भारतीय विमानपत्तन प्राधिकरण
(मिनी रत्न - श्रेणी - 1 सार्वजनिक क्षेत्र का उद्यम)
AIRPORTS AUTHORITY OF INDIA
(Schedule – 'A' Mini Ratna – Category – 1 Public Sector Enterprise)

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Test Date	29/11/2018
Test Time	12:30 PM - 2:30 PM
Subject	JUNIOR EXECUTIVE (INFORMATION TECHNOLOGY)

Section : **General Knowledge**

Q.1 Article 45 of the Constitution of India provides provision for early childhood care and education to children below the age of:

Ans
✗ 1. 9 years
✓ 2. 6 years
✗ 3. 12 years
✗ 4. 10 years

Question ID : **509647307**
Status : **Answered**
Chosen Option : **3**

Q.2 Which team won the ICC World Twenty20 2016 (Men's) tournament?

Ans
✗ 1. Australia
✓ 2. West Indies
✗ 3. South Africa
✗ 4. England

Question ID : **509647303**
Status : **Answered**
Chosen Option : **2**

Q.3 Article 26 of the Constitution of India deals with:

Ans
✗ 1. prohibition of trafficking in human beings
✓ 2. freedom to manage religious affairs
✗ 3. validation of certain acts and regulations
✗ 4. equality of opportunity in matters of public employment

Question ID : **509647306**
Status : **Answered**
Chosen Option : **3**

Q.4 In which of the following states is the Tuluni Festival celebrated?

Ans
✓ 1. Nagaland
✗ 2. Manipur

3. Arunachal Pradesh
4. Sikkim

Question ID : **509647308**
Status : **Answered**
Chosen Option : **2**

Q.5 In which country was the ninth edition of The Mountain Echoes Literature Festival held in August 2018?

Ans
1. Bhutan
2. Sri Lanka
3. India
4. China

Question ID : **509647301**
Status : **Answered**
Chosen Option : **3**

Q.6 Who among the following devised the Ryotwari system during the British rule in India?

Ans
1. Warren Hastings
2. Lord Dalhousie
3. Capt. Alexander Read
4. Lord Minto

Question ID : **509647309**
Status : **Answered**
Chosen Option : **4**

Q.7 The Asian Development Bank (ADB) has approved a USD 346 million loan for road improvements in which of the following states?

Ans
1. Karnataka
2. Gujarat
3. Telangana
4. Maharashtra

Question ID : **509647302**
Status : **Answered**
Chosen Option : **4**

Q.8 _____ can produce a virtual image larger than the object.

Ans
1. Convex mirror
2. Plane mirror
3. Concave lens
4. Concave mirror

Question ID : **509647305**
Status : **Answered**
Chosen Option : **3**

Q.9 Among the various electrical safety devices in the options, the one based on the heating effect of electric current is the:

Ans
1. protective relay
2. fuse

✗ 3. surge protectors

✗ 4. circuit breaker

Question ID : **509647304**
Status : **Answered**
Chosen Option : **2**

Section : **General Intelligence**

Q.1 Select the option that is different from the other three options.

Ans
✗ 1. 78
✓ 2. 60
✗ 3. 52
✗ 4. 117

Question ID : **509647316**
Status : **Answered**
Chosen Option : **4**

Q.2 If the seventh day of the month is four days after Friday, what day will it be on the thirty-first day of the month?

Ans
✗ 1. Tuesday
✓ 2. Friday
✗ 3. Monday
✗ 4. Wednesday

Question ID : **509647317**
Status : **Answered**
Chosen Option : **2**

Q.3 Choose the correct option that will complete the given number series.
2, 2, 3, 8, 35, ?, 1421

Ans
✓ 1. 204
✗ 2. 408
✗ 3. 40
✗ 4. 70

Question ID : **509647312**
Status : **Answered**
Chosen Option : **1**

Q.4 Select the option that is different from the other threeoptions.

Ans
✗ 1. Resentful
✗ 2. Sad
✓ 3. Serene
✗ 4. Desolate

Question ID : **509647311**
Status : **Answered**
Chosen Option : **2**

Q.5 Ruby met Nisha at a party. Nisha introduced herself as the eldest daughter of the brother-in-law of Ruby's friend's mother? How is Ruby's friend related to Nisha?

Ans
✗ 1. Daughter
✗ 2. Friend
✓ 3. Cousin
✗ 4. Niece

Question ID : **509647313**
Status : **Answered**
Chosen Option : **2**

Q.6 'Restaurant' is related to 'chef' in the same way as 'garage' is related to:

Ans
✓ 1. mechanic
✗ 2. accountant
✗ 3. vehicle
✗ 4. car

Question ID : **509647310**
Status : **Answered**
Chosen Option : **1**

Q.7 From the given options, select the word that can be formed using the letters from the given word.
ALTERNATE

Ans
✗ 1. TAVERN
✓ 2. TALENT
✗ 3. TANNER
✗ 4. LANTERN

Question ID : **509647318**
Status : **Answered**
Chosen Option : **2**

Q.8 Five children are standing in a single-file line in ascending order of their heights. Q is second in line. P and R are taller than O. N is taller than P but shorter than R. P is in the middle of the line. Who is at the end of the line?

Ans
✗ 1. Q
✗ 2. P
✓ 3. R
✗ 4. O

Question ID : **509647314**
Status : **Answered**
Chosen Option : **3**

Q.9 Select the option that is related to the third term in the same way as the second term is related to the first term.

CEGI : XVTR :: FHJL: ?

Ans
✗ 1. VSQO
✓ 2. USQO
✗ 3. USPO
✗ 4. OQSU

Question ID : **509647315**
Status : **Answered**
Chosen Option : **1**

Section : **General Aptitude**

Q.1 If $\frac{17+12\sqrt{2}}{3+2\sqrt{2}}+\frac{14}{3+\sqrt{2}}+\frac{\sqrt{2}+1}{\sqrt{2}-1}-\frac{4+\sqrt{2}}{\sqrt{2}+1}=a+b\sqrt{2}$, then the value of $(a+b)$ will be:

Ans
✗ 1. 14
✓ 2. 13
✗ 3. 7
✗ 4. 15

Question ID : **509647319**
Status : **Answered**
Chosen Option : **3**

Q.2 Of three numbers, the first is 7 times the second and is also 4 times the third. If the average of the three numbers is $\frac{299}{7}$, what is the sum of the first and the third number?

Ans
✗ 1. $\frac{253}{7}$
✓ 2. 115
✗ 3. $\frac{736}{7}$
✗ 4. 110

Question ID : **509647321**
Status : **Answered**
Chosen Option : **3**

Q.3 A vessel contains a solution of A and B in the ratio 5 : 7. If $4\frac{1}{2}$ L of the solution is replaced by the same quantity of A, then their ratio becomes 9 : 7. How much (in litres) of liquid B was there in the bucket initially?

Ans
✗ 1. 15
✗ 2. 21
✓ 3. $10\frac{1}{2}$
✗ 4. $7\frac{1}{2}$

Question ID : **509647324**
Status : **Answered**
Chosen Option : **1**

Q.4 The value of $\frac{(0.055)^2+(0.411)^2+(0.0733)^2}{(0.0055)^2+(0.04111)^2+(0.00733)^2}\times\frac{0.008\times0.01\times0.072}{0.12\times0.0024}$ is:

Ans
✓ 1. 2
✗ 2. 20
✗ 3. $\frac{1}{20}$
✗ 4. $\frac{1}{2}$

Question ID : **509647320**
Status : **Answered**
Chosen Option : **1**

Q.5 Abhi bought an article and sold it at a loss of 10%. If he had bought it for 20% less and sold it for ₹121 more, he would have had a profit of 40%. If he decides to sell it for ₹506, what will the percentage gain/loss be?

Ans
✗ 1. Gain 5.5%
✗ 2. Loss 5.50%
✓ 3. Loss 8%
✗ 4. Gain 8%

Question ID : **509647325**
Status : **Answered**
Chosen Option : **4**

Q.6 A shopkeeper sold an article for ₹492 after giving a discount of 18% on its marked price. Had he NOT given the discount, he would have earned a profit of 25% on the cost price. What is the cost price (in ₹) of the article?

Ans
✔ 1. ₹480
✘ 2. ₹450
✘ 3. ₹410
✘ 4. ₹484

Question ID : **509647326**
Status : **Answered**
Chosen Option : **3**

Q.7 In finding the HCF of two numbers by the division method, the quotients are 1 and 6 respectively. If the HCF of the two numbers is 300, then their LCM will be:

Ans
✘ 1. 6300
✔ 2. 12600
✘ 3. 8400
✘ 4. 2100

Question ID : **509647322**
Status : **Answered**
Chosen Option : **3**

Q.8 There are eleven numbers whose average is 64. The first number is 4 more than the second but 10 less than the third. The average of the numbers from the fourth to the seventh is 62.5, and the average of the remaining numbers is 65.5. What is the average of the second and the third number?

Ans
✘ 1. 64
✘ 2. 64.5
✔ 3. 65
✘ 4. 65.5

Question ID : **509647327**
Status : **Answered**
Chosen Option : **3**

Q.9 A bag contains coins of ₹1, 50 paise and 25 paise in the ratio 4 : 3 : 8. If the total amount in the bag is ₹240, then the number of 50 paise coins is:

Ans
✔ 1. 96
✘ 2. 256
✘ 3. 192
✘ 4. 128

Question ID : **509647323**
Status : **Answered**
Chosen Option : **4**

Section : **General English**

Q.1 Select the most appropriate option to fill in the blank.

_____their clothes were proper, they didn't look smart.

Ans
✘ 1. Because

✗ 2. Whether
✓ 3. Although
✗ 4. Despite

Question ID : **509647331**
Status : **Answered**
Chosen Option : **3**

Q.2 Select the wrongly spelt word.

Ans
✓ 1. impropreity
✗ 2. impression
✗ 3. improbable
✗ 4. impudent

Question ID : **509647335**
Status : **Answered**
Chosen Option : **3**

Q.3 Select the most appropriate option to fill in the blank.

This ward is meant for critically _____ children.

Ans
✗ 1. injuring
✓ 2. injured
✗ 3. injury
✗ 4. injurious

Question ID : **509647329**
Status : **Answered**
Chosen Option : **2**

Q.4 Select the most appropriate synonym of the given word.

STEALTHY

Ans
✗ 1. direct
✓ 2. sly
✗ 3. unrestricted
✗ 4. daring

Question ID : **509647332**
Status : **Answered**
Chosen Option : **1**

Q.5 Select the most appropriate antonym of the given word.

AUDACITY

Ans
✗ 1. boldness
✓ 2. timidity
✗ 3. courage

✗ 4. nerve

Question ID : **509647333**
Status : **Answered**
Chosen Option : **2**

Q.6 Select the option which is NOT an antonym of another word by way of adding the prefix 'in-'.

Ans
✓ 1. individualism
✗ 2. indomitable
✗ 3. incoherent
✗ 4. incompetent

Question ID : **509647334**
Status : **Answered**
Chosen Option : **3**

Q.7 Select the most appropriate option to fill in the blank.

Usually she has milk, but today she _____ hot herbal tea because she has a sore throat.

Ans
✗ 1. takes
✗ 2. was taking
✓ 3. is taking
✗ 4. had taken

Question ID : **509647328**
Status : **Answered**
Chosen Option : **4**

Q.8 In the following sentence, four words or phrases have been underlined. One of them is incorrect. Choose the incorrect word or phrase from the given options.

Most of the projects is struggling to make progress due to various reasons like land acquisition, forest clearance or release of funds from the government.

Ans
✓ 1. is struggling
✗ 2. to make progress
✗ 3. release of funds
✗ 4. due to

Question ID : **509647336**
Status : **Answered**
Chosen Option : **1**

Q.9 Select the most appropriate option to fill in the blank.

Divyanshu didn't like to work at a corporate. He wants to start _____ own business.

Ans
✗ 1. our
✗ 2. their
✗ 3. my
✓ 4. his

Question ID : **509647330**
Status : **Answered**
Chosen Option : **4**

Section : **Discipline**

Q.1 A DFA can be represented as a 5-tuple $(Q, \sum, \delta, q_0, F)$, where δ is the transition function defined as ____:

Ans

✔ 1. $\delta: Q \times \sum \rightarrow Q$

✘ 2. $\delta: \sum \rightarrow Q$

✘ 3. $\delta: Q \times Q \rightarrow \sum$

✘ 4. $\delta: Q \rightarrow Q$

Question ID : **509647392**
Status : **Answered**
Chosen Option : **3**

Q.2 Which of the following protocols is used to map IP address to MAC address?

Ans

✘ 1. RARP

✘ 2. IP

✔ 3. ARP

✘ 4. DHCP

Question ID : **509647411**
Status : **Answered**
Chosen Option : **4**

Q.3 Which of the following statements about the Newton-Raphson method is/are correct?

(i) It is quadratic convergent
(ii) If f'(x) is zero, it fails
(iii) It is also used to obtain complex root

Ans

✘ 1. Only (i)

✔ 2. (i), (ii), and (iii)

✘ 3. Only (i) and (ii)

✘ 4. Only (i) and (iii)

Question ID : **509647360**
Status : **Answered**
Chosen Option : **4**

Q.4 How many bit strings of length eight (either start with a 1 bit or end with the two bits 00) can be formed?

Ans

✘ 1. 64

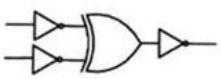
✔ 2. 160

✘ 3. 128

✘ 4. 255

Question ID : **509647347**
Status : **Answered**
Chosen Option : **3**

Q.5 The following circuit represents the function of a 2-input _____ logic gate.



Ans

✘ 1. Exclusive-OR

✘ 2. NAND

✘ 3. NOR

✔ 4. Exclusive-NOR

Question ID : **509647366**
Status : **Answered**
Chosen Option : **2**

Q.6 In a full binary tree of height 10, the number of nodes with degree 0, 1, and 2 will be _____, _____, and _____, respectively.

Note: Consider height of a tree as the number of nodes in the longest path from root node to any leaf node.

Ans
✘ 1. 511, 0, 512
✘ 2. 511, 1, 511
✔ 3. 512, 0, 511
✘ 4. 512, 1, 510

Question ID : **509647382**
Status : **Answered**
Chosen Option : **4**

Q.7 Which of the following provides a method to avoid element name conflicts in XML?

Ans
✘ 1. DOM
✘ 2. CSS
✔ 3. Namespaces
✘ 4. DTD

Question ID : **509647419**
Status : **Answered**
Chosen Option : **3**

Q.8 Which of the following correctly defines Kleene Closure?

Ans
✘ 1.
It is the finite set of all possible strings of all possible lengths over ∑ (input set) excluding λ (empty string).

✘ 2.
It is the finite set of all possible strings of all possible lengths over ∑ (input set)

✔ 3.
It is the infinite set of all possible strings of all possible lengths over ∑ (input set) excluding λ (empty string).

✘ 4.
It is the infinite set of all possible strings of all possible lengths over ∑ (input set)

Question ID : **509647390**
Status : **Answered**
Chosen Option : **2**

Q.9 Which of the following relation schemas is definitely in BCNF?

Ans
✘ 1. R2(A, B, C)
✔ 2. R1(A, B)
✘ 3. R3(A, B, C, D)
✘ 4. R4(A, B, C, D, E)

Question ID : **509647403**
Status : **Answered**
Chosen Option : **3**

Q.10 Which of the following data structures is used in level-order traversal of a binary tree?

Ans

✗ 1. Array

✗ 2. Stack

✓ 3. Queue

✗ 4. Skip list

Question ID : **509647384**
Status : **Answered**
Chosen Option : **2**

Q.11 For what values of k, the points (k, 2 – 2k), (– k + 1, 2k) and (– 4 – k, 6 – 2k) are collinear?

Ans

✗ 1. 0, 1

✗ 2. –1, 1

✗ 3. 1/2, –1/2

✓ 4. –1, 1/2

Question ID : **509647357**
Status : **Answered**
Chosen Option : **4**

Q.12 State whether TRUE or FALSE.

(i) In NDFA, the transition function δ is defined as $\delta: Q \times \sum \rightarrow 2^Q$
(ii) NDFA does not permit empty string transitions

Ans

✗ 1. (i) – True, (ii) – True

✗ 2. (i) – False, (ii) – False

✓ 3. (i) – True, (ii) – False

✗ 4. (i) – False, (ii) – True

Question ID : **509647393**
Status : **Answered**
Chosen Option : **4**

Q.13 Consider an array with n elements. Which of the following options gives the maximum number of swap (a_j, a_{j+1}) operations to sort the array elements using efficient bubble sort algorithm?

Ans

✗ 1. n^2

✓ 2. $\frac{n(n-1)}{2}$

✗ 3. $\frac{n(n+1)}{2}$

✗ 4. $\frac{n^2}{2}$

Question ID : **509647385**
Status : **Answered**
Chosen Option : **3**

Q.14 If R (A, B, C, D) is a relation schema, which is decomposed into R1 (A, B, C) and R2 (C, D). Which of the following ensures that the given decomposition is non-additive (or lossless)?

Ans

✗ 1. R1 ∪ R2 → R1 or R1 ∪ R2 → R2

✗ 2. R1 → R2

✔ 3. R1 ∩ R2 → R1 or R1 ∩ R2 → R2

✘ 4. R2 → R1

Question ID : **509647405**
Status : **Answered**
Chosen Option : **1**

Q.15 Which of the following is a recursive algorithm to convert a positive decimal integer into equivalent binary integer?

Ans

✘ 1.
```
Algorithm binary(n) {
  If (n > 1) then {
    Return binary(floor(n/2)) + n % 2;
  }Else{
    Return n;
  }
}
```

✔ 2.
```
Algorithm binary(n) {
  If (n > 1) then {
    Return 10 * binary(floor(n/2)) + n % 2;
  }Else{
    Return n;
  }
}
```

✘ 3.
```
Algorithm binary(n) {
  If (n > 1) then {
    Return 10 * binary(ceil(n/2)) + n % 2;
  }Else{
    Return n;
  }
}
```

✘ 4.
```
Algorithm binary(n) {
  If (n > 1) then {
    Return binary(ceil(n/2)) + n % 2;
  }Else{
    Return n;
  }
}
```

Question ID : **509647387**
Status : **Answered**
Chosen Option : **2**

Q.16 Which of the following statements is FALSE?

Ans

✔ 1. Multiple processes of a single program cannot exist.

✘ 2. Ready queue of the processes resides in main memory.

✘ 3. A process can have multiple sub-processes.

✘ 4. The long term scheduler controls the degree of multiprogramming.

Question ID : **509647399**
Status : **Answered**
Chosen Option : **2**

Q.17 How many different heading tags are available in HTML?

Ans
1. ✗ 5
2. ✓ 6
3. ✗ 3
4. ✗ 8

Question ID : **509647416**
Status : **Answered**
Chosen Option : **1**

Q.18 Which of the following is a white-box testing technique?

Ans
1. ✗ Cause-Effect graphing
2. ✗ Equivalence class testing
3. ✗ State-based testing
4. ✓ Data-flow testing

Question ID : **509647409**
Status : **Answered**
Chosen Option : **4**

Q.19 State whether TRUE or FALSE.

(i) Secondary index cannot be defined on key attribute values
(ii) In B^+ tree indexing the non-leaf nodes contain the actual data pointers

Ans
1. ✓ (i) – False, (ii) – False
2. ✗ (i) – False, (ii) – True
3. ✗ (i) – True, (ii) – False
4. ✗ (i) – True, (ii) – True

Question ID : **509647406**
Status : **Answered**
Chosen Option : **4**

Q.20 Which of the following Boolean equations is/are correct?

(i) X(X'+Y)=XY'
(ii) X+XY=X
(iii) X+X'Y=X+Y

Ans
1. ✓ Both (ii) and (iii)
2. ✗ Only (iii)
3. ✗ Only (i)
4. ✗ Only (ii)

Question ID : **509647371**
Status : **Answered**
Chosen Option : **1**

Q.21 How many ways are there to arrange the nine letters of the word ALLAHABAD?

Ans
1. ✗ 4560

2. 7500
3. 4000
4. 7560

Question ID : **509647346**
Status : **Answered**
Chosen Option : **1**

Q.22 XML documents form a _____ structure.

Ans
1. graph
2. linear list
3. binary tree
4. tree

Question ID : **509647418**
Status : **Answered**
Chosen Option : **2**

Q.23 Which one of the following is most affected by the presence of outliers in sample data?

Ans
1. Median
2. Mean
3. Variance
4. Mode

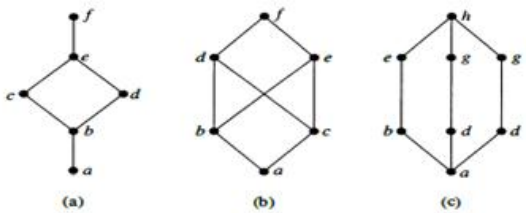
Question ID : **509647340**
Status : **Answered**
Chosen Option : **3**

Q.24 What is the minimum number of students in a class to be sure that three of them are born in the same month?

Ans
1. 12
2. 25
3. 24
4. 13

Question ID : **509647348**
Status : **Answered**
Chosen Option : **2**

Q.25 Which of the following Hasse diagrams is a/are lattice(s)?



Ans
1. Only (b) and (c)
2. Only (a) and (b)
3. Only (a) and (c)
4. Only (a), (b) and (c)

Question ID : **509647344**
Status : **Answered**
Chosen Option : **1**

Q.26 Let P, Q and R be three atomic prepositional assertions, and
X: $(P \vee Q) \rightarrow R$
Y: $(P \rightarrow R) \vee (Q \rightarrow R)$

Which one of the following is a tautology?

Ans
✗ 1. $Y \rightarrow X$
✓ 2. $X \rightarrow Y$
✗ 3. $\neg Y \rightarrow X$
✗ 4. $X \equiv Y$

Question ID : **509647339**
Status : **Answered**
Chosen Option : **4**

Q.27 What is the base (radix) of the number system whose numbers 312, 20 and 13.1 satisfy the following equation?

$\frac{312}{20} = 13.1$

Ans
✗ 1. 8
✗ 2. 4
✗ 3. 6
✓ 4. 5

Question ID : **509647369**
Status : **Answered**
Chosen Option : **4**

Q.28 Considering every instruction and address as one word long, how many memory accesses are required for the following instruction, where R1, R2, and R3 are registers, and (R3) represents that R3 contains a memory address where some value (operand) is stored?

ADD R1, R2, (R3)

Ans
✗ 1. 1
✓ 2. 2
✗ 3. 3
✗ 4. 4

Question ID : **509647373**
Status : **Answered**
Chosen Option : **4**

Q.29 The average rate of convergence of the bisection method is ____.

Ans
✗ 1. 1
✓ 2. 1/2
✗ 3. 3
✗ 4. 2

Question ID : **509647362**
Status : **Answered**
Chosen Option : **4**

Q.30 Which of the following is the time complexity to find the determinant of an upper-triangular matrix of order n × n?

Ans
1. $\Theta(1)$
2. $\Theta(n^2)$
3. $\Theta(n^{2.5})$
4. $\Theta(n)$

Question ID : **509647381**
Status : **Answered**
Chosen Option : **4**

Q.31 What is the total number of spanning trees of a complete graph of 4 vertices (K_4)?

Ans
1. 4
2. 15
3. 8
4. 16

Question ID : **509647386**
Status : **Answered**
Chosen Option : **3**

Q.32 Consider the following statements. Which one is/are correct?

(i) The LU decomposition method fails if any of the diagonal elements of the matrix is zero
(ii) The LU decomposition is guaranteed when the coefficient matrix is positive definite

Ans
1. Both (i) and (ii)
2. Neither (i) nor (ii)
3. Only (ii)
4. Only (i)

Question ID : **509647361**
Status : **Answered**
Chosen Option : **1**

Q.33 A fair coin is tossed 6 times. What is the probability that exactly two heads will occur?

Ans
1. 11/32
2. 1/64
3. 15/64
4. 63/64

Question ID : **509647341**
Status : **Answered**
Chosen Option : **3**

Q.34 The Boolean function X'Y' + XY +X'Y, where X' represents the compliment of X, is equivalent to _____.

Ans
1. X'+ Y'
2. X + Y'
3. X + Y
4. X' + Y

Question ID : **509647345**
Status : **Answered**
Chosen Option : **3**

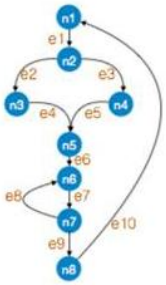
Q.35 In 'C' language, _____ is a process in which a function calls itself repeatedly until some specified condition has been satisfied.

Ans

1. ✗ Call-by-reference
2. ✗ Call-by-value
3. ✓ Recursion
4. ✗ Infinite loop

Question ID : **509647379**
Status : **Answered**
Chosen Option : **2**

Q.36 What is the Cyclomatic Complexity of the following flow-graph of a software code?



Ans

1. ✓ 4
2. ✗ 8
3. ✗ 10
4. ✗ 2

Question ID : **509647410**
Status : **Answered**
Chosen Option : **4**

Q.37 Considering an undirected graph, which of the following statements is/are true?

(i) Number of vertices of odd degree is always even.
(ii) Sum of degrees of all the vertices is always even.

Ans

1. ✗ Only (ii)
2. ✓ Both (i) and (ii)
3. ✗ Neither (i) nor (ii)
4. ✗ Only (i)

Question ID : **509647351**
Status : **Answered**
Chosen Option : **3**

Q.38 Which of the following statements is/are correct?

(i) If the rank of the matrix of given vectors is equal to the number of vectors, then the vectors are linearly independent.
(ii) If the rank of the matrix of given vectors is less than the number of vectors, then the vectors are linearly dependent.

Ans

1. ✓ Both (i) and (ii)
2. ✗ Only (i)
3. ✗ Only (ii)
4. ✗ Neither (i) nor (ii)

Question ID : **509647358**
Status : **Answered**
Chosen Option : **1**

Q.39 With respect to compiler design, "recursive descent" is a _____ parsing technique that reads the inputs from _____.

Ans
✗ 1. top-down, right-to-left
✗ 2. bottom-up, left-to-right
✓ 3. top-down, left-to-right
✗ 4. bottom-up, right-to-left

Question ID : **509647397**
Status : **Answered**
Chosen Option : **3**

Q.40 A graph G is dual if and only if G is a ____.

Ans
✗ 1. Euler graph
✗ 2. complete graph
✗ 3. regular graph
✓ 4. planar graph

Question ID : **509647355**
Status : **Answered**
Chosen Option : **1**

Q.41 State whether TRUE or FALSE.

(i) Shortest remaining time (SRT) algorithm is the preemptive version of the Shortest Job Next (SJN) CPU scheduling algorithm.
(ii) A "context switch" is the mechanism to store and restore the state or context of a CPU in PCB.

Ans
✗ 1. (i) – True, (ii) – False
✗ 2. (i) – False, (ii) – True
✓ 3. (i) – True, (ii) – True
✗ 4. (i) – False, (ii) – False

Question ID : **509647401**
Status : **Answered**
Chosen Option : **3**

Q.42 What is the minimum number of 2-input NOR gates to implement the Boolean function (XY + Z)?

Ans
✓ 1. 5
✗ 2. 7
✗ 3. 3
✗ 4. 8

Question ID : **509647365**
Status : **Answered**
Chosen Option : **2**

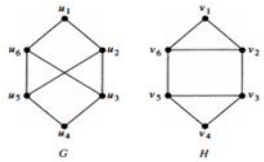
Q.43 If 100 users are making 10 requests/sec to a slotted ALOHA channel and each slot is of 50 m sec, then what will be the channel load?

Ans
✗ 1. 10
✗ 2. 2
✗ 3. 20

✔ 4. 50

Question ID : **509647413**
Status : **Answered**
Chosen Option : **4**

Q.44 Select the option that best describes the relationship between the following graphs:



Ans
✘ 1. G and H are homomorphic
✔ 2. G and H are not isomorphic
✘ 3. G and H are directed
✘ 4. G and H are isomorphic

Question ID : **509647353**
Status : **Answered**
Chosen Option : **1**

Q.45 Referential integrity constraint works on the concept of:

Ans
✘ 1. Primary key
✘ 2. Super key
✘ 3. Secondary key
✔ 4. Foreign key

Question ID : **509647402**
Status : **Answered**
Chosen Option : **4**

Q.46 A language is a subset of $\sum^*$ for some alphabet $\sum$. If a language takes all possible strings of length 2 over $\sum = \{a, b\}$, then, which of the below is correct?

Ans
✘ 1. L = { ab, bb, ba}
✘ 2. L = { ab, bb, aa}
✘ 3. L = { ab, ba, aa}
✔ 4. L = { aa, ab, ba, bb}

Question ID : **509647391**
Status : **Answered**
Chosen Option : **4**

Q.47 How many solutions does the equation $x + y + z = 11$ have, where x, y, and z are non-negative integers?

Ans
- ✗ 1. 156
- ✓ 2. 78
- ✗ 3. 120
- ✗ 4. 130

Question ID : **509647349**
Status : **Answered**
Chosen Option : **1**

Q.48 If a connected graph G has planar embedding with 4 faces and 4 vertices, then what will be the number of edges in G?

Ans
- ✗ 1. 3
- ✗ 2. 7
- ✓ 3. 6
- ✗ 4. 4

Question ID : **509647354**
Status : **Answered**
Chosen Option : **2**

Q.49 Consider the matrix A defined as follows:

$$A = \begin{vmatrix} 1 & 2 & -3 \\ 0 & 3 & 2 \\ 0 & 0 & -2 \end{vmatrix}$$

What is the eigenvalues of $3A^3 + 5A^2 - 6A + 2I$, where I is an identity matrix?

Ans
- ✓ 1. 4, 110, 10
- ✗ 2. 1, 27, – 8
- ✗ 3. 1, 9, 4
- ✗ 4. 4, 27, 9

Question ID : **509647359**
Status : **Answered**
Chosen Option : **4**

Q.50 Which of the following in NOT a symmetric key algorithm?

Ans
- ✓ 1. Elliptic Curve Cryptography
- ✗ 2. Blowfish
- ✗ 3. Advanced Encryption Standard
- ✗ 4. Data Encryption Standard

Question ID : **509647414**
Status : **Answered**
Chosen Option : **2**

Q.51 Which of the following is NOT a bottom-up, shift-reduce parser?

Ans
- ✓ 1. LL parser
- ✗ 2. SLR parser
- ✗ 3. LR parser

✗ 4. LALR parser

Question ID : **509647398**
Status : **Answered**
Chosen Option : **4**

Q.52 Which of the following is the first module of a language processing system?

Ans
✗ 1. Linker
✗ 2. Loader
✗ 3. Compiler
✓ 4. Preprocessor

Question ID : **509647394**
Status : **Answered**
Chosen Option : **4**

Q.53 What is the solution of the recurrence relation $a_n = 6a_{n-1} - 9a_{n-2}$ with initial conditions $a_0 = 1$ and $a_1 = 6$?

Ans
✗ 1. $a_n = 3^n + 3n^3$
✗ 2. $a_n = 3^n + 3n^n$
✗ 3. $a_n = n^3 + n3^n$
✓ 4. $a_n = 3^n + n3^n$

Question ID : **509647350**
Status : **Answered**
Chosen Option : **1**

Q.54 What is the chromatic number of an n-vertex simple connected graph, which does NOT contain any odd-length cycle?

Ans
✗ 1. n
✓ 2. 2
✗ 3. n − 1
✗ 4. 3

Question ID : **509647356**
Status : **Answered**
Chosen Option : **2**

Q.55 Which of the following statements is/are FALSE?

(i) XML element names are case-sensitive
(ii) In XML, empty element can be represented as <element></element>
(iii) XML element names can contain spaces

Ans
✗ 1. Only (ii) and (iii)
✗ 2. Only (i) and (iii)
✓ 3. Only (iii)
✗ 4. Only (ii)

Question ID : **509647420**
Status : **Answered**
Chosen Option : **1**

Q.56 Which of following 'C' language operators has the right-to-left associativity?

Ans

✗ 1. Logical AND and OR operators

✗ 2. Relational operators

✓ 3. Conditional operator

✗ 4. Arithmetic multiply and divide operators

Question ID : **509647376**
Status : **Answered**
Chosen Option : **3**

Q.57 Choose the option that correctly matches each element of LIST-1 with exactly one element of LIST-2:

LIST-1	LIST-2
(i) Newton-Raphson method	(a) Solving non-linear equation
(ii) Simpson's rule	(b) Solving ordinary differential equations
(iii) Runge- Kutta method	(c) Numerical Integration
(iv) Gauss Elimination	(d) Interpolation

Ans

✓ 1. (i) – (d), (ii) – (c), (iii) – (b), (iv) – (a)

✗ 2. (i) – (a), (ii) – (b), (iii) – (c), (iv) – (d)

✗ 3. (i) – (a), (ii) – (c), (iii) – (d), (iv) – (b)

✗ 4. (i) – (b), (ii) – (d), (iii) – (a), (iv) – (c)

Question ID : **509647363**
Status : **Answered**
Chosen Option : **1**

Q.58 Suppose x and y are floating-point variables that have been assigned the values x=8.8 and y=3.5. What will be the value of the following arithmetic expression?

$2 * x / 3 * y$

Ans

✗ 1. 16.35353

✗ 2. 20.33335

✗ 3. 24.45453

✓ 4. 20.53333

Question ID : **509647378**
Status : **Answered**
Chosen Option : **1**

Q.59 Which of the given options is the logical translation of the following statement, where F(x) and P(x) express the terms friend and perfect, respectively?

"None of my friends are perfect"?

Ans

✓ 1. $\neg\exists x(F(x) \wedge P(x))$

✗ 2. $\exists x(\neg F(x) \wedge \neg P(x))$

✗ 3. $\exists x(F(x) \wedge \neg P(x))$

✗ 4. $\exists x(\neg F(x) \wedge P(x))$

Question ID : **509647337**
Status : **Answered**
Chosen Option : **4**

Q.60 Which of the following DFD levels depicts the entire information system as one diagram concealing all the underlying details?

Ans
1. Level 0 ✔
2. Level 3 ✘
3. Level 1 ✘
4. Level 2 ✘

Question ID : **509647407**
Status : **Answered**
Chosen Option : **2**

Q.61 What is the return value of the 'C' library function fmod (d1, d2), where d1 and d2 are integer numbers?

Ans
1. It returns the remainder of d1/d2, with the same sign as d1 ✔
2. It returns the remainder of d2/d1, with the same sign as d2 ✘
3. It returns the remainder of d1/d2, with the same sign as d2 ✘
4. It returns the remainder of d2/d1, with the same sign as d1 ✘

Question ID : **509647377**
Status : **Answered**
Chosen Option : **1**

Q.62 Which of the following is the correct syntax to insert an image in HTML documents?

Ans
1. <a href="flower.jpg"> ✘
2. <img src="flower.jpg"> ✔
3. <image href="flower.jpg" width="500" height="600"> ✘
4. <img href="flower.jpg"> ✘

Question ID : **509647417**
Status : **Answered**
Chosen Option : **4**

Q.63 Which of the following is NOT a goal of the software testing?

Ans
1. Size reduction ✔
2. Failure detection ✘
3. Fault detection ✘
4. Error detection ✘

Question ID : **509647408**
Status : **Answered**
Chosen Option : **1**

Q.64 Which of the following phases of the compilation process is also known as parsing?

Ans
1. Code optimization ✘
2. Lexical analysis ✘
3. Semantic analysis ✘
4. Syntax analysis ✔

Question ID : **509647395**
Status : **Answered**
Chosen Option : **1**

Q.65 What is the hexadecimal representation of the decimal number 8537?

Ans
✗ 1. $(2195)_{16}$
✗ 2. $(2059)_{16}$
✓ 3. $(2159)_{16}$
✗ 4. $(2157)_{16}$

Question ID : **509647368**
Status : **Answered**
Chosen Option : **1**

Q.66 What is the area bounded by the parabola $2y = x^2$ and the line $x = y - 4$?

Ans
✗ 1. 6
✓ 2. 18
✗ 3. 36
✗ 4. 72

Question ID : **509647364**
Status : **Answered**
Chosen Option : **4**

Q.67 If A and B are sets and $A \cup B = A \cap B$, then which of the following is correct?

Ans
✓ 1. $A = B$
✗ 2. $A = \Phi$
✗ 3. $B = \Phi$
✗ 4. $A \subset B$

Question ID : **509647342**
Status : **Answered**
Chosen Option : **1**

Q.68 The maximum number of Boolean functions that can be formed using 3 Boolean variables is _____.

Ans
✗ 1. 512
✗ 2. 1024
✗ 3. 128
✓ 4. 256

Question ID : **509647370**
Status : **Answered**
Chosen Option : **1**

Q.69 Consider the following algorithm:

```
Algorithm compute(n) {
  sum:= 0;
  for i = 1 to n do {
    for j = 1 to i do{
      sum := sum + i;
    }
  }
}
```

What will be the output of this algorithm for n = 10?

Ans
✗ 1. 380

2. 370
3. 385
4. 55

Question ID : **509647388**
Status : **Answered**
Chosen Option : **4**

Q.70 Which of the following greedy strategies gives the optimal solution for the following 0 –1 knapsack problem?

$w = 30$, $w_1 = 10$, $p_1 = 11$, $w_2 = 15$, $p_2 = 12$, $w_3 = 20$, $p_3 = 24$, $w_4 = 25$, $p_4 = 25$.

Ans
1. Heaviest item first
2. Largest profit per unit weight first
3. Largest profit first
4. Lightest item first

Question ID : **509647389**
Status : **Answered**
Chosen Option : **2**

Q.71 Which of the following does NOT represent the Exclusive-NOR operation over the binary variables A and B?

Ans
1. $A' \oplus B$
2. $A \oplus B'$
3. $A' \oplus B'$
4. $AB + A'B'$

Question ID : **509647367**
Status : **Answered**
Chosen Option : **3**

Q.72 Consider an AVL tree constructed by inserting the elements 18, 10, 5, 3, 27, 7, 35, 43, 32 one by one. Which of the following options gives the number of comparisons to search the key value 45 in this AVL tree?

Ans
1. 4
2. 5
3. 3
4. 2

Question ID : **509647383**
Status : **Answered**
Chosen Option : **1**

Q.73 Considering 0-address instructions machine, what will be at the top of the stack after executing the following sequence of instructions?

PUSH 15, PUSH 4, PUSH 6, MULT, PUSH 30, ADD, ADD

Ans
1. 30
2. 54
3. 69
4. 10

Question ID : **509647372**
Status : **Answered**
Chosen Option : **3**

Q.74 Choose the option which matches each element of LIST-1 with exactly one element of LIST-2:

LIST-1	LIST-2
(i) Repeater	(a) Physical layer
(ii) Gateway	(b) Data link layer
(iii) Router	(c) Network layer
(iv) Bridge	(d) All seven layers

Ans
✗ 1. (i) – (d), (ii) – (c), (iii) – (b), (iv) – (a)
✗ 2. (i) – (b), (ii) – (a), (iii) – (d), (iv) – (c)
✓ 3. (i) – (a), (ii) – (d), (iii) – (c), (iv) – (b)
✗ 4. (i) – (d), (ii) – (b), (iii) – (c), (iv) – (a)

Question ID : **509647412**
Status : **Answered**
Chosen Option : **3**

Q.75 Suppose a network using CSMA/CD has a bandwidth of 10 Mbps. If the maximum propagation time is 25 μsec, that what will be the minimum frame size?

Ans
✓ 1. 500 bits
✗ 2. 500 bytes
✗ 3. 50 bits
✗ 4. 4×10^{11} bits

Question ID : **509647415**
Status : **Answered**
Chosen Option : **3**

Q.76 Which of the following numerical values is NOT a valid constant in 'C' language?

Ans
✗ 1. 12345L
✗ 2. 9.3e12
✓ 3. 018CDF
✗ 4. 0XBCF

Question ID : **509647375**
Status : **Answered**
Chosen Option : **2**

Q.77 Banker's algorithms is used for:

Ans
✗ 1. Deadlock resolution
✗ 2. Deadlock recovery
✗ 3. Deadlock prevention
✓ 4. Deadlock avoidance

Question ID : **509647400**
Status : **Answered**
Chosen Option : **4**

Q.78 In a Big-Endian machine, a 32-bit word is stored at address 0 in a memory that is byte addressable. Which byte of the word will be stored at address 0?

Ans
✗ 1. Byte 0
✗ 2. Byte 2
✓ 3. Byte 3

✗ 4. Byte 1

Question ID : **509647374**
Status : **Answered**
Chosen Option : **2**

Q.79 If r and s are regular expressions representing the languages L(r) and L(s), respectively, then which of the following is FALSE?

Ans
✓ 1. (r)|(s) is a regular expression representing $(L(r))^*$ or $(L(s))^*$
✗ 2. (r)(s) is a regular expression representing L(r)L(s)
✗ 3. $(r)^*$ is a regular expression representing $(L(r))^*$
✗ 4. (r)|(s) is a regular expression representing $L(r) \cup L(s)$

Question ID : **509647396**
Status : **Answered**
Chosen Option : **4**

Q.80 The DELETE/FROM/WHERE command is used for removing one or more _____.

Ans
✗ 1. attributes from a table (relation)
✗ 2. databases
✓ 3. tuples from a table (relation)
✗ 4. tables from a database

Question ID : **509647404**
Status : **Answered**
Chosen Option : **4**

Q.81 What is the possible number of reflexive relations on a set of 5 elements?

Ans
✗ 1. 2^{15}
✓ 2. 2^{20}
✗ 3. 2^{25}
✗ 4. 2^{10}

Question ID : **509647343**
Status : **Answered**
Chosen Option : **3**

Q.82 Every cut-set of a connected Euler graph has _____.

Ans
✓ 1. an even number of edges
✗ 2. an odd number of edges
✗ 3. a single edge
✗ 4. at least three edges

Question ID : **509647352**
Status : **Answered**
Chosen Option : **3**

Q.83 Which of the following data structures is most suitable for radix sort?

Ans
✗ 1. Stack
✗ 2. Tree

✗ 3. Binary search tree

✓ 4. Linked list

Question ID : **509647380**
Status : **Answered**
Chosen Option : **4**

Q.84 Which of the following statements are logically equivalent?

(i) $\neg\forall x\,(P(x))$
(ii) $\neg\exists x\,(P(x))$
(iii) $\neg\exists x\,(\neg P(x))$
(iv) $\exists x\,(\neg P(x))$

Ans

✓ 1. Only (i) and (iv)

✗ 2. Only (ii) and (iii)

✗ 3. Only (ii) and (iv)

✗ 4. Only (i) and (ii)

Question ID : **509647338**
Status : **Answered**
Chosen Option : **3**