National Testing Agency

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PGQP54

Group Number :	1
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Show Attended Group? :	No
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Group Marks :	400
Is this Group for Examiner? :	No

PART A-General

Section Id :	8643511172
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory

Number of Questions :	25
Number of Questions to be attempted :	25
Section Marks :	100
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	8643511405
Question Shuffling Allowed :	Yes

Question Number : 1 Question Id : 86435127205 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Select the correct word that can best complete the given sentence :

Marriages between members of extended family were _____ to strengthen the ties of relationship.

1. mentioned
2. promoted
3. indulged
4. performed

Options :

86435193271. 1

86435193272. 2

86435193273. 3

86435193274. 4

Question Number : 2 Question Id : 86435127206 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

From the choices given below, select the pair which exhibits the same relationship as the one in capitalized pair of words :

SOLDIER : REGIMENT

1. clown : circus
2. actor : troupe
3. dancer : ballet
4. instrument : musician

Options :

86435193275. 1

86435193276. 2

86435193277. 3

86435193278. 4

Question Number : 3 Question Id : 86435127207 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following is correctly spelt?

1. Surruptitious
2. Surepptitious
3. Surrepcitious
4. Surreptitious

Options :

86435193279. 1

86435193280. 2

86435193281. 3

86435193282. 4

Question Number : 4 Question Id : 86435127208 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which of the following is nearest in meaning to the word '**EDIFY**'?

1. Instruct
2. Satisfy
3. Amuse
4. Consume

Options :

86435193283. 1

86435193284. 2

86435193285. 3

86435193286. 4

Question Number : 5 Question Id : 86435127209 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

There was nobody to attend _____ the complaints of the passengers.

1. on
2. in
3. to
4. for

Options :

86435193287. 1

86435193288. 2

86435193289. 3

86435193290. 4

Question Number : 6 Question Id : 86435127210 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A post without remuneration is known as

1. voluntary
2. sinecure
3. sincere
4. honorary

Options :

86435193291. 1

86435193292. 2

86435193293. 3

86435193294. 4

Question Number : 7 Question Id : 86435127211 Question Type : MCQ Option Shuffling : No Is

Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Select the most suitable antonym :

EXPEDITION

1. Silence
2. Explanation
3. Undertaking
4. Delay

Options :

86435193295. 1

86435193296. 2

86435193297. 3

86435193298. 4

Question Number : 8 Question Id : 86435127212 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Fill in the blanks with right words :

Lakshman was initially _____ at the suggestion but later started _____ it himself.

1. thrilled, negating
2. frowning, rejecting
3. impressed, negating
4. shocked, advocating

Options :

86435193299. 1

86435193300. 2

86435193301. 3

86435193302. 4

Question Number : 9 Question Id : 86435127213 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Identify the meaning of the idiom from the options given :

Miss the boat

1. let too much time go by to complete a task
2. long for something that you don't have
3. miss out on an opportunity
4. not know the difference between right and wrong

Options :

86435193303. 1

86435193304. 2

86435193305. 3

86435193306. 4

Question Number : 10 Question Id : 86435127214 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

These grapes _____ sour.

1. are testing
2. tasted
3. taste
4. have tested

Options :

86435193307. 1

86435193308. 2

86435193309. 3

86435193310. 4

Question Number : 11 Question Id : 86435127215 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In a certain code THRIVES is written as SIUHRDU. How is SOULFUL written in that code?

1. VPTKKTE
2. VPTKETK
3. TPVKKTE
4. TNRKMVG

Options :

86435193311. 1

86435193312. 2

86435193313. 3

86435193314. 4

Question Number : 12 Question Id : 86435127216 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What will come in place of the question mark (**?**) in the expression?

$$1050 \div 25 \times 51 - 1942 = ?$$

1. 152
2. 200
3. 252
4. 300

Options :

86435193315. 1

86435193316. 2

86435193317. 3

86435193318. 4

Question Number : 13 Question Id : 86435127217 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

There are five statues L, M, N, O and P each of them having different height. Statue L is smaller than only statue M. Statue O is smaller than statue N. Statue O is longer than statue P. The height of the tallest statue is 20 feet. The height of the second smallest statue is 11 feet. What will be the height of statue P?

1. 9 feet
2. 12 feet
3. 13 feet
4. 15 feet

Options :

86435193319. 1

86435193320. 2

86435193321. 3

86435193322. 4

Question Number : 14 Question Id : 86435127218 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Ashok started walking towards South. After walking 50 meters he took a right turn and walked 30 meters. He then took a right turn and walked 100 meters. He again took a right turn and walked 30 meters and stopped. How far he from the starting point?

1. 180 meters
2. 150 meters
3. 50 meters
4. None of these

Options :

86435193323. 1

86435193324. 2

86435193325. 3

86435193326. 4

Question Number : 15 Question Id : 86435127219 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The number, whose square is equal to the difference of the squares of the numbers 68 and 32, is

1. 36
2. 48
3. 60
4. 64

Options :

86435193327. 1

86435193328. 2

86435193329. 3

86435193330. 4

Question Number : 16 Question Id : 86435127220 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which one of the following is not a prime number?

1. 31
2. 61
3. 71
4. 91

Options :

86435193331. 1

86435193332. 2

86435193333. 3

86435193334. 4

Question Number : 17 Question Id : 86435127221 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

1397 x 1397 = **?**

1. 1981709
2. 1951609
3. 1836219
4. 1902179

Options :

86435193335. 1

86435193336. 2

86435193337. 3

86435193338. 4

Question Number : 18 Question Id : 86435127222 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

What least number must be added to 1056, so that the sum is completely divisible by 23?

1. 21
2. 18
3. 3
4. 2

Options :

86435193339. 1

86435193340. 2

86435193341. 3

86435193342. 4

Question Number : 19 Question Id : 86435127223 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Choose the correct answer :

7845 - ? = 8461 - 3569

1. 2953
2. 2773
3. 3569
4. 2352

Options :

86435193343. 1

86435193344. 2

86435193345. 3

86435193346. 4

Question Number : 20 Question Id : 86435127224 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which country is called the 'Land of Fiords' ?

1. Sweden
2. Italy
3. Norway
4. Singapore

Options :

86435193347. 1

86435193348. 2

86435193349. 3

86435193350. 4

Question Number : 21 Question Id : 86435127225 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The biggest part of the brain is

1. cerebrum
2. spinal cord
3. cerebellum
4. brain stem

Options :

86435193351. 1

86435193352. 2

86435193353. 3

86435193354. 4

Question Number : 22 Question Id : 86435127226 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Name the person who was also known as 'Deshbandhu'.

1. S. Radhakrishnan
2. G. K. Gokhale
3. Chittaranjan Das
4. A. P. J. Abdul Kalam

Options :

86435193355. 1

86435193356. 2

86435193357. 3

86435193358. 4

Question Number : 23 Question Id : 86435127227 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Who is known as 'The Saint of Gutters'?

1. Baba Amte
2. Anna Hazare
3. Mother Teresa
4. None of these

Options :

86435193359. 1

86435193360. 2

86435193361. 3

86435193362. 4

Question Number : 24 Question Id : 86435127228 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Garampani Sanctuary is located at

1. Junagarh, Gujarat
2. Diphu, Assam
3. Kohima, Nagaland
4. Gangtok, Sikkim

Options :

86435193363. 1

86435193364. 2

86435193365. 3

86435193366. 4

Question Number : 25 Question Id : 86435127229 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The National Rural Health Mission has been launched in the country in _____.

1. 2003
2. 2005
3. 2007
4. 2009

Options :

86435193367. 1

86435193368. 2

86435193369. 3

86435193370. 4

Part B-Computer Science and Technology

Section Id :	8643511173
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	75
Number of Questions to be attempted :	75
Section Marks :	300
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Sub-Section Number :	1
Sub-Section Id :	8643511406
Question Shuffling Allowed :	Yes

Question Number : 26 Question Id : 86435127230 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider an algorithm *A* that takes *n* elements as input and solves a computational problem. Let us assume that the asymptotic complexity of this algorithm is $O(1)$. Then, when the size of the input to the algorithm *A* doubles, the time taken by the algorithm

1. doubles
2. halves
3. remains the same, as when the original input size
4. linearly increases with the increase in the input size

Options :

86435193371. 1

86435193372. 2

86435193373. 3

86435193374. 4

Question Number : 27 Question Id : 86435127231 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider that you just purchased a laptop- called it MyLaptop. Being tech-savvy you wish to experiment with the speed of your machine. You decide to use the Merge Sort algorithm's implementation for the purpose. Assume that MyLaptop executes 10 million instructions per second. Suppose you code an implementation of merge sort to run on MyLaptop and it takes 50 n lg n instructions. Then, the time taken to sort 10 million numbers on MyLaptop then is _____ seconds.

1. 3500
2. 1163
3. 5000
4. 900

Options :

86435193375. 1

86435193376. 2

86435193377. 3

86435193378. 4

Question Number : 28 Question Id : 86435127232 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider undirected connected graphs $G_1=(V, E_1)$ and $G_2=(V, E_2)$ with $|V| =10$. Given that G_1 is sparse and G_2 is dense, the number of edges G_1 and G_2 can have is _____ and _____ respectively.

1. O(100), O(1000)
2. O(100), O(10)
3. 100,100
4. O(10), O(100)

Options :

86435193379. 1

86435193380. 2

86435193381. 3

86435193382. 4

Question Number : 29 Question Id : 86435127233 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Assume given a complete graph consisting of E edges and N vertices, with $|N| = 10$, and each weight being distinct. Then the maximum number of spanning tress it can have is _____ and the maximum number of minimum spanning trees, it can have is _____.

1. 10000, one
2. 100000000, one
3. 100, any number
4. 44^{10}, 44^2

Options :

86435193383. 1

86435193384. 2

86435193385. 3

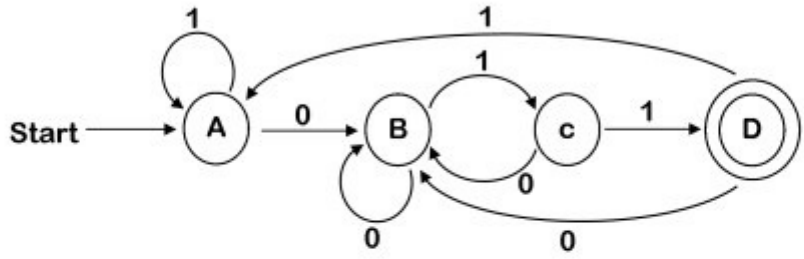
86435193386. 4

Question Number : 30 Question Id : 86435127234 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the figure of a deterministic finite automaton M shown below. The start state of M is A and the accepting state is D. Then, the regular expression that denotes the set of all words accepted by M is



1. 001
2. 10*1*0
3. 1*0*001
4. (0|1)*011

Options :

86435193387. 1

86435193388. 2

86435193389. 3

86435193390. 4

Question Number : 31 Question Id : 86435127235 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In a determinant, the sum of the products of the element of any column (or row) with the cofactors of the corresponding elements of any other column (or row) is

1. 0
2. 1
3. –1
4. 1 or –1, either

Options :

86435193391. 1

86435193392. 2

86435193393. 3

86435193394. 4

Question Number : 32 Question Id : 86435127236 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider that the identifiers A and B depict some discrete event in real world and their probability of occurrence is depicted by P(A) and P(B) respectively. Then, one of the following statements is not true. Identify the one and tick mark the answer

1. If $A \subset B$, then $P(A) \leq P(B)$
2. $P(A \cap B) \geq P(A) + P(B) - 1$
3. If $P(B) > 0$, then $P(A|B) \geq P(A)$
4. $P(A \cap B^c) = P(A \cup B) - P(B)$

Options :

86435193395. 1

86435193396. 2

86435193397. 3

86435193398. 4

Question Number : 33 Question Id : 86435127237 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Assume that a certain microprocessor requires 4.5 microseconds to respond to an interrupt. Assume also that the three interrupts I_1, I_2, I_3 require 25 microseconds, 35 microseconds and 20 microseconds to execute the ISR once the interrupt is recognized. I_1 has the highest priority and I_3 has the lowest. Then, considering that the interrupt I_3 is executed and that I_3 may or may not have occurred simultaneously with the other two interrupts, the time period for the execution of I_3 ranges between

1. 24.5 microseconds to 93.5 microseconds
2. 24.5 microseconds to 39.5 microseconds
3. 4.5 microseconds to 24.5 microseconds
4. 29.5 microseconds to 93.5 microseconds

Options :

86435193399. 1

86435193400. 2

86435193401. 3

86435193402. 4

Question Number : 34 Question Id : 86435127238 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

In the microprocessor systems, when the time between consecutive hardware interrupts starts approaching the overhead required to process an interrupt

1. the Interrupt-driven I/O is preferable over the Program-controlled I/O
2. the Program-controlled I/O is preferable over the interrupt-driven I/O
3. both cannot be deployed and used, in this case
4. any one of the two techniques can be employed without any difference

Options :

86435193403. 1

86435193404. 2

86435193405. 3

86435193406. 4

Question Number : 35 Question Id : 86435127239 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the following problem for which an algorithm MyAlgorithm(A[],m) has been devised. MyAlgorithm takes as input a sequence of m numbers $<a_1, a_2, \ldots, a_m>$ and yields an output which is such that it is a permutation (reordering) of the input sequence, viz. $<a'_1, a'_2, \ldots, a'_m>$ such that $a'_1 \leq a'_2 \leq a'_3 \ldots\ldots, a'_m$. Consider also an abstract representation of the working of MyAlgorithm(A[],m) in terms of a full binary tree, such that each internal node represents a comparison operation viz $a_i \leq a_j$ between two elements of the input sequence. The left subtree then dictates subsequent comparisons for $a_i < a_j$, and the right subtree dictates subsequent comparisons for $a_i > a_j$ – assuming all elements are distinct. When one reaches a leaf, the algorithm MyAlgorithm() has finished its job for the specified input. Thus, the execution of the algorithm corresponds to tracing a path from the root of the full binary tree to a leaf.

Then, the relation between the maximum number of leaves in the tree say n and its height h is given by

1. $n! \geq 2^h$
2. $n! < 2^h$
3. $n! = 2^h$
4. $n! \leq 2^h$

Options :

86435193407. 1

86435193408. 2

86435193409. 3

86435193410. 4

Question Number : 36 Question Id : 86435127240 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a Divide and Conquer algorithm whose recurrence relation is given by the following expression viz.

$$T(n) = 27T\left(\frac{n}{3}\right) + n^2$$

The asymptotic upper and lower bound for the complexity of this algorithm would be given by

1. $\Theta(n^3)$
2. $O(n^2)$
3. $\Omega(n^2)$
4. $\Theta(n^2)$

Options :

86435193411. 1

86435193412. 2

86435193413. 3

86435193414. 4

Question Number : 37 Question Id : 86435127241 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider six files F_1, F_2, F_3, F_4, F_5, and F_6 that contains the number of records as 100, 200, 170, 140, 250 and 50 respectively. Let us assume that the nature of the application dictates that these files are to be accessed with sequential access only. The designer of the application is asked to optimize the average access time for accessing a record from one of the six files. The application designer stores the files in such a manner and yields the optimal average access time for a record as

1. 131
2. 286
3. 420
4. 433

Options :

86435193415. 1

86435193416. 2

86435193417. 3

86435193418. 4

Question Number : 38 Question Id : 86435127242 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the following algorithm viz. MyAlgorithm(n) that takes as input an integer number n and computes the output as shown by the code snippet. The asymptotic upper and lower bound for the complexity of this algorithm would be given by

```
Algorithm  MyAlgorithm(n)
1. ans=0
2. for i=1 to n
3.    ans=ans + log(i)
4. print ans
```

1. $\Theta(n^3)$
2. $\Theta(n^2)$
3. $\Theta(n)$
4. $\Theta(n \log n)$

Options :

86435193419. 1

86435193420. 2

86435193421. 3

86435193422. 4

Question Number : 39 Question Id : 86435127243 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider an algorithm that takes as input a list of n positive numbers, and selects the set of numbers that maximizes the sum of selected numbers, with the constraint that no two numbers selected are located adjacent to each other. The complexity of this algorithm is

1. O(n log n)
2. O(n)
3. $O(n^2)$
4. O(log n)

Options :

86435193423. 1

86435193424. 2

86435193425. 3

86435193426. 4

Question Number : 40 Question Id : 86435127244 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the following code snippet. If the abstract cost of execution of each statement here is unity, then the overall time complexity of the algorithm is

```
Algorithm RSum(a[ ] , int n)
1 if (n <= 0)
2         return (0)
3 else return(RSum(a , n-1) + a[n])
```

1. O(squareroot($n \log n^2$))
2. O(squareroot(n))
3. O(n)
4. O(squareroot(n log n))

Options :

86435193427. 1

86435193428. 2

86435193429. 3

86435193430. 4

Question Number : 41 Question Id : 86435127245 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a relational scheme R and an attribute set $\propto \subseteq R$, $K \subseteq R$. Then, if a relation r is defined on R, and $\propto$ is the candidate key of R, then the functional dependence _____ holds on a relation r(R)

1. $\propto \rightarrow R$
2. $\propto \rightarrow \beta$ for some $\beta \subseteq R$
3. $\propto \rightarrow \Upsilon$, for some $\Upsilon \subseteq R$
4. a primary key cannot functionally determine any other attribute in R

Options :

86435193431. 1

86435193432. 2

86435193433. 3

86435193434. 4

Question Number : 42 Question Id : 86435127246 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let R(a,b,c) and S(d,e,f) be two relations in which d is the foreign key of S that refers to the primary key of R. Consider the following four operations R and S.

A. Insert into R

B. Insert into S

C. Delete from R

D. Delete from S

Then, _____ of the following can cause violation of the referential integrity constraint above

1. None of A, B, C or D can cause its violation
2. Both A and D can cause its violation
3. All of A, B, C and D can cause its violation
4. Both B and C can cause its violation

Options :

86435193435. 1

86435193436. 2

86435193437. 3

86435193438. 4

Question Number : 43 Question Id : 86435127247 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a database table instance as shown in Table below. One of the candidate keys of the relation is

A	B	C	D
a_1	b_1	c_1	d_1
a_1	b_2	c_1	d_1
a_2	b_2	c_2	d_2
a_2	b_3	c_2	d_3
a_3	b_3	c_2	d_4

1. AC
2. AB
3. BC
4. CD

Options :

86435193439. 1

86435193440. 2

86435193441. 3

86435193442. 4

Question Number : 44 Question Id : 86435127248 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The characteristic _____ implies that the program accessing the data need not "*bother*" about the way in which the data is accessed (e.g. sequential or direct access) in the program, accessing the data.

1. lack of data redundancy
2. data consistency
3. data independence
4. data atomicity

Options :

86435193443. 1

86435193444. 2

86435193445. 3

86435193446. 4

Question Number : 45 Question Id : 86435127249 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the following database schedule with two transactions, T1 and T2.

$$S = r_2(X);r_1(X);r_2(Y);w(X);r_1(Y);w_2(X);a_2;a_2$$

where $r_i(Z)$ denotes a read operation by transaction on a variable Z, $w_i(Z)$ denotes a write operation by a variable Z, a_i denotes an abort by transaction T_i. Then, which one of the following statements about the above schedule is TRUE?

1. S is non-recoverable
2. S is recoverable, but has a cascading abort
3. S does not have a cascading abort
4. S is strict

Options :

86435193447. 1

86435193448. 2

86435193449. 3

86435193450. 4

Question Number : 46 Question Id : 86435127250 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the following relational schema viz.

EmployeeDetail(EmpId, FullName, ManagerID, DateOfJoining)
EmployeeSalary(EmpID, Project, Salary)

Consider the following query on this database viz.

```
SELECT Salary
      FROM EmployeeSalary Emp1
      WHERE 2 = (
           SELECT COUNT(DISTINCT (Emp2.Salary))
                FROM EmployeeSalary Emp2
                WHERE Emp2.Salary > Emp1.Salary).
```

The query is interpreted as

1. find the highest salary from table
2. find the 2nd highest salary from table
3. find the 3rd highest salary from table
4. None of these

Options :

86435193451. 1

86435193452. 2

86435193453. 3

86435193454. 4

Question Number : 47 Question Id : 86435127251 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given that the average object size of an object, communicated by an operating system is 10 Kbits, the average request rate from browsers to origin servers is 20 requests/sec, the LAN speed is 10 Gbps, the access link rate is 15 Mbps and the Round Trip Time (RTT) from internet side router to any origin server is 2 sec, the traffic intensity would be

1. 0.13
2. 0.013
3. 0.26
4. 0.9

Options :

86435193455. 1

86435193456. 2

86435193457. 3

86435193458. 4

Question Number : 48 Question Id : 86435127252 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which layer of the OSI model is concerned with transforming a raw transmission facility into a line that appears free of undetected transmission errors?

1. Physical Layer
2. Data Link Layer
3. Networks Layer
4. MAC layer

Options :

86435193459. 1

86435193460. 2

86435193461. 3

86435193462. 4

Question Number : 49 Question Id : 86435127253 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a demand paging system that uses 4 KByte pages. In such a system, if the page replacement policy used in Least Recently Used (LRU) page replacement, then the property _____ is exploited, to an advantage by the demand paging system

1. principle of spatial locality of reference
2. farthest usage of page in time
3. first in first out policy
4. principle of temporal locality of reference

Options :

86435193463. 1

86435193464. 2

86435193465. 3

86435193466. 4

Question Number : 50 Question Id : 86435127254 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a virtual memory system with FIFO page replacement policy. Let us also assume that the page access pattern in general is random and not having any particular pattern. If the operating systems designer decides to increase the number of page frames in main memory, then this

1. would always decrease the number of page faults
2. would always increase the number of page faults
3. sometimes increase the number of page faults
4. would not at all affect the number of page faults

Options :

86435193467. 1

86435193468. 2

86435193469. 3

86435193470. 4

Question Number : 51 Question Id : 86435127255 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider an instruction viz. “Set value of timer.” This instruction can be executed only in the _____ mode

1. user
2. both the user and the monitor
3. neither user nor the monitor
4. monitor

Options :

86435193471. 1

86435193472. 2

86435193473. 3

86435193474. 4

Question Number : 52 Question Id : 86435127256 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the following code snippet executed by a processes P_i that wishes to enter the critical section. The processes i and j share the critical section of the code – that is to be executed in a mutually exclusive manner to prevent inconsistent updates. For program to guarantee mutual exclusion, the predicate P in the loop should be

```
Repeat
      flag[i]=true;
      turn = j;
      while(P);
      /*critical section*/
      flag[i] = false;
      /* other processing */
until false;
```

1. flag[j] = true and turn = i
2. flag[j] = true and turn = j
3. flag[i] = true and turn = j
4. flag[i] = true and turn = i

Options :

86435193475. 1

86435193476. 2

86435193477. 3

86435193478. 4

Question Number : 53 Question Id : 86435127257 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Several concurrent processes are attempting to share an I/O device. In an attempt to achieve mutual exclusion, each process executes the following code fragment :

```
/*other processing */
repeat
until busy = false;
busy = true;
/* critical section of the code to access the
device */
busy = false;
/*other processing */
```

Then, which of the following is (are) true of this approach?

A. It may provide a reasonable solution to the problem of guaranteeing mutual exclusion

B. It may consume substantial CPU time accessing the busy variable

C. It will fail to guarantee mutual exclusion

1. A only
2. B only
3. A and B only
4. B and C only

Options :

86435193479. 1

86435193480. 2

86435193481. 3

86435193482. 4

Question Number : 54 Question Id : 86435127258 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the relational schema R(StudentID, Sports-Activity, Fees-for-SportsActivity) with the attributes as indicated. Consider a relation r defined on the schema R. There is no restriction on the number of sports activities a student can register for; but the student has to pay specific amount of fees as designated for registering for a particular sports-activity. Then, the relation

1. Has lack of full functional dependence of non-key attributes on primary key and is in 1NF, but not in 2NF

2. Has lack of full functional dependence of non-key attributes on primary key and is in 2NF, but not in 3NF

3. Has full functional dependence of non-key attributes on primary key and is in 2NF, but not in 3NF

4. Has full functional dependence of non-key attributes on primary key and is in 1NF, but not in 2NF

Options :

86435193483. 1

86435193484. 2

86435193485. 3

86435193486. 4

Question Number : 55 Question Id : 86435127259 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the following C-langauge code snippet. The output of the program snippet is

```
int fun()
{
  static int num = 20;
  return num--;
}

int main()
{
  for(fun(); fun(); fun())
    printf("%d ", fun());
  return 0;
}
```

1. Infinite loop
2. 17 14 11 8 5
3. 19 16 12 9 6
4. 18 15 12 9 6

Options :

86435193487. 1

86435193488. 2

86435193489. 3

86435193490. 4

Question Number : 56 Question Id : 86435127260 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a programming language that has numerous data types. It is mandated that the data types of the every variable name and those in expressions, in a program must be evaluated at the program compile time. Such languages are known as

1. Weakly type-checked languages
2. Loosely type-checked languages
3. Strongly type-checked languages
4. Tightly type-checked languages

Options :

86435193491. 1

86435193492. 2

86435193493. 3

86435193494. 4

Question Number : 57 Question Id : 86435127261 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given that an identifier is defined to be a letter followed by any number of letters or digits. IF L and D denote the sets of letters and digits respectively, then the expression _____ formally defines an identifier

1. $(L \cup D)^*$
2. $L(L \cup D)^*$
3. $(L.D)^*$
4. $L.(L.D)^*$

Options :

86435193495. 1

86435193496. 2

86435193497. 3

86435193498. 4

Question Number : 58 Question Id : 86435127262 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the following grammar :

S.→S*E
S→E
E.→F+E
E.→F
F→id

Consider the following LR(0) items corresponding to the grammar above :

(a) S→S* .E

(b) E→F. + E

(c) E→F + .E

Given the items as above, which two of them will appear in the same set in the canonical sets-of-items for the grammar

1. (a) and (b)
2. (b) and (c)
3. (a) and (c)
4. None of the above

Options :

86435193499. 1

86435193500. 2

86435193501. 3

86435193502. 4

Question Number : 59 Question Id : 86435127263 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A linker reads four modules whose lengths are 200,800, 600 and 500 words respectively. If they are loaded in that order, the relocation constants are

1. 200, 500, 600, 800
2. 0, 200, 500, 600
3. 0, 200, 1000, 1600
4. 200, 700, 1300, 2100

Options :

86435193503. 1

86435193504. 2

86435193505. 3

86435193506. 4

Question Number : 60 Question Id : 86435127264 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

_____ register in the microprocessor is used to keep track of address of the memory location where the next instruction is located.

1. Memory Address Register
2. Memory Data Register
3. Instruction Register
4. Program Counter

Options :

86435193507. 1

86435193508. 2

86435193509. 3

86435193510. 4

Question Number : 61 Question Id : 86435127265 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a 4-way set associative cache with total 16 cache blocks. The cache is initially empty. The request for main memory blocks is in the following order viz.

0,255,1,4,3,8,133,159,216,129,63,8,48,32,73,92,155.

The number of blocks in the main memory is 256. Then, if the LRU replacement policy is used, then the memory block _____ will not be in cache.

1. 8
2. 3
3. 216
4. 129

Options :

86435193511. 1

86435193512. 2

86435193513. 3

86435193514. 4

Question Number : 62 Question Id : 86435127266 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a 6-stage instruction pipeline, where all stages are perfectly balanced. Assume that there is no cycle-time overhead of pipelining. When an application is executing on this 6-stage pipeline, the speedup achieved with respect to non-pipelined execution if 25% of the instructions incur 2 pipeline stall cycles is

1. 6
2. 8
3. 4
4. 7

Options :

86435193515. 1

86435193516. 2

86435193517. 3

86435193518. 4

Question Number : 63 Question Id : 86435127267 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Assume that the Programmable peripheral interface 8255 gets selected whenever address pins A15-A11 are high during the I/O read or write cycles. The address pins A2 and A1 are connected to A1 and A0 of 8255 chip. Then the address for port C of 8255 is

1. 03H
2. FEH
3. 04H
4. FF03H

Options :

86435193519. 1

86435193520. 2

86435193521. 3

86435193522. 4

Question Number : 64 Question Id : 86435127268 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the following assembly language program for intel 8085 processor. Then, the statement no _____ is true for this program.

```
        ORG 8000H
START : LXL H, 8000H
        MOV A,L
        ADD H
        JM XYZ
        RST 0
XYZ :   PCHL
        HLT
```

1. The program will branch to 0000H after JM XYZ
2. The program will branch to 0008H after JM XYZ
3. The program will halt the processor
4. The program will be repeated infinitely

Options :

86435193523. 1

86435193524. 2

86435193525. 3

86435193526. 4

Question Number : 65 Question Id : 86435127269 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a digital circuit that consists of AND, OR and NOT gates. The circuit takes input x, y, z and the output is some function f(x,y,z). The function f(x,y,z)=1 whenever x,y are different and 0 otherwise. In addition, the 3 inputs x, y, z are never all the same value. Then, the equation _____ leads to the correct design for the minimum complexity circuit

1. x'y + xy'
2. x + y'z
3. x'y'z' + xy'z
4. xy + y'z + z'

Options :

86435193527. 1

86435193528. 2

86435193529. 3

86435193530. 4

Question Number : 66 Question Id : 86435127270 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the Karnaugh map given below, where x represents “don’t care” and blank represents 0. Assume for all inputs (a, b, c, d) the respective complements a’, b’, c’, d’. are also available. The above logic is implemented using 2-input NOR gates only. Then the minimum number of gates required is

dc \ ba	00	01	11	10
00		X	X	
01	1			X
11	1			1
10		X	X	

1. 0
2. 1
3. 2
4. 3

Options :

86435193531. 1

86435193532. 2

86435193533. 3

86435193534. 4

Question Number : 67 Question Id : 86435127271 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let $\oplus$ and ε denote the exclusive OR and Exclusive NOR operations, respectively. Then the statement, out of the following, that is not correct is

1. $(P \oplus Q)' = P \varepsilon Q$
2. $P' \oplus Q = P \varepsilon Q$
3. $P' \oplus Q' = P \oplus Q$
4. $(P \oplus P') \oplus Q = (P \varepsilon P') \varepsilon Q'$

Options :

86435193535. 1

86435193536. 2

86435193537. 3

86435193538. 4

Question Number : 68 Question Id : 86435127272 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let X be the number of distinct 16-bit integers in 2's complement representation.
Let Y be the number of distinct 16-bit integers in sign magnitude representation.
Then X − Y is

1. 1
2. 2
3. 3
4. 4

Options :

86435193539. 1

86435193540. 2

86435193541. 3

86435193542. 4

Question Number : 69 Question Id : 86435127273 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Two dices are thrown simultaneously. The probability that at least one of them will have 6 facing up is

1. 1/36
2. 1/3
3. 25/36
4. 11/36

Options :

86435193543. 1

86435193544. 2

86435193545. 3

86435193546. 4

Question Number : 70 Question Id : 86435127274 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the tree search algorithm viz. Breadth First Search (BFS). Assume that given a binary tree, the BFS is started beginning from the root vertex. There is a vertex t at a distance four from the root. If t is the n-th vertex in this BFS traversal, then the maximum possible value of n is

1. 11
2. 21
3. 31
4. 41

Options :

86435193547. 1

86435193548. 2

86435193549. 3

86435193550. 4

Question Number : 71 Question Id : 86435127275 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A survey amongst 50 housewives about the two laundry detergents Smurf (L) and Virma(R) shows that 25 like Smurf, 30 like Virma, 10 like both and 5 like neither. A housewife is selected at random from the group surveyed. The probability that she likes neither Smurf nor Virma is

1. 1/9
2. 1/5
3. 1/10
4. 1/50

Options :

86435193551. 1

86435193552. 2

86435193553. 3

86435193554. 4

Question Number : 72 Question Id : 86435127276 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a casino in Las Vegas. One of the games on offer is known as the Numbers game. A player has to bet a dollar on one of the whole numbers between 000 through 999 (both included). If the number betted on is the winning number, the player wins $700, otherwise, (s)he looses the dollar. Then the average expected profit of the game i.e. if the game is played several times, the amount won per game is _____. [100 cents=1 dollar]

1. 30 cents
2. – 30 cents
3. 1 dollar
4. 30 dollars

Options :

86435193555. 1

86435193556. 2

86435193557. 3

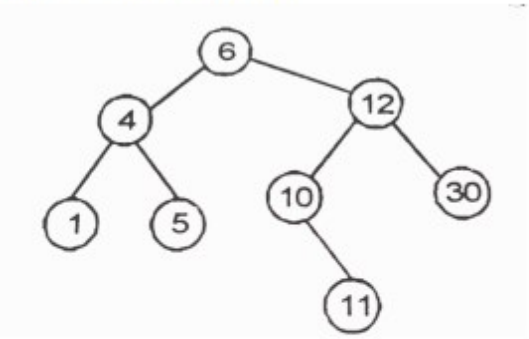
86435193558. 4

Question Number : 73 Question Id : 86435127277 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the tree shown in the figure here. If the tree is used for sorting, then a new number 8, should be placed as the



1. left child of node labelled 10
2. left child of node labelled 30
3. right child of node labelled 5
4. right child of node labelled 30

Options :

86435193559. 1

86435193560. 2

86435193561. 3

86435193562. 4

Question Number : 74 Question Id : 86435127278 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a Fibonacci tree. If **d** is the depth of a Fibonacci tree and is the d^{th} number in the Fibonacci sequence, then the number of nodes in Fibonacci tree is given by $|F_d| = |F_{d-1}|+|F_{d-2}|+1$. The number of nodes in Fibonacci tree is also given by

1. $|F_d|=F_d$
2. $|F_d|=F_d + d$
3. $|F_d|=F_{d+3} -1$
4. $|F_d|=F_d * d$

Options :

86435193563. 1

86435193564. 2

86435193565. 3

86435193566. 4

Question Number : 75 Question Id : 86435127279 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let “q” be the queue of integer defined as follows :

```
#define MAX-Q 500
struct queue{
   int item[MAX-Q];
   int front, rear;
}q;
```

To insert an element X in the queue, one may write the statement

1. `++q.item[q.rear]=X;`
2. `q.item[q.rear]++=X`
3. `q.front=X;`
4. `q.item[++q.rear]=X;`

Options :

86435193567. 1

86435193568. 2

86435193569. 3

86435193570. 4

Question Number : 76 Question Id : 86435127280 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the grammar G3=({S}, {a,b}, R, S). The set of rules R is as follows:

S. → aSb | SS | ε. Then the string _____ is accepted by this grammar.

1. aababb
2. abbaba
3. bbabbb
4. baabaa

Options :

86435193571. 1

86435193572. 2

86435193573. 3

86435193574. 4

Question Number : 77 Question Id : 86435127281 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Assume that the alphabet ∑ is {0,1}. Then the context free grammar defined as
S → 0 |0S0|0S1|1S0|1S1, generates the language

1. {w | w contains at least three 1s}
2. {w | w starts and ends with the same symbol}
3. {w | the length of w is even}
4. {w | the length of w is odd and its middle symbol is a 0}

Options :

86435193575. 1

86435193576. 2

86435193577. 3

86435193578. 4

Question Number : 78 Question Id : 86435127282 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The collection of Turing-recognizable languages is closed under the operations of

1. union, concatenation, star, complementation and intersection
2. concatenation operation only
3. union, concatenation, star and intersection
4. union and intersection operations only

Options :

86435193579. 1

86435193580. 2

86435193581. 3

86435193582. 4

Question Number : 79 Question Id : 86435127283 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A survey found that 45% of men like pizza with only vegetables, 55% like pizza with only cheese and 23% like both. Then the percentage of men who like plain pizza with only vegetables or with only cheese but not both is

1. 22%
2. 54%
3. 32%
4. 77%

Options :

86435193583. 1

86435193584. 2

86435193585. 3

86435193586. 4

Question Number : 80 Question Id : 86435127284 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let D30={1,2,3,5,6,10,15,30} and a relation I be a partial ordering on D30. The LUB of 10 and 15 respectively is

1. 30
2. 15
3. 10
4. 6

Options :

86435193587. 1

86435193588. 2

86435193589. 3

86435193590. 4

Question Number : 81 Question Id : 86435127285 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

(Z, *) is a group with ab=a+b+1, for all a, b$\in$Z. Then, the inverse of a is

1. 0
2. – 2
3. a – 2
4. – a – 2

Options :

86435193591. 1

86435193592. 2

86435193593. 3

86435193594. 4

Question Number : 82 Question Id : 86435127286 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let set G= {EVEN, ODD} be a group defined over a binary operation $\oplus$, as per the following table.

$\oplus$	EVEN	ODD
EVEN	EVEN	ODD
ODD	ODD	EVEN

Then, the inverse of the element ODD (with respect to the operation defined over the group) in this group is

1. EVEN
2. either ODD or EVEN, any
3. ODD
4. does not have inverse

Options :

86435193595. 1

86435193596. 2

86435193597. 3

86435193598. 4

Question Number : 83 Question Id : 86435127287 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the matrix as shown below. The eigenvalues of the given matrix are

$$\begin{bmatrix} 3 & 0 & 0 \\ 5 & 4 & 0 \\ 3 & 6 & 1 \end{bmatrix}$$

1. 1, 2 and 3
2. 2, 3 and 4
3. 4, 2, and 1
4. 3, 4 and 1

Options :

86435193599. 1

86435193600. 2

86435193601. 3

86435193602. 4

Question Number : 84 Question Id : 86435127288 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Five friends would like to order beverages with their dinner at a local restaurant that serves iced tea, masala tea or coffee. The number of beverage orders possible is

1. 31
2. 14
3. 21
4. 140

Options :

86435193603. 1

86435193604. 2

86435193605. 3

86435193606. 4

Question Number : 85 Question Id : 86435127289 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Using generating functions, _____ is the number of solutions of the equation $x_1 + x_2 + x_3 + x_4 = 11$ where $x_1 \geq 7$, $1 \leq x_2$, $x_3 \leq 3$ and $0 \leq x_4 \leq 3$

1. 11
2. 10
3. 12
4. 13

Options :

86435193607. 1

86435193608. 2

86435193609. 3

86435193610. 4

Question Number : 86 Question Id : 86435127290 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Let G be the graph with 100 vertices numbered 1 to 100. Two vertices i and j are adjacent iff $|i-j|=8$ or $|i-j|=12$. Then, the number of connected components in G is

1. 4
2. 8
3. 12
4. 25

Options :

86435193611. 1

86435193612. 2

86435193613. 3

86435193614. 4

Question Number : 87 Question Id : 86435127291 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The recurrence relation $T(n) = 2T(n/2) + 2n^{\sqrt{\log n}}$ is satisfied by

1. $T(n) = \theta(n^2)$
2. $T(n) = \theta(n \lg^2 n)$
3. $T(n) = \theta(n \lg n)$
4. $T(n) = \theta(n^2 \lg n)$

Options :

86435193615. 1

86435193616. 2

86435193617. 3

86435193618. 4

Question Number : 88 Question Id : 86435127292 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Six men A, B, C, D, E, F agree with a seventh man G to provide a sum of money among them. A, B, C, D, E , F are to subscribe Rs 10 each and G is to pay Rs 3 more than the average of the seven. Then in that case, _____ is the whole sum to be provided

1. Rs. 73.5
2. Rs. 74
3. Rs. 73
4. Rs. 72.5

Options :

86435193619. 1

86435193620. 2

86435193621. 3

86435193622. 4

Question Number : 89 Question Id : 86435127293 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If $7x + 6y = 420$ and x and y are natural numbers, then

1. x is even only if y is odd
2. x is always even
3. x is always odd
4. x is odd if y is even

Options :

86435193623. 1

86435193624. 2

86435193625. 3

86435193626. 4

Question Number : 90 Question Id : 86435127294 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The two Matrices shown below commute under multiplication, subject to

$$\begin{bmatrix} \cos\theta & \sin\theta \\ \sin\theta & \cos\theta \end{bmatrix}$$

$$\begin{bmatrix} a & 0 \\ 0 & b \end{bmatrix}$$

1. if a=b or θ = n∏, where n is an integer
2. if a cos θ ≠ b sin θ
3. never
4. always

Options :

86435193627. 1

86435193628. 2

86435193629. 3

86435193630. 4

Question Number : 91 Question Id : 86435127295 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Given that f(0)=2 and f(x) = $\frac{1}{5-x^2}$. The lower bound f(1) estimated by the mean value theorem is

1. 1.9
2. 2.2
3. 2.25
4. 3.25

Options :

86435193631. 1

86435193632. 2

86435193633. 3

86435193634. 4

Question Number : 92 Question Id : 86435127296 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

If a function is continuous at a point, then its first derivative

1. may or may not exist
2. will not exist
3. always exist
4. has a unique value

Options :

86435193635. 1

86435193636. 2

86435193637. 3

86435193638. 4

Question Number : 93 Question Id : 86435127297 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

The value of $[\lim_{x\to\infty}\left(\frac{1}{\sin x}-\frac{1}{tan\,x}\right)]$ is

1. 0
2. 1
3. ∞
4. 2

Options :

86435193639. 1

86435193640. 2

86435193641. 3

86435193642. 4

Question Number : 94 Question Id : 86435127298 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

IF G is the union of two simple disconnected subgraphs H_1 and H_2 with chromatic number m and n, respectively. Then, the chromatic number c of G is related to m and n such that

1. $\min\{m,n\} \leq \max\{m,n\}$
2. $\min\{m,n\} < \max\{m,n\}$
3. $\min\{m,n\} \geq \max\{m,n\}$
4. $\min\{m,n\} > \max\{m,n\}$

Options :

86435193643. 1

86435193644. 2

86435193645. 3

86435193646. 4

Question Number : 95 Question Id : 86435127299 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

A connected, planar graph G contains 24 edges. This graph divides the plane into 13 regions. Then, the number of vertices the graph G has is

1. 13
2. 15
3. 17
4. 11

Options :

86435193647. 1

86435193648. 2

86435193649. 3

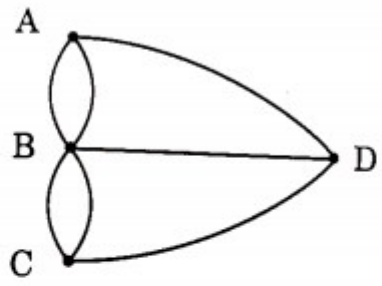
86435193650. 4

Question Number : 96 Question Id : 86435127300 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the mathematical model of Konigsberg bridge puzzle as shown in the figure here. This graph has



1. both an Eulerian path and an Eulerian circuit
2. no Eulerian circuit, but an Eulerian path
3. no Eulerian path, but an Eulerian circuit
4. neither Eulerian path, nor Eulerian circuit

Options :

86435193651. 1

86435193652. 2

86435193653. 3

86435193654. 4

Question Number : 97 Question Id : 86435127301 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider the following three statements about link state and distance vector routing protocols, for a large network with 500 network nodes and 4000 links.

[S1] The computational overhead in link state protocols is higher than in distance vector protocols.

[S2] A distance vector protocol (with split horizon) avoids persistent routing loops, but not a link state protocol.

[S3] After a topology change, a link state protocol will converge faster than a distance vector protocol.

Which one of the following is correct about S1, S2, and S3?

1. S1, S2, and S3 are all true
2. S1 and S3 are true, but S2 is false
3. S1, S2, and S3 are all false
4. S1 and S2 are true, but S3 is false

Options :

86435193655. 1

86435193656. 2

86435193657. 3

86435193658. 4

Question Number : 98 Question Id : 86435127302 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

An IP datagram of size 1000 bytes arrives at a router. The router has to forward this packet on a link whose MTU (maximum transmission unit) is 100 bytes. Assume that the size of the IP header is 20 bytes. Then, the number of fragments that the IP datagram will be divided into for transmission is

1. 14
2. 15
3. 11
4. 13

Options :

86435193659. 1

86435193660. 2

86435193661. 3

86435193662. 4

Question Number : 99 Question Id : 86435127303 Question Type : MCQ Option Shuffling : No

Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Consider a cryptosystem using the symmetric key cryptography cipher. The key size used in the cipher is 8 bits. An adversary tries to orchestrate a brute-force attack on the ciphertext to guess the key that could have been used in encrypting the plaintext. The adversary would require _____ attempts to be made, in the worst case, before succeeding in an attempt

1. 256
2. 8
3. 255
4. 128

Options :

86435193663. 1

86435193664. 2

86435193665. 3

86435193666. 4

Question Number : 100 Question Id : 86435127304 Question Type : MCQ Option Shuffling : No Is Question Mandatory : No

Correct Marks : 4 Wrong Marks : 1

Which band is used by Wireless LAN (IEEE 802.11) Standard by IEEE?

1. Licensed Spectrum
2. ISM Band
3. Both of them
4. None of them

Options :

86435193667. 1

86435193668. 2

86435193669. 3

86435193670. 4