use

(b) batch processing

(c) multiprocessing

(d) single process

**Answer: (b)**

9. A knowledge based agent can be built simply by telling it what it needs to know name this approach of system building?

(a) Procedural

(b) Modular

(c) Declarative

(d) Structural

**Answer: (c)**

10. _____ provide a method for transferring information between internal storage and external I/O devices.

(a) CPU

(b) Output interface

(c) Input-output interface

(d) I/O bus

**Answer: (c)**

11. A transaction is _____, if its complete execution ... the database from one consistent state to another.

(a) Atomicity

(b) Consistency preserving

(c) Permanency

(d) Isolation

**Answer: (b)**

12. A schedule in which the transactions participate is then serializable and the equivalent serial schedule has the transactions in order of their timestamp values this is called _____.

(a) timestamp starvation

(b) timestamp ordering

(c) timestamp writing

(d) timestamp reading

**Answer: (b)**

13. Other protocols for concurrency control keep the old values of a data item when the item is update. These are known as _____.

(a) strict timestamp ordering
(b) validation concurrency control
(c) multiversion concurrency control
(d) granularity level control

**Answer: (c)**

14. Which of the following is NOT incremental integration testing strategies used in software engineering?

(a) Bottom up testing
(b) Regression testing
(c) Top down testing
(d) Smog testing

**Answer: (d)**

15. Which type of language is accepted by pushdown automata?

(a) Context – sensitive
(b) Unrestricted
(c) Context – free
(d) Non regular

**Answer: (c)**

16. Predictive learning is also known as _____.

(a) supervised learning
(b) unsupervised learning
(c) descriptive learning
(d) reinforced learning

**Answer: (a)**

17. Which of the following statement is correct regarding boosting in machine learning?
I. It increase the biasing error.
II. It is a ensemble-based technique.

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

**Answer: (b)**

18. Which of the following is NOT decision tree node?

(a) Root node
(b) Branch node
(c) Leaf node
(d) Boxes node

**Answer: (d)**

19. Which of the following is pros of wireless communication system?
I. The data transfer speed is low as compared to wired technology.
II. Wireless network provides mobility to its users.

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

**Answer: (b)**

20. Which of the following is component of embedded system?
I. Software
II. Time operating system

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

**Answer: (c)**

21. Which of the following statement is correct regarding special theory of relativity?
I. All the fundamental laws of physics retain the same form in all the inertial frames of reference.
II. The velocity of light in free space is constant and is independent of the relative motion of the source and the observer.

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

**Answer: (c)**

22. X-ray are _____ in the presence of electric and magnetic fields.

(a) deflected
(b) disappear
(c) not deflected
(d) nullified

**Answer: (c)**

23. A logic circuit that selects one of several input lines and connects it to a single output line is known as _____.

(a) half adder
(b) full adder
(c) multiplexer
(d) subtracts

**Answer: (c)**

24. Amplitude modulation (AM) signals with large carrier are detected by using the _____.

(a) envelope detector

(b) square law detector

(c) circle law detector

(d) rectangle law detector

**Answer: (a)**

27. Which of the following is the polish notation of the following infix expression?
(A * B)/(C – D)

(a) / * – A B C D

(b) * / A B – C D

(c) / * A B – C D

(d) / – A B C D

**Answer: (c)**

29. Which of the following algorithm is a divide and conquer algorithm by nature?

(a) Matrix-dain multiplication

(b) Longest common subsequence

(c) an activity-selection problem

(d) Quick Sort

**Answer: (d)**

30. Suppose we are sorting an array of ten integers ıg quicksort, and we have just finished the first partitioning with the array looking like this.
12 15 11 17 29 22 21 23 35 30
Which of the following is the pivot point?

(a) 11

(b) 17

(c) 29

(d) 22

**Answer: (b)**

31. Which Hadoop file system is layered on another file system for archiving files Hadoop archives are typically used for archiving files in HDFS to reduce the Name Node's memory usage?

(a) HFTP

(b) HSFTP

(c) HAR

(d) KFS

**Answer: (c)**

32. In artificial intelligence there must be a way to add new sentences to the knowledge base and a way to query what is known. The standard name to these questions are _____ and _____.

(a) Tell; Ask

(b) Question; Answer

(c) Problem; Solution

(d) Inference; deduce

**Answer: (a)**

33. In the context of OSI (Open System Interconnection) reference model, which of the following statement is correct?
I. The OSI model is a set of protocols that attempt to define and standardise the data communications process.
II. The OSI reference model describes how information from a software application in one computer moves through a network medium to a software application in another computer.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (c)**

34. Which of the following statement is correct regarding 'cin' in C++ programming?
I. The 'cin' is used in conjunction with the stream extraction operator.
II. The 'cin' is written as two less than (<<) sign.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (a)**

35. Which of the following statement is correct regarding Direct Memory Access (DMA)?
I. During DMA transfer, the CPU is idle and has no control of the memory buses.
II. A DMA controller takes over the buses to manage the transfer directly between the I/O device and memory.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (c)**

36. Which of the following is a technique of decomposing a sequential process into suboperations?

(a) Vectoring

(b) Pipelining

(c) ALU operations

(d) Interleaving

**Answer: (b)**

37. Which of the following is NOT a component of the mechanical diagram of the pushdown automata?

(a) Input tape
(b) Writing head
(c) Finite control
(d) Stack

**Answer: (b)**

38. Name the hash function which is used in Rabin Karp algorithm for pattern match

(a) Rolling hash function
(b) Division method
(c) Mid square method
(d) Folding method

**Answer: (a)**

39. What is time required to find a path in a residual network in Ford Fulkerson method used for solving maximum flow problem (where V is vertex set and E is set of Edge)?

(a) O(E)
(b) O(V)
(c) O(E∗V)
(d) O(E/V>)

**Answer: (a)**

41. At the resonance, the amplitude of oscillations r hes its _____.

(a) maximum
(b) proportional
(c) minimum
(d) inversely proportional

**Answer: (a)**

42. Which of the following theorem is applicable where it is desired to determine the current through or voltage across any one element in a network without solving a set of network equations?

(a) Thevenin's theorem
(b) Millman's theorem
(c) Tellegen's theorem
(d) Maximum power transfer theorem

**Answer: (a)**

43. Which of the following function is NOT performed by half adder?
I. There is not to add a carry coming from lower order when multibit addition is performed.
II. Addition of two one-bit numbers.

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

**Answer: (a)**

44. Which of the following modulations technique does NOT give a satisfactory value for probability of error?

(a) Amplitude shift keying (ASK)
(b) Frequency shift keying (FSK)
(c) Phase shift keying (PSK)
(d) Height shift keying (HSK)

**Answer: (a)**

45. The process of extracting a baseband (modulating) signal from the modulated signal is known as _____.

(a) Demodulation
(b) Modulation
(c) Detector
(d) Evaluation

**Answer: (a)**

46. To satisfied Euler's theorem the function [illegible]hould not be _____.

(a) homogeneous
(b) neutral
(c) hetrogenous
(d) zero

**Answer: (a)**

48. Using mathematical induction, for all n ϵ N, 6 n – 1 is a multiple of _____.

(a) 2
(b) 7
(c) 5
(d) 8

**Answer: (c)**

50. Which of the following keyboard is used to create a function in python?

(a) def
(b) fu
(c) ft
(d) arg

**Answer: (a)**

51. Binary Heap is a _____.

(a) Complete Binary tree

(b) Primary search tree

(c) B-tree

(d) Spanning tree

**Answer: (a)**

52. Which of the following data structure for Breadth-First search algorithm used for the purpose of graph traversal?

(a) Stack

(b) Queues

(c) Arrays

(d) Linked list

**Answer: (b)**

55. Which of the following layer of OSI model is responsible for overall end-to-end validity and integrity of the transmission?

(a) Transport layer

(b) Session layer

(c) Presentation layer

(d) Application layer

**Answer: (a)**

56. In C++ programming, the predefined object 'co s an instance of _____.

(a) fstream class

(b) ostream class

(c) iomanip classes

(d) zstream class

**Answer: (b)**

57. Which of the following statement is correct regarding application of machine learning?
I. Machine learning is used to generate actionable insight from the data.
II. Machine learning can be used in multiple business domain.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (c)**

58. _____ works on ad-hoc mode in which the network is formed quickly and is of temporary basis.

(a) Paging system

(b) Switched telephone network

(c) Bluetooth

(d) IEEE 802.11

**Answer: (c)**

59. Which of the following statement is correct regarding patent documentation?
I. Patent documents cover inventions of all technical fields in the whole spectrum of technology.
II. Technical information contained in patent documents is not secret and can be used freely for research and development purpose.

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

**Answer: (c)**

61. Ruby laser is a _____ state laser.

(a) solid
(b) gas
(c) liquid
(d) plasma

**Answer: (a)**

62. Which of the following statement is correct regarding 'J-K flip flop' with inputs J and K?
I. The state of the flip-flop does not change when J = K = 0.
II. The state of the flip-flop changes with every clock pulse when J = K = 1.

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

**Answer: (c)**

63. A positive number 'r' is said to be the rank of matrix A, if matrix A satisfies.
I. There exists at least one non-zero minor of order 'r'.
II. Every minor of order (r + 1) and higher if any vanishes.

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

**Answer: (c)**

64. _____ is important tool which provide polynomial approximations of real valued functions.

(a) Taylor's theorem
(b) Curve tracing
(c) Polar curve
(d) Asymptotes

**Answer: (a)**

65. If A = {2, 5, 7}, then which of the following is correct regarding power set of A (where, P(A) = Power set of A)?

(a) ϕ ϵ P(A)

(b) 2 ϵ P(A)

(c) 2 and 5 ϵ P (A)

(d) 7 ϵ P (A)

**Answer: (a)**

66. Which of the following statement is correct regarding 'graph'?
I. A graph is an ordered pair G = (V, E).
II. A graph is consisting of a non-empty set V(vertices).

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (c)**

70. What is the recurrence for best case of quick sort and what is the time complexity in best case (where n is number of elements)?

(a) T(n) = T(n – 2) + θ(n)

(b) T(n) = 2T(n/2) + θ(n)

(c) T(n) = T(n – 1) + θ(n)

(d) T(n) = T(n/2) + θ(n)

**Answer: (c)**

71. Consider a rectangle with co-ordinate po… …), (0, 2), (2, 0) and (2, 2) when scaling parameter is 2 towards x-axis and 1/2 toward y-axis are applied, then what are the new co-ordinates of the rectangle.

(a) (0, 0), (0, 1), (4, 0) and (4, 1)

(b) (0, 0), (0, 1), (1, 0) and (1, 1)

(c) (0, 0), (0, 4), (4, 0) and (4, 4)

(d) (2, 1/2), (2, 25), (21, 0.5) and (4, 2.5)

**Answer: (a)**

72. Choose the incorrect statement among the following. Regarding complex sentence. Which hold for any subsentences P and Q in any model (here 'iff' means "if and only if") I. ¬ P is true iff P is false in m
II. P ^ Q is false iff both P and Q are true in m
III. P ˅ Q is true iff either P or R is true in m

(a) Only I

(b) Only II

(c) Only III

(d) Only I and II

**Answer: (b)**

73. Which of the following is the logical equivalent of ¬ (α ^ β). The symbol α ^ β stand for arbitrary sentences for propositional logic?

(a) ¬ α ˅ ¬ β

(b) ¬ α ^ ¬ β

(c) ¬ α ˅ β

(d) ¬ α ^ β

**Answer: (a)**

74. Which of the following statement is correct regarding inheritance in Java?
I. Inheritance is a language property specific to the object-oriented paradigm.
II. Inheritance is used for a unique form of code-sharing by allowing you to take the implementation of any given class and build a new class based on that implementation.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (c)**

75. In some cases in Java you will find the superclass cannot have any instance (object) and such of classes are called _____.

(a) subclasses

(b) abstract classes

(c) drived classes

(d) prototype classes

**Answer: (b)**

76. _____ is an object oriented programming (oop) concept that binds together the data and functions that manipulate the data and that keeps both safe from outside interference and misuse in C++ programming.

(a) Polymorphism

(b) Inheritance

(c) Encapsulation

(d) Data hiding

**Answer: (c)**

77. Which of the following is the purpose of parallel processing?

(a) To decrease computer processing throughput

(b) To speed up the computer processing capability

(c) To expand ROM of computer

(d) To decrease the speed of computer processing capability

**Answer: (b)**

78. Select the correct statements that suits the manifesto for agile software development.
I. Individuals and interactions over process and tools.
II. Working software over compressive documentation.
III. Customer collaboration over contract negotiations.
IV. Responding to change over following a plan.

(a) Only I and II
(b) Only III and IV
(c) I, II, IIII ad IV
(d) Only I, II and III

**Answer: (c)**

79. Patent documents can NOT be stored in which of the following?

(a) Paper
(b) Data bases
(c) CD-ROM
(d) Cache Memory

**Answer: (d)**

81. 'Light-emitting diode' is a diode that gives off visible or invisible _____ when energized.

(a) gas
(b) light
(c) heat
(d) neutron

**Answer: (b)**

83. If A = {2, 4, 5, 6}, then what will be the ca[illegible] of power set of 'A'?

(a) 8
(b) 16
(c) 12
(d) 9

**Answer: (b)**

84. Name the geometric transformation that distorts the shape of an object such that the transformed shape appears as if the object were composed of internal layers that had been caused to slide over each other.

(a) Reflection
(b) Shear
(c) Rotation
(d) Translation

**Answer: (b)**

87. Which of the following has the ability to write data to files and to read data from files in Java?

(a) TextOP

(b) TextIO

(c) TextEX

(d) TextIN

**Answer: (b)**

88. In C++ programming, which of the following is type of inheritance?
I. Public inheritance
II. Protected inheritance

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (c)**

89. C++ allows to specify more than one definition for a function name in the same scope, which is called _____.

(a) function overloading

(b) operator overloading

(c) function overriding

(d) operator overriding

**Answer: (a)**

90. Which of the following is NOT an exam of a om (a constant type) in a PROLOG programming language?

(a) circle

(b) →

(c) a_c

(d) A-c

**Answer: (d)**

91. _____ denotes a special type of variable in PROLOG programming language known as anonymous variable.

(a) _ (Under score)

(b) ? (Question Mark)

(c) : (Colon)

(d) , (Comma)

**Answer: (a)**

92. Which of the following is NOT agile methodologies in software engineering?

(a) Scrum

(b) Crystal

(c) Feature Driven Development

(d) Waterfall

**Answer: (d)**

93. Which of the tree is used for external memory storage purpose?

(a) Binary search tree

(b) AVL tree

(c) B-tree

(d) Red-Black tree

**Answer: (c)**

101. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): New transformation equations which are consistent with the new concept of the invariance of light in free space are known as Lorentz transformation equations.
Reason (R): Because the invariance of speed of light in all inertial frames implies that Galilean transformation equations are not suitable.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

**Answer: (a)**

102. For the Assertion (A) and Reason (R) giv w, choose the correct alternative.
Assertion (A): In damped oscillator, the amplitude decays exponentially with time as e –st , where s = q'/2m together with 'm' as the mass of the body and 'q'' as the proportionality constant of the damping force.
Reason (R): Quality factor (Q) of the oscillator is defined as 2p times the ratio of energy stored in the system to the energy lost per cycle.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

**Answer: (b)**

103. What type of wave fronts we use to obtain Fraunhofer diffraction?

(a) Plane

(b) Curve

(c) Heavy

(d) Light

**Answer: (a)**

104. Which of the following statements is correct regarding KCL (Kirchoff's current law)?
I. The algebraic sum of the current at any junction of a network is zero.
II. The sum of the current flowing towards a point is equal to the total current flowing away from it.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (c)**

105. Maclaurin's series expansion is a special case of _____ when the expansion is about the origin (0, 0).

(a) Taylor's series

(b) Cayley series

(c) Hamilton series

(d) Euler's equation

**Answer: (a)**

106. The operation of multiplying f(t) by 'e –st ' and integrating the product with respect to 't' between '0' and '∞' is called _____.

(a) laplace transformation

(b) laplace differentiation

(c) Cayley-hamilton transformation

(d) Taylor's transformation

**Answer: (a)**

109. What is the size in bits for the long doub[illegible]ype on a 16-bit machine for C programming language?

(a) 32

(b) 16

(c) 64

(d) 80

**Answer: (d)**

110. Which header file in C programming language include malloc ( ) function.

(a) <stdio.h>

(b) <studlib.h>

(c) <ctype.h>

(d) <assert.h>

**Answer: (b)**

112. Which of the following is NOT a feature of lisp programming language?

(a) LISP uses postfix notation

(b) Modular language

(c) Based on mathematical discipline of l - calculus

(d) LISP is format free

**Answer: (a)**

114. If we want to eliminate duplicate tuples from the result of an SQL query, we use the keyword _____ in select clause.

(a) Where

(b) Distinct

(c) Alter

(d) Drop

**Answer: (b)**

115. Choose the incorrect pair of software testing strategy.

(a) Unit testing – ends at the vortex of the spiral and dissipate on each unit of the software

(b) Integration testing – focus is on design and the construction of the software architecture

(c) Validation testing – where requirements established as part of requirement modeling are validate against the software that has been constructed

(d) System testing – where system the software and other system elements are tested as a whole

**Answer: (a)**

116. Choose the correct pair of the regular expressions.

(a) A regular expression consist of any combination of a and b , beginning with a and ending with b – L = (aa)* (bb)*

(b) A language of any combination of a and b containing abb as a substring – L = a(a + b)*

(c) Regular expression of a and b containing at least 2 'a' s – L = (a + b)* b

(d) A regular expression of a and b, having exactly one 'a' – L = b* ab*

**Answer: (d)**

118. Which of the following pair of 'standard internet protocols – its example' is correct?
I. Application layer – Simple Mail Transfer Protocol.
II. Data link layer – Transmission Control Protocol.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (a)**

119. Which of the following is NOT the example of real time operating system?

(a) Palm OS

(b) OS-9

(c) VxWorks

(d) RTLinux

**Answer: (a)**

121. Which type of laser beams are used for welding, cutting of materials?

(a) Carbon dioxide laser

(b) Oxygen laser

(c) Sulphur dioxide laser

(d) Ruby laser

**Answer: (a)**

123. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): The light-emitting diode is a diode that gives off visible or invissible (infrared) light when energized.
Reason (R): In 'Si' and 'Ge' diodes the greater percentage of the energy converted during recombination at the junction is dissipated in the form of heat within the structure and the emitted light is insignificant.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

**Answer: (b)**

125. Which of the following is NOT a modulation technique?

(a) Amplitude shift keying (ASK)

(b) Frequency shift keying (FSK)

(c) Phase shift keying (PSK)

(d) Height shift keying (HSK)

**Answer: (d)**

126. What is the degree of Homogeneous function?

(a) degree of numerator – degree of denominator

(b) degree of numerator + degree of denominator

(c) always one

(d) always zero

**Answer: (a)**

128. When inheriting from a class, we can alter the behaviour of the original superclass by _____ function in python.

(a) Lambda

(b) Overriding

(c) Composition

(d) Polymorphism

**Answer: (b)**

129. Consider a binary tree T with the following Inorder traversal and postorder traversal.
Inorder: D, B, F, E, A, G, C, L, J, H, K
Postorder: D, F, E, B, G, L, J, K, H, C, A
Which of the following is the pre-order traversal of the given binary tree?

(a) A, B, D, E, F, C, G, H, J, L, K

(b) A, C, G, H, J, L, K, B, D, E, F

(c) A, C, H, K, J, L, G, B, E, F, D

(d) A, E, F, B, D, G, C, L, J, H, K

**Answer: (a)**

131. Choose the correct pair of Hadoop ecosystem elements from the following options.

(a) Data management : HBase

(b) Data processing : Sqoop

(c) Data storage : map reduce

(d) Data Access : Hive

**Answer: (d)**

132. Arrange the followings steps in order of transformation sequence to produce scaling with respect to selected fixed position.
I. Inverse translate the object so that object return to its original position II. Translate object so that the fixed point coincides with the co-ordinate origin III. Scale the object with respect to the co-ordinate origin

(a) I, II, III

(b) III, I, II

(c) III, II, I

(d) II, III, I

**Answer: (d)**

133. Choose the incorrect pair of the EVAL function in the LISP.

(a) → (* 4 11) : 44

(b) → (+(* 2 3) (–5 1)) : 10

(c) → (–(* 2 3) (–2 3)) : 5

(d) → (*(* 2 2) (–2 2)) : 0

**Answer: (c)**

134. _____ is a concept of declaring multiple methods with the same name and different parameters of the same or different data types in the same class.

(a) Method overriding

(b) Method overloading

(c) Method overbinding

(d) Method monotropic

**Answer: (b)**

135. For any connected planar graph with vertices 'v', edges 'e' and faces 'f', what is the Euler's formula?

(a) v – e – f = 2

(b) v – e + f = 4

(c) v + e – f = 6

(d) v – e + f = 2

**Answer: (d)**

136. If P and Q are two regular expression then which of the following statement is true?
I. Union of P and Q is represented by P + Q, is also regular expression.
II. Concatenation of P and Q is denoted by PQ is also an regular expression.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (c)**

138. Choose the correct pair of the worst case complexity of the string matching algorithms (where m is length of pattern string and n is length of text string).

(a) The Naive Algorithms – O(m n )

(b) The Rabin – Karp Algorithm – O(mn)

(c) Knuth Mooris Pratt Algorithm – O(n m )

(d) Boyer Moore – O(m + n)

**Answer: (b)**

142. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): The condition (for example, for forced oscillation) where the driving frequency 'w' and the natural frequency 'w 0' of the vibrating system match with each other is known as 0 resonance.
Reason (R): At the resonance the amplitude of oscillations reaches its maximum.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

**Answer: (b)**

143. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): The condition where the driving frequencies and the natural frequency of the vibrating system match with each other is known as resonance.
Reason (R): All mechanical structures example building, bridges, etc. have one or more natural frequencies. If such a structure is subject to a driving frequency, which is equal to the natural frequencies the resulting oscillations will have large amplitude that can have disastrous consequences.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

**Answer: (a)**

145. Which of the following properties of eigen values and eigen vectors is true?
I. Determinant of A = Product of eigen values of A.
II. Eigen vectors cannot correspond to two distinct characteristic values.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (c)**

147. _____ is an analytical method in which we draw approximate shape of any curve with the help of symmetry, intercepts, asymptotes, tangents, multiple points, region of existence, sign of the first and second derivatives.

(a) Curve equalisation

(b) Curve tracing

(c) Pole tracing

(d) Height tracing

**Answer: (b)**

148. A hauffman code for A = 0, B = 101, C = 100, D = 01. The frequency (in thousands) for A = 45, B = 13, C = 12, D = 5. Find how many bits the code required.

(a) 110000 bits

(b) 120000 bits

(c) 130000 bits

(d) 140000 bits

**Answer: (c)**

149. Which of the following is NOT the component of Apache Spark?

(a) Spark Core

(b) Spark SQL

(c) Graph X

(d) Spark Plot

**Answer: (d)**

152. _____ network-layer protocols that are responsible for path determination and traffic switching.

(a) WAN protocols

(b) Routing protocols

(c) LAN protocol

(d) Network protocol

**Answer: (b)**

153. Which of the following pair is incorrect with reference to artificial intelligence?

(a) Semantic network : Provides structural knowledge representation

(b) Frames : are variant of syntax network that represent non-procedural knowledge in expert system

(c) Propositional logic : deals with proposition

(d) Predicate logic : uses predicate, function and variable together

**Answer: (b)**

154. _____ provide a general, practical method for learning real-valued, discrete-valued and vector-valued functions.

(a) Computational learning

(b) Ensemble learning

(c) Inductive learning

(d) Artificial neural networks

**Answer: (d)**

155. The BACKOPROPAGATION algorithm is used in which of the following learning technique?

(a) Inductive Bias

(b) Bayesian

(c) Artificial neural networks

(d) Naive bayes

**Answer: (c)**

156. Which of the following is the practical application of reinforcement learning?

(a) Disease prediction

(b) Fraud detection

(c) Stock market prediction

(d) Self-driving cars

**Answer: (d)**

157. Which of the following properties a binary search tree contain and to be called as Red-Black tree?
I. Each node of a tree should be either red or black.
II. The root is always red.
III. If a node is black, then its children should be red.

(a) Only I
(b) Only I and II
(c) Only II and III
(d) I, II and III

**Answer: (a)**

159. Consider a 5-way B-tree. What is the minimum number of keys in any non-root node?

(a) 2
(b) 3
(c) 4
(d) 5

**Answer: (a)**

161. X-ray produce 'fluorescence' in which of the following substance?

(a) Methane
(b) Hydrogen
(c) Zinc sulphide
(d) Iron sulphide

**Answer: (c)**

162. Choose the correct option on behalf of [illegible] given statement.
"A state in which the number of atoms in higher energy state is greater than that of lower energy state"

(a) Population inversion
(b) Light inversion
(c) Einstein coefficient
(d) Light amplification

**Answer: (a)**

164. Which of the following pair is correct?
I. Intrinsic Semiconductors - are those semiconductors that have very low level of impurities.
II. Entrinsic Semiconductors - are those semiconductors that have been exposed to a doping process.
III. Light-emitting diodes - emit light under forward-bias conditions but require 2V to 4V for good emission.

(a) Only I
(b) Only I and II
(c) Only II and III
(d) I, II and III

**Answer: (d)**

166. The multiplexer is a logic circuit that allows one of the _____ data inputs at the output.

(a) n

(b) n–1

(c) n+1

(d) n+2

**Answer: (a)**

169. Which of the following is the core component of the hadoop ecosystem, which can be assumed analogous to an engine that takes data input, process it, generates the output and returns the required answer?

(a) Mapreduce

(b) Hadoop Distributed file system

(c) Sqoop

(d) Oozie

**Answer: (a)**

170. Choose the INCORRECT Data lake capabilities regarding Big Data?

(a) Ingesst : distribute data

(b) Store : responsible for data storage

(c) Process : transformation and data processing

(d) Consume : ensure data access

**Answer: (a)**

171. In prolog programming language [X/Y] = [a, b, ] then X is associated with _____.

(a) a

(b) [a, b]

(c) [a, b, c]

(d) [ ]

**Answer: (a)**

172. Which of the following is type of polymorphism in Java?
I. Overloading
II. Overbinding

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (a)**

173. In C++ programming, A _____ is a special member function of a class that is executed whenever we create new object of that class.

(a) Constructor
(b) Parameter
(c) Destructors
(d) Pointer

**Answer: (a)**

174. Which of the following is category of pipeline hazards?
I. Structural hazard
II. Uncontrol hazard

(a) Only I
(b) Only II
(c) Both I and II
(d) Neither I nor II

**Answer: (a)**

175. Name the rule based system in which we start with the initial facts and keep using the rules to draw new intermediate conclusion given those facts?

(a) Forward chaining
(b) Backward chaining
(c) Inward chaining
(d) Outward chaining

**Answer: (a)**

176. _____, sometimes called glass-box testing, is a test-case design philosophy that uses the control structure described as part of component-level design to drive test case.

(a) white-box testing
(b) black-box testing
(c) exhaustive testing
(d) functional testing

**Answer: (a)**

177. The Turing machine is defined by 7 touples does (Q, Σ, Γ, δ, q , B, F). What G symbol represent? 0

(a) Finite set of states
(b) Finite set of input alphabets
(c) Finite set of allowable tape symbol
(d) Transitional function

**Answer: (c)**

178. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): Supervised learning is used when you know how to classify a given data.
Reason (R): Supervised learning is applicable for stock market prediciton.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

**Answer: (b)**

179. Which of the following pair of 'embedded operating system – it example' is correct?
I. Non Real time operating system – Windows.
II. Real time operating system – Bluetooth.

(a) Only I

(b) Only II

(c) Both I and II

(d) Neither I nor II

**Answer: (a)**

181. According to special theory of relativity the velocity of light in free space is _____ and is _____ of the relative motion of the source and the observer.

(a) constant; independent

(b) constant; dependent

(c) depended; independent

(d) variable; constant

**Answer: (a)**

182. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): X-rays are produced when fast moving electrons strike with a target of high melting point and high atomic number.
Reason (R): X-rays are electromagnetic radiations of very short wavelength of the order of 10 –10 metre and they travel with the velocity of light.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

**Answer: (b)**

183. X-ray _____ the gas when they are passing through it.

(a) ionize

(b) evaporate

(c) free

(d) oxidise

**Answer: (a)**

186. Which of the following is the NP complete problem?

(a) Finding shortest simple path

(b) Euler tour

(c) 2 – conjunctive normal form satisfiability

(d) Hamiltonian cycle

**Answer: (d)**

189. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): Recurrent neural networks are utilised in time series forecasting.
Reason (R): Recurrent neural networks are ideal for time-related data.

(a) Both A and R is true, and R is the correct explanation of A.

(b) Both A and R is true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

**Answer: (a)**

190. Which of the following TCP/IP model layer includes the services of data link layer and physical layer of OSI model?

(a) Network layer

(b) Transport layer

(c) Interface layer

(d) Independent layer

**Answer: (c)**

191. Which of the following network is limited to a small geographical area, such as single building or a compass?

(a) LAN (Local Area Network)

(b) MAN (Metropolitan Area Network)

(c) WAN (Wide Area Network)

(d) SAN (Standard Area Network)

**Answer: (a)**

192. Which of the following is supervises the application software and provides a mechanism to let the processor run a process as per scheduling and do the switching from one process to another process?

(a) Real Time operating system (RTOS)

(b) Read Only Memory (ROM)

(c) Read Access Memory (RAM)

(d) Mobile Embedded System (MES)

**Answer: (a)**

194. Find the part of the sentence which has an error.
Working in the food service and hospitality sectors is a popular choice for candidates with the few work experience.

(a) Working in the food service and

(b) hospitality sectors is a popular choice for

(c) candidates with the few

(d) work experience

**Answer: (c)**

196. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): People of France suffered from a sense of loss and grief that persists to this day.
Reason (R): Wars had an immense psychological impact on the French people.

(a) Both A and R are true, and R is the correct explanation of A.

(b) Both A and R are true, and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

**Answer: (a)**

198. For the Assertion (A) and Reason (R) given below, choose the correct alternative.
Assertion (A): The Catholic Church became one of France's greatest powers and institutions in history.
Reason (R): The Catholic Church had the political, soci[illegible] and economic dominance.

(a) Both A and R are true, and R is the correct exp[illegible]ation of A.

(b) Both A and R are true, and R is not the correc[illegible]xplanation of A.

(c) A is true but R is false.

(d) A is false but R is true.

**Answer: (a)**

200. Find the part of the sentence which has an error.
FIIs are likely to make a strong comeback as global scenarios settle away as they do not have any large investable destinations other than India.

(a) FIIs are likely to make a strong comeback as

(b) global scenarios settle away as

(c) they do not have any large investable

(d) destinations other than India

**Answer: (b)**

# Answer key

Answer key from the Delhi Subordinate Services Selection Board's official answer key for this sitting. "—" means the key gave none.

## General

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | **(a)** | 2 | **(c)** | 5 | **(d)** | 7 | **(a)** | 8 | **(b)** | 9 | **(c)** |
| 10 | **(c)** | 11 | **(b)** | 12 | **(b)** | 13 | **(c)** | 14 | **(d)** | 15 | **(c)** |
| 16 | **(a)** | 17 | **(b)** | 18 | **(d)** | 19 | **(b)** | 20 | **(c)** | 21 | **(c)** |
| 22 | **(c)** | 23 | **(c)** | 24 | **(a)** | 27 | **(c)** | 29 | **(d)** | 30 | **(b)** |
| 31 | **(c)** | 32 | **(a)** | 33 | **(c)** | 34 | **(a)** | 35 | **(c)** | 36 | **(b)** |
| 37 | **(b)** | 38 | **(a)** | 39 | **(a)** | 41 | **(a)** | 42 | **(a)** | 43 | **(a)** |
| 44 | **(a)** | 45 | **(a)** | 46 | **(a)** | 48 | **(c)** | 50 | **(a)** | 51 | **(a)** |
| 52 | **(b)** | 55 | **(a)** | 56 | **(b)** | 57 | **(c)** | 58 | **(c)** | 59 | **(c)** |
| 61 | **(a)** | 62 | **(c)** | 63 | **(c)** | 64 | **(a)** | 65 | **(a)** | 66 | **(c)** |
| 70 | **(c)** | 71 | **(a)** | 72 | **(b)** | 73 | **(a)** | 74 | **(c)** | 75 | **(b)** |
| 76 | **(c)** | 77 | **(b)** | 78 | **(c)** | 79 | **(d)** | 81 | **(b)** | 83 | **(b)** |
| 84 | **(b)** | 87 | **(b)** | 88 | **(c)** | 89 | **(a)** | 90 | **(d)** | 91 | **(a)** |
| 92 | **(d)** | 93 | **(c)** | 101 | **(a)** | 102 | **(b)** | 103 | **(a)** | 104 | **(c)** |
| 105 | **(a)** | 106 | **(a)** | 109 | **(d)** | 110 | **(b)** | 112 | **(a)** | 114 | **(b)** |
| 115 | **(a)** | 116 | **(d)** | 118 | **(a)** | 119 | **(a)** | 121 | **(a)** | 123 | **(b)** |
| 125 | **(d)** | 126 | **(a)** | 128 | **(b)** | 129 | **(a)** | 131 | **(d)** | 132 | **(d)** |
| 133 | **(c)** | 134 | **(b)** | 135 | **(d)** | 136 | **(c)** | 138 | **(b)** | 142 | **(b)** |
| 143 | **(a)** | 145 | **(c)** | 147 | **(b)** | 148 | **(c)** | 149 | **(d)** | 152 | **(b)** |
| 153 | **(b)** | 154 | **(d)** | 155 | **(c)** | 156 | **(d)** | 157 | **(a)** | 159 | **(a)** |
| 161 | **(c)** | 162 | **(a)** | 164 | **(d)** | 166 | **(a)** | 169 | **(a)** | 170 | **(a)** |
| 171 | **(a)** | 172 | **(a)** | 173 | **(a)** | 174 | **(a)** | 17 | **(a)** | 176 | **(a)** |
| 177 | **(c)** | 178 | **(b)** | 179 | **(a)** | 181 | **(a)** | 182 | **(b)** | 183 | **(a)** |
| 1 | **(d)** | 189 | **(a)** | 190 | **(c)** | 191 | **(a)** | 192 | **(a)** | 194 | **(c)** |
| 196 | **(a)** | 198 | **(a)** | 0 | **(b)** | | | | | | |