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M.PERIASAMY.,MCA.,SET.,NET

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Thanks & Regard

M.PERIASAMY.,MCA.,SET.,NET

ASSISTANT PROFESSOR

DEPT OF COMPUTER SCIENCE

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: Validity checks real need of system users

Reason R: Completeness checks system user defined requirements.

Ques 1, Ques ID: 87052

In the light of the above statements, choose the correct answer from the options given below.

1. Both A and R are true and R is the correct explanation of A
2. Both A and R are true but R is NOT the correct explanation of A
3. A is true but R is false
4. A is false but R is true

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2. Both A and R are true but R is NOT the correct explanation of A
3. A is true but R is false
4. A is false but R is true

1 (Chosen Option)
 1 (Chosen Option)

2
 2

3
 3

4
 4

Question No. 2 / Question ID 87062

Marks: 2.00

Consider the following statements about heap sort algorithm:

- A. The MAX-HEAPIFY procedure which runs in $O(\lg n)$ time, is the key to maintaining the max heap property
- B. The BUILD-MAX-HEAP procedure, which runs in $O(\lg n)$ time, produces max-heap from an unordered input array
- C. The MAX-HEAP-INSERT, which runs in $O(\lg n)$ time, implements the insertion operation
- D. The HEAP-INCREASE-KEY procedure runs in $O(n \lg n)$ time, to set the key of new node of its correct value

Choose the correct answer from the options given below:

1. A, B only
2. A, C only
3. B, D only
4. A, B, C, D

Consider the following statements about heap sort algorithm:

- A. The MAX-HEAPIFY procedure which runs in $O(\lg n)$ time, is the key to maintaining the max heap property
- B. The BUILD-MAX-HEAP procedure, which runs in $O(\lg n)$ time, produces max-heap from an unordered input array
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- D. The HEAP-INCREASE-KEY procedure runs in $O(n \lg n)$ time, to set the key of new node of its correct value

Choose the correct answer from the options given below:

1. A, B only
2. A, C only
3. B, D only
4. A, B, C, D

1
 1

2
 2

3 (Chosen Option)
 3 (Chosen Option)

4
4

Question No. 3 / Question ID 87084

Marks: 2.00

Consider universe positive integer $X = \{1 \leq n \leq 8\}$, proposition $P = \text{"n is an even integers"}$, $Q = \text{"}(3 \leq n \leq 7) \wedge (n \neq 6)\text{"}$. Then truth set of $P \leftrightarrow Q$ is

1. $\{1,4\}$
2. $\{2,6\}$
3. $\{3,4,5\}$
4. $\{1\}$

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1. $\{1,4\}$
2. $\{2,6\}$
3. $\{3,4,5\}$
4. $\{1\}$

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 4 / Question ID 87007

Marks: 2.00

Let $(\mathbb{Z}, +)$ denote the group of all integers under addition. Then the number of all automorphisms of $(\mathbb{Z}, +)$ is

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

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1. 1
 2. 2
 3. 3
 4. 4
- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 5 / Question ID 87010

Marks: 2.00

Match List I with List II

LIST I		LIST II	
A.	PERT	I.	used for non repetitive jobs
B.	Optimistic time	II.	Used for repetitive jobs
C.	CPM	III.	The shortest possible time to complete the activity if all goes well
D.	Pessimistic time	IV.	The longest time that an activity takes

Choose the correct answer from the options given below:

1. A-III B-IV C-II D-I

2. A-IV B-I C-II D-III

3. A-I B-III C-II D-II

4. A-I B-III C-II D-IV

Match List I with List II

LIST I		LIST II	
A.	PERT	I.	used for non repetitive jobs
B.	Optimistic time	II.	Used for repetitive jobs
C.	CPM	III.	The shortest possible time to complete the activity if all goes well
D.	Pessimistic time	IV.	The longest time that an activity takes

Choose the correct answer from the options given below:

1. A-III B-IV C-II D-I

2. A-IV B-I C-II D-III

3. A-I B-III C-II D-II

4. A-I B-III C-II D-IV

1

1

2

2

3 (Chosen Option)

3 (Chosen Option)

4

4

Question No. 6 / Question ID 87047

Marks: 2.00

Which of the following is used to determine the cost performance index?

1. Budgeted cost of work performed-budget at completion
2. Budgeted cost of work performed÷budget at completion
3. Budgeted cost of work performed÷Actual cost of work performed
4. Budgeted cost of work performed-Actual cost of work performed

Which of the following is used to determine the cost performance index?

1. Budgeted cost of work performed-budget at completion
2. Budgeted cost of work performed÷budget at completion
3. Budgeted cost of work performed÷Actual cost of work performed
4. Budgeted cost of work performed-Actual cost of work performed

1

1

2

2

3

3

4 (Chosen Option)

4 (Chosen Option)

Question No. 7 / Question ID 87048

Marks: 2.00

_____ is intended to show that a system both conforms to its specifications and meets the expectations of the system customer.

1. Software specification
2. Software design
3. Software evaluation
4. software validation

_____ is intended to show that a system both conforms to its specifications and meets the expectations of the system customer.

1. Software specification
2. Software design
3. Software evaluation
4. software validation

- 1
1
- 2
2
- 3
3
- 4 (Chosen Option)
4 (Chosen Option)

Question No. 8 / Question ID 87077

Marks: 2.00

A TCP server application is programmed to listen on port P on host S. A TCP client is connected to the TCP server over the network. Consider that while TCP connection is active the server is crashed and rebooted. Assume that the client does not use TCP keepalive timer. Which of the following behaviour/s is/are possible ?

Statement I: The TCP application server on S can listen on P after reboot.

Statement II: If client sends a packet after the server reboot, it will receive the RST segment.

In the light of the above statements, choose the correct answer from the options given below.

1. Both Statement I and Statement II are true
2. Both Statement I and Statement II are false
3. Statement I is true but Statement II is false
4. Statement I is false but Statement II is true

A TCP server application is programmed to listen on port P on host S. A TCP client is connected to the TCP server over the network. Consider that while TCP connection is active the server is crashed and rebooted. Assume that the client does not use TCP keepalive timer. Which of the following behaviour/s is/are possible ?

Statement I: The TCP application server on S can listen on P after reboot.

Statement II: If client sends a packet after the server reboot, it will receive the RST segment.

In the light of the above statements, choose the correct answer from the options given below.

1. Both Statement I and Statement II are true
2. Both Statement I and Statement II are false
3. Statement I is true but Statement II is false
4. Statement I is false but Statement II is true

- 1 (Chosen Option)
1 (Chosen Option)
- 2
2
- 3
3
- 4
4

Given below are two statements: one is labelled as **Assertion A** and the other is labelled as **Reason R**.

Assertion A: I/O protection is ensured by a hardware trap

Reason R: I/O interrupt caused by the condition like I/O completion and device malfunction occurring within the I/O devices

In the light of the above statements, choose the **correct** answer from the options given below.

1. Both A and R are true and R is the correct explanation of A
2. Both A and R are true but R is NOT the correct explanation of A
3. A is true but R is false
4. A is false but R is true

Given below are two statements: one is labelled as **Assertion A** and the other is labelled as **Reason R**.

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2. Both A and R are true but R is NOT the correct explanation of A
3. A is true but R is false
4. A is false but R is true

- 1
1
- 2
2
- 3 (Chosen Option)
3 (Chosen Option)
- 4
4

Match List I with List II

LIST I		LIST II	
A.	Parallel FFT	I.	$O(n^2)$
B.	Iterative FFT	II.	$O(n)$
C.	Evaluation of polynomial at n points by Horner method	III.	$O(\lg n)$
D.	Product of two polynomials that are represented in point value form	IV.	$O(n \lg n)$

Choose the correct answer from the options given below:

1. A-III B-I C-II D-III
2. A-II B-I C-III D-IV
3. A-III B-IV C-I D-II
4. A-II B-III C-IV D-I

Match List I with List II

LIST I		LIST II	
A.	Parallel FFT	I.	$O(n^2)$
B.	Iterative FFT	II.	$O(n)$
C.	Evaluation of polynomial at n points by Horner method	III.	$O(\lg n)$
D.	Product of two polynomials that are represented in point value form	IV.	$O(n \lg n)$

Choose the correct answer from the options given below:

1. A-III B-I C-II D-III
2. A-II B-I C-III D-IV
3. A-III B-IV C-I D-II
4. A-II B-III C-IV D-I

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Match List I with List II

LIST I		LIST II	
A.	Bezier curves	I.	3 dim objects that have translation rotational symmetry
B.	B-Splines	II.	Fractal geometry
C.	Sweep representations	III.	Bias and tension
D.	Natural objects	IV.	painting drawing CAD

Choose the correct answer from the options given below:

1. A-IV B-I C-III D-II

2. A-II B-III C-IV D-I

3. A-IV B-III C-I D-II

4. A-II B-IV C-I D-III

Match List I with List II

LIST I		LIST II	
A.	Bezier curves	I.	3 dim objects that have translation rotational symmetry
B.	B-Splines	II.	Fractal geometry
C.	Sweep representations	III.	Bias and tension
D.	Natural objects	IV.	painting drawing CAD

Choose the correct answer from the options given below:

1. A-IV B-I C-III D-II

2. A-II B-III C-IV D-I

3. A-IV B-III C-I D-II

4. A-II B-IV C-I D-III

1

1

2

2

3 (Chosen Option)

3 (Chosen Option)

4

4

Given below are two statements:

Let $f(n)$ and $g(n)$ be asymptotically positive functions. The following conjectures are given

Statement I: $f(n) \geq 1$ and $f(n) = O(g(n)) \Rightarrow g(n) = \Omega(f(n))$

Statement II: $f(n) = O(g(n)) \Rightarrow \lg(f(n)) = O(\lg(g(n)))$ where $\lg(g(n)) \geq 1$ for all sufficient large n .

In the light of the above statements, choose the most appropriate answer from the options given below.

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

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Let $f(n)$ and $g(n)$ be asymptotically positive functions. The following conjectures are given

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Statement II: $f(n) = O(g(n)) \Rightarrow \lg(f(n)) = O(\lg(g(n)))$ where $\lg(g(n)) \geq 1$ for all sufficient large n .

In the light of the above statements, choose the most appropriate answer from the options given below.

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

- 1
1
- 2
2
- 3 (Chosen Option)
3 (Chosen Option)
- 4
4

Question No. 13 / Question ID 87040

Marks: 2.00

Consider the following statements:

S1: LRU page replacement algorithm suffers from the belady's anomaly

S2: Shortest remaining time first scheduling may cause starvations

S3: Stack is shared by all threads in a process

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

Consider the following statements:

S1: LRU page replacement algorithm suffers from the belady's anomaly

S2: Shortest remaining time first scheduling may cause starvations

S3: Stack is shared by all threads in a process

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

- 1

- 1
 2 (Chosen Option)
 2 (Chosen Option)
 3
 3
 4
 4

Question No. 14 / Question ID 87034

Marks: 2.00

The total cost of retrieving records in sorted order using an unclustered B+ tree is

(P- Average number of records per data page

N- Data pages

F- Ratio of the size of a data entry to the size of a data record)

1. $(F*N) + P$
2. $(F+P) * N$
3. $F*N*P$
4. $F+P/N$

The total cost of retrieving records in sorted order using an unclustered B+ tree is

(P- Average number of records per data page

N- Data pages

F- Ratio of the size of a data entry to the size of a data record)

1. $(F*N) + P$
2. $(F+P) * N$
3. $F*N*P$
4. $F+P/N$

- 1 (Chosen Option)
 1 (Chosen Option)
 2
 2
 3
 3
 4
 4

Question No. 15 / Question ID 87055

Marks: 2.00

Match List I with List II

Match List I with List II

LIST I		LIST II	
A.	Scenario testing	I.	To verify the I/O behavior of text object
B.	Regression testing	II.	user acceptance methodology
C.	Component testing	III.	No new bugs after changes in program
D.	Beta testing	IV.	The documentation of a use case

LIST I		LIST II	
A.	Scenario testing	I.	To verify the I/O behavior of text object
B.	Regression testing	II.	user acceptance methodology
C.	Component testing	III.	No new bugs after changes in program
D.	Beta testing	IV.	The documentation of a use case

Choose the correct answer from the options given below:

Choose the correct answer from the options given below:

1. A-IV B-III C-II D-I
2. A-II B-I C-III D-IV
3. A-IV B-III C-I D-II
4. A-III B-I C-IV D-II

1. A-IV B-III C-II D-I
2. A-II B-I C-III D-IV
3. A-IV B-III C-I D-II
4. A-III B-I C-IV D-II

- 1
 1
 2
 2
 3 (Chosen Option)
 3 (Chosen Option)
 4
 4

- | | |
|---|---|
| A. If some NP-complete problem P is in \mathbb{P} that $\mathbb{P} = \text{NP}$ | A. If some NP-complete problem P is in \mathbb{P} that $\mathbb{P} = \text{NP}$ |
| B. TSP is in NP | B. TSP is in NP |
| C. SAT is in NP | C. SAT is in NP |
| D. Hamilton circuit problem is not NP-complete | D. Hamilton circuit problem is not NP-complete |

Choose the correct answer from the options given below: Choose the correct answer from the options given below:

- | | |
|--------------------|--------------------|
| 1. A, B and C only | 1. A, B and C only |
| 2. B, C and D only | 2. B, C and D only |
| 3. C, D and A only | 3. C, D and A only |
| 4. D, A and B only | 4. D, A and B only |

1 (Chosen Option)
1 (Chosen Option)

2
2

3
3

4
4

A B-tree used as an index for a large database table has four levels including the root node. If a new key is inserted in this index, then maximum number of nodes that could be newly created in the process is

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

A B-tree used as an index for a large database table has four levels including the root node. If a new key is inserted in this index, then maximum number of nodes that could be newly created in the process is

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

1
1

2
2

3 (Chosen Option)
3 (Chosen Option)

4
4

Suppose a circular queue of capacity (n-1) elements is implemented with an array of n elements. Assume that the insertion and deletion operations are carried out using REAR and FRONT as array index variable respectively. Initially, REAR=FRONT=0. The conditions to detect queue empty and queue full are

1. EMPTY: REAR == FRONT

FULL : (REAR+1) mod n == FRONT

2. EMPTY: (FRONT +1) mod n == REAR

FULL: (REAR +1) mod n == FRONT

3. EMPTY (REAR +1) mod n == FRONT

FULL: REAR== FRONT

4. EMPTY: REAR== FRONT

FULL: (FRONT+1) mod n == REAR

Suppose a circular queue of capacity (n-1) elements is implemented with an array of n elements. Assume that the insertion and deletion operations are carried out using REAR and FRONT as array index variable respectively. Initially, REAR=FRONT=0. The conditions to detect queue empty and queue full are

1. EMPTY: REAR == FRONT

FULL : (REAR+1) mod n == FRONT

2. EMPTY: (FRONT +1) mod n == REAR

FULL: (REAR +1) mod n == FRONT

3. EMPTY (REAR +1) mod n == FRONT

FULL: REAR== FRONT

4. EMPTY: REAR== FRONT

FULL: (FRONT+1) mod n == REAR

1 (Chosen Option)

1 (Chosen Option)

2

2

3

3

4

4

Consider the following statements about the software product line system:

Statement I: At the interaction level, components provide an operator display interface and an interface with the communication system used.

Statement II: At the I/O management level, components handle operator authentication, report generator and query manager.

In the light of the above statements, choose the most appropriate answer from the options given below.

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

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Statement I: At the interaction level, components provide an operator display interface and an interface with the communication system used.

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In the light of the above statements, choose the most appropriate answer from the options given below.

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

1 (Chosen Option)
 1 (Chosen Option)

2
 2

3
 3

4
 4

Question No. 20 / Question ID 87042

Marks: 2.00

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: A process involves a library function to create a thread.

Reason R: The threads make system calls to convey their resource and I/O requirement to the Kernel.

In the light of the above statements, choose the correct answer from the options given below.

1. Both A and R are true and R is the correct explanation of A
2. Both A and R are true but R is NOT the correct explanation of A
3. A is true but R is false
4. A is false but R is true

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: A process involves a library function to create a thread.

Reason R: The threads make system calls to convey their resource and I/O requirement to the Kernel.

In the light of the above statements, choose the correct answer from the options given below.

1. Both A and R are true and R is the correct explanation of A
2. Both A and R are true but R is NOT the correct explanation of A
3. A is true but R is false
4. A is false but R is true

1 (Chosen Option)
 1 (Chosen Option)

2
 2

3
 3

4
 4

Question No. 21 / Question ID 87059

Marks: 2.00

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: The AVL trees are more balanced as compared to Red Black trees, but they may cause more rotations during insertion and deletion

Reason R: A Red Black tree with n nodes has height that is greater than $2 \log_2 (n+1)$ and the AVL tree with n nodes has height less than $\log_{\Phi} (\sqrt{5} (n+2)) - 2$ (where Φ is golden ratio)

In the light of the above statements, choose the correct answer from the options given below.

1. Both A and R are correct and R is the correct explanation of A
2. Both A and R are correct and R is NOT the correct explanation of A
3. A is true but R is false
4. A is false but R is true

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: The AVL trees are more balanced as compared to Red Black trees, but they may cause more rotations during insertion and deletion

Reason R: A Red Black tree with n nodes has height that is greater than $2 \log_2 (n+1)$ and the AVL tree with n nodes has height less than $\log_{\Phi} (\sqrt{5} (n+2)) - 2$ (where Φ is golden ratio)

In the light of the above statements, choose the correct answer from the options given below.

1. Both A and R are correct and R is the correct explanation of A
2. Both A and R are correct and R is NOT the correct explanation of A
3. A is true but R is false
4. A is false but R is true

- 1 (Chosen Option)
 1 (Chosen Option)
 2
 2
 3
 3
 4
 4

Match List I with List II

LIST I		LIST II	
A.	Physical layer	I.	Transforming the raw bits in the form of frame for transmission
B.	Data Link Layer	II.	Control and monitoring of subnet
C.	Network layer	III.	Transmission of raw bits over communication channel
D.	Transport layer	IV.	Datagrams transmission data through connection oriented or connectionless using datagram

Choose the correct answer from the options given below:

1. A-III B-II C-I D-IV
2. A-II B-III C-I D-IV
3. A-III B-I C-II D-IV
4. A-II B-IV C-I D-III

Match List I with List II

LIST I		LIST II	
A.	Physical layer	I.	Transforming the raw bits in the form of frame for transmission
B.	Data Link Layer	II.	Control and monitoring of subnet
C.	Network layer	III.	Transmission of raw bits over communication channel
D.	Transport layer	IV.	Datagrams transmission data through connection oriented or connectionless using datagram

Choose the correct answer from the options given below:

1. A-III B-II C-I D-IV
2. A-II B-III C-I D-IV
3. A-III B-I C-II D-IV
4. A-II B-IV C-I D-III

- 1
 1
 2
 2
 3 (Chosen Option)
 3 (Chosen Option)
 4
 4

Question No. 23 / Question ID 87008

Marks: 2.00

Let $R = \{x \mid x \in N, x \text{ is multiple of } 3 \text{ and } x \leq 100\}$ and $S = \{x \mid x \in N, x \text{ is a multiple of } 5 \text{ and } x < 100\}$. What is the number of elements in $(R \cap S) \times (S \cap R)$?

1. 36
2. 33
3. 20
4. 6

Let $R = \{x \mid x \in N, x \text{ is multiple of } 3 \text{ and } x \leq 100\}$ and $S = \{x \mid x \in N, x \text{ is a multiple of } 5 \text{ and } x < 100\}$. What is the number of elements in $(R \cap S) \times (S \cap R)$?

1. 36
 2. 33
 3. 20
 4. 6
- 1 (Chosen Option)
 1 (Chosen Option)
 2
 2
 3
 3
 4
 4

Question No. 24 / Question ID 87026

Marks: 2.00

let R (A,B,C, D) be a relational schema with following function dependencies:

$A \rightarrow B$, $B \rightarrow C$

$C \rightarrow D$ and $D \rightarrow B$

The decomposition of R into

(A,B) (B,C) (B,D)

1. gives a lossless join, and is dependency preserving
2. gives lossless join, but is not dependency preserving
3. does not give a lossless join, but is dependency preserving
4. does not give a lossless join and is not dependency preserving

let R (A,B,C, D) be a relational schema with following function dependencies:

$A \rightarrow B$, $B \rightarrow C$

$C \rightarrow D$ and $D \rightarrow B$

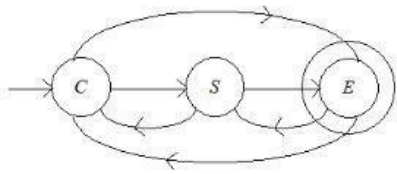
The decomposition of R into

(A,B) (B,C) (B,D)

1. gives a lossless join, and is dependency preserving
2. gives lossless join, but is not dependency preserving
3. does not give a lossless join, but is dependency preserving
4. does not give a lossless join and is not dependency preserving

- 1 (Chosen Option)
 1 (Chosen Option)
 2
 2
 3
 3
 4
 4

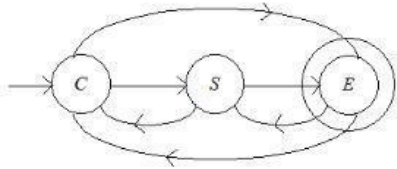
Consider the following finite automata F1 that accepts a language L.



Let F2 be a finite automata which is obtained by reversal of F1. Then which of the following is correct?

1. $L(F1) \neq L(F2)$
2. $L(F1) = L(F2)$
3. $L(F1) \leq L(F2)$
4. $L(F1) \geq L(F2)$

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Let F2 be a finite automata which is obtained by reversal of F1. Then which of the following is correct?

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3. $L(F1) \leq L(F2)$
4. $L(F1) \geq L(F2)$

- 1
1
- 2
2
- 3
3
- 4 (Chosen Option)
4 (Chosen Option)

Given below are two statements:

Which of the following statement/s is/are correct with respect to virtual memory

Statement I: Address translation is performed for every logical address used during the execution of a program

Statement II: A program can execute only when all of its components are loaded in the memory

In the light of the above statements, choose the most appropriate answer from the options given below.

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

Given below are two statements:

Which of the following statement/s is/are correct with respect to virtual memory

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In the light of the above statements, choose the most appropriate answer from the options given below.

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

- 1 (Chosen Option)
1 (Chosen Option)
- 2
2
- 3
3
- 4
4

Question No. 27 / Question ID 87001

Marks: 2.00

There are M points on one straight line AB and n points on another straight line AC none of them being A . How many triangles can be formed with these points as vertices?

1. $mn(m+n-2)$
2. $\frac{1}{2}mn(m+n-2)$
3. $\frac{1}{2}mn(m+n-1)$
4. $mn(m+n-1)$

There are M points on one straight line AB and n points on another straight line AC none of them being A . How many triangles can be formed with these points as vertices?

1. $mn(m+n-2)$
 2. $\frac{1}{2}mn(m+n-2)$
 3. $\frac{1}{2}mn(m+n-1)$
 4. $mn(m+n-1)$
- 1
1
- 2
2

- 3 (Chosen Option)
- 3 (Chosen Option)
- 4
- 4

Question No. 28 / Question ID 87087

Marks: 2.00

Given below are two statements:

Statement I: Fuzzifier is a part of a fuzzy system

Statement II: Inference engine is a part of fuzzy system

In the light of the above statements, choose the most appropriate answer from the options given below.

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

Given below are two statements:

Statement I: Fuzzifier is a part of a fuzzy system

Statement II: Inference engine is a part of fuzzy system

In the light of the above statements, choose the most appropriate answer from the options given below.

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

- 1 (Chosen Option)
- 1 (Chosen Option)
- 2
- 2
- 3
- 3
- 4
- 4

Question No. 29 / Question ID 87028

Marks: 2.00

Consider the following statements:

- A. A database design is in BCNF if each member of the set of relation schemas that constitutes the design is in BCNF
- B. A BCNF schema can have transitive dependency
- C. It is always possible to obtain a 3NF design without sacrificing a lossless join
- D. There are multivalued dependencies in 4NF

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

Consider the following statements:

- A. A database design is in BCNF if each member of the set of relation schemas that constitutes the design is in BCNF
- B. A BCNF schema can have transitive dependency
- C. It is always possible to obtain a 3NF design without sacrificing a lossless join
- D. There are multivalued dependencies in 4NF

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

- 1
- 2
- 3 (Chosen Option)
- 3 (Chosen Option)
- 4
- 4

Question No. 30 / Question ID 87083

Marks: 2.00

Which of the following is not a property of a good system for representation of knowledge in a particular domain?

- 1. Presentation adequacy
- 2. inferential adequacy
- 3. Inferential efficiency
- 4. acquisitional efficiency

Which of the following is not a property of a good system for representation of knowledge in a particular domain?

- 1. Presentation adequacy
- 2. inferential adequacy
- 3. Inferential efficiency
- 4. acquisitional efficiency

- 1
- 1
- 2 (Chosen Option)
- 2 (Chosen Option)
- 3
- 3
- 4
- 4

Question No. 31 / Question ID 87019

Marks: 2.00

What will be the output of the following code? What will be the output of the following code?

```
# include < stdio. h>

int main ( ) {

int a, b, c;

a= 0x10; b= 010;

c= a+b;

printf ( "%d", c);

return 0;

}
```

```
# include < stdio. h>

int main ( ) {

int a, b, c;

a= 0x10; b= 010;

c= a+b;

printf ( "%d", c);

return 0;

}
```

- 1. 20
- 2. 24
- 3. Garbage
- 4. error

- 1. 20
- 2. 24
- 3. Garbage
- 4. error

- 1
- 1
- 2
- 2
- 3 (Chosen Option)
- 3 (Chosen Option)
- 4
- 4

Question No. 32 / Question ID 87012

Marks: 2.00

What is the (4+4) bit binary fixed point equivalent of $-(3.72)_{10}$? What is the (4+4) bit binary fixed point equivalent of $-(3.72)_{10}$?

- | | |
|--------------|--------------|
| 1. 0011.1100 | 1. 0011.1100 |
| 2. 0011.1010 | 2. 0011.1010 |
| 3. 1100.0100 | 3. 1100.0100 |
| 4. 0011.1011 | 4. 0011.1011 |
- 1
1
- 2
2
- 3
3
- 4 (Chosen Option)
4 (Chosen Option)

Question No. 33 / Question ID 87004

Marks: 2.00

Let N denote the set of all natural numbers and R be the relation on $N \times N$ defined by $(a,b)R(c,d)$, if $ad(b+c) = bc(a+d)$. Then R is

1. Symmetric only
2. Reflexive only
3. Transitive only
4. An equivalence relation

Let N denote the set of all natural numbers and R be the relation on $N \times N$ defined by $(a,b)R(c,d)$, if $ad(b+c) = bc(a+d)$. Then R is

1. Symmetric only
 2. Reflexive only
 3. Transitive only
 4. An equivalence relation
- 1 (Chosen Option)
1 (Chosen Option)
- 2
2
- 3
3
- 4
4

Question No. 34 / Question ID 87068

Marks: 2.00

The maximum yield length of the following CNF CFG is The maximum yield length of the following CNF CFG is

$S \rightarrow AB$	$S \rightarrow AB$
$A \rightarrow CD$	$A \rightarrow CD$
$B \rightarrow e$	$B \rightarrow e$
$C \rightarrow a$	$C \rightarrow a$
$D \rightarrow b$	$D \rightarrow b$

- | | |
|------|------|
| 1. 8 | 1. 8 |
| 2. 7 | 2. 7 |
| 3. 4 | 3. 4 |
| 4. 5 | 4. 5 |
- 1 (Chosen Option)
1 (Chosen Option)
- 2
2
- 3
3
- 4
4

Let \oplus denote XOR operation. Let 1 and 0 denote the binary constants and F is the Boolean expression over two variables P and Q

$$F(P, Q) = ((1 \oplus P) \oplus (P \oplus Q)) \oplus ((P \oplus Q) \oplus (Q \oplus 0))$$

Which of the following is equivalent expression to F ?

1. $P \oplus Q$
2. $P + Q$
3. $\overline{P + Q}$
4. $\overline{P \oplus Q}$

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1. $P \oplus Q$
2. $P + Q$
3. $\overline{P + Q}$
4. $\overline{P \oplus Q}$

- 1
1
- 2
2
- 3 (Chosen Option)
3 (Chosen Option)
- 4
4

Which of the following scenario may lead to an irrecoverable error in a database system?

1. A transaction writes a data item after it is read by an uncommitted transaction
2. A transaction reads a data item after it is read by an uncommitted transaction
3. A transaction reads a data item after it is written by a committed transactions
4. A transaction reads a data item after it is written by an uncommitted transaction.

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1. A transaction writes a data item after it is read by an uncommitted transaction
2. A transaction reads a data item after it is read by an uncommitted transaction
3. A transaction reads a data item after it is written by a committed transactions
4. A transaction reads a data item after it is written by an uncommitted transaction.

- 1
1
- 2
2
- 3 (Chosen Option)
3 (Chosen Option)
- 4
4

An observational technique that can be used to understand operational process and help to derive requirement for software to support operational process is known as

1. Requirement specification
2. Structural specification
3. Ethnography
4. Natural language specification

An observational technique that can be used to understand operational process and help to derive requirement for software to support operational process is known as

1. Requirement specification
2. Structural specification
3. Ethnography
4. Natural language specification

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 38 / Question ID 87043

Marks: 2.00

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

A virtual memory system uses first-in first-out page replacement policy and allocates a fixed number of frames to a process

Assertion A: Increasing number of page frames allocated to a process sometimes increases the page fault rate.

Reason R: Some programs do not exhibit locality of reference.

In the light of the above statements, choose the correct answer from the options given below.

1. Both A and R are true and R is the correct explanation of A
2. Both A and R are true but R is NOT the correct explanation of A
3. A is true but R is false
4. A is false but R is true

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

A virtual memory system uses first-in first-out page replacement policy and allocates a fixed number of frames to a process

Assertion A: Increasing number of page frames allocated to a process sometimes increases the page fault rate.

Reason R: Some programs do not exhibit locality of reference.

In the light of the above statements, choose the correct answer from the options given below.

1. Both A and R are true and R is the correct explanation of A
2. Both A and R are true but R is NOT the correct explanation of A
3. A is true but R is false
4. A is false but R is true

- 1
1
- 2
2
- 3 (Chosen Option)
3 (Chosen Option)
- 4
4

Match List I with List II

LIST I		LIST II	
A.	CDMA	I.	It provides mobile internet connection with faster data transfer rates
B.	GSM	II.	It allows user to connect to a network or to other devices over wireless channel
C.	UMTS	III.	Accessing mechanism for multiple transmitters over a single channel
D.	WiFi	IV.	It is a cellular technology that employs hybrid of FDMA and TDMA

Choose the correct answer from the options given below:

1. A-III B-IV C-II D-I
2. A-III B-IV C-I D-II
3. A-II B-III C-IV D-I
4. A-II B-I C-IV D-III

Match List I with List II

LIST I		LIST II	
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Choose the correct answer from the options given below:

1. A-III B-IV C-II D-I
2. A-III B-IV C-I D-II
3. A-II B-III C-IV D-I
4. A-II B-I C-IV D-III

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 40 / Question ID 87069

Marks: 2.00

Consider the following language :

Consider the following language :

$$L = \{ w \in \{ a, b, c \}^* : n_a(w) + n_b(w) = n_c(w) \}$$

$$L = \{ w \in \{ a, b, c \}^* : n_a(w) + n_b(w) = n_c(w) \}$$

L is

L is

1. Context free but not linear
2. Not context free
3. Context free and linear
4. Linear

1. Context free but not linear
2. Not context free
3. Context free and linear
4. Linear

- 1
1
- 2
2
- 3 (Chosen Option)
3 (Chosen Option)
- 4
4

Question No. 41 / Question ID 87088

Marks: 2.00

Which of the following is not a mutation operator in a genetic algorithm?

- A. Random resetting
- B. Scramble
- C. Inversion
- D. Difference

Choose the correct answer from the options given below:

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

Which of the following is not a mutation operator in a genetic algorithm?

- A. Random resetting
- B. Scramble
- C. Inversion
- D. Difference

Choose the correct answer from the options given below:

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

- 1
- 2
- 3
- 4 (Chosen Option)

Question No. 42 / Question ID 87038

Marks: 2.00

Consider the following table of arrival time and burst time for three processes P0,P1 P2:

Process	arrival time	Burst time
P0	0 ms	7
P1	1 ms	3
P2	2 ms	7

The pre-emptive shortest job first scheduling algorithm is used. Scheduling is carried out only at arrival or completion of a process. What is the average waiting time for the three processes?

- 1. 3 ms
- 2. 3.67 ms
- 3. 4.47 ms
- 4. 4 ms

Consider the following table of arrival time and burst time for three processes P0,P1 P2:

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P2	2 ms	7

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- 1. 3 ms
- 2. 3.67 ms
- 3. 4.47 ms
- 4. 4 ms

- 1
- 2 (Chosen Option)
- 2 (Chosen Option)
- 3
- 3
- 4
- 4

Question No. 43 / Question ID 87081

Marks: 2.00

Which is not the component of the natural language understanding process?

1. Morphological analysis
2. Semantic analysis
3. Pragmatic analysis
4. Meaning analysis

Which is not the component of the natural language understanding process?

1. Morphological analysis
2. Semantic analysis
3. Pragmatic analysis
4. Meaning analysis

- 1
- 1
- 2
- 2
- 3 (Chosen Option)
- 3 (Chosen Option)
- 4
- 4

Question No. 44 / Question ID 87058

Marks: 2.00

Consider a hash table of size seven with starting index zero and a hash function $(6x + 3) \bmod 4$. Assuming the hash table is initially empty. Which of the following is the content of the table when the sequence 1,3,8,10,5 is inserted into the table using closed hashing? Here "___" denotes an empty location in the table.

1. 1,3,8,10,5,_,_
2. 3,8,1,_,10,5
3. _,3,8,1,_,10,5
4. _,1,3,8,10,5,_,_

Consider a hash table of size seven with starting index zero and a hash function $(6x + 3) \bmod 4$. Assuming the hash table is initially empty. Which of the following is the content of the table when the sequence 1,3,8,10,5 is inserted into the table using closed hashing? Here "___" denotes an empty location in the table.

1. 1,3,8,10,5,_,_
2. 3,8,1,_,10,5
3. _,3,8,1,_,10,5
4. _,1,3,8,10,5,_,_

- 1
- 1
- 2
- 2
- 3
- 3
- 4 (Chosen Option)
- 4 (Chosen Option)

Question No. 45 / Question ID 87056

Marks: 2.00

A three dimensional array in C++ is declared as `int A [a] [b] [c]`. Consider that array elements are stored in row major order and indexing begin from 0. Here the address of an item at the location `A [r] [s] [t]` computed in terms of word length `w` of an integer is

1. $\&A[0][0][0] + w(b*c*s + c*r + t)$
2. $\&A[0][0][0] + w(b*c*r* + c*s + t)$
3. $\&A[0][0][0] + w(a*b*r* + c*s + t)$
4. $\&A[0][0][0] + w(a*b*s + c*r + t)$

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3. $\&A[0][0][0] + w(a*b*r* + c*s + t)$
4. $\&A[0][0][0] + w(a*b*s + c*r + t)$

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 46 / Question ID 87035

Marks: 2.00

Match List I with List II

LIST I		LIST II	
A.	RAID level 2	I.	Bit interleaved parity
B.	RAID level 4	II.	Block interleaved distributed parity
C.	RAID level 5	III.	Error correcting parity
D.	RAID level 3	IV.	Block interleaved parity

Match List I with List II

LIST I		LIST II	
A.	RAID level 2	I.	Bit interleaved parity
B.	RAID level 4	II.	Block interleaved distributed parity
C.	RAID level 5	III.	Error correcting parity
D.	RAID level 3	IV.	Block interleaved parity

Choose the correct answer from the options given below: Choose the correct answer from the options given below:

1. A-IV B-III C-I D-II
2. A-III B-IV C-II D-I
3. A-III B-I C-II D-IV
4. A-I B-III C-IV D-I

1. A-IV B-III C-I D-II
2. A-III B-IV C-II D-I
3. A-III B-I C-II D-IV
4. A-I B-III C-IV D-I

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 47 / Question ID 87090

Marks: 2.00

Match List I with List II

LIST I		LIST II	
A.	Expert system	I.	Decision tree
B.	Fuzzy system	II.	Scramble
C.	Operator in genetic algorithm	III.	Inference engine
D.	Supervised technique	IV.	Mycin

Match List I with List II

LIST I		LIST II	
A.	Expert system	I.	Decision tree
B.	Fuzzy system	II.	Scramble
C.	Operator in genetic algorithm	III.	Inference engine
D.	Supervised technique	IV.	Mycin

Choose the correct answer from the options given below: Choose the correct answer from the options given below:

1. A-IV B-I C-III D-II
2. A-III B-IV C-II D-I
3. A-IV B-III C-II D-I
4. A-I B-II C-III D-IV

1. A-IV B-I C-III D-II
2. A-III B-IV C-II D-I
3. A-IV B-III C-II D-I
4. A-I B-II C-III D-IV

- 1 (Chosen Option)
- 1 (Chosen Option)
- 2
- 2
- 3
- 3
- 4
- 4

Question No. 48 / Question ID 87075

Marks: 2.00

Consider following statements:

- A. A context free language is generated by LR(o) grammar if and only if it is accepted by a deterministic pushdown automata and has prefix property
- B. If M1 is the single tape TM simulating multilape TM M, then time taken by M1 to simulate n moves is (n^3)
- C. Push down automata behaves like a Turning machine when it has one auxiliary memory.
- D. $L = \{a^n b^n c^n : n \geq 1\}$ is not context free but context sensitive.

Choose the correct answer from the options given below:

- 1. A, B and C only
- 2. A, B only
- 3. C, D only
- 4. B, C only

Consider following statements:

- A. A context free language is generated by LR(o) grammar if and only if it is accepted by a deterministic pushdown automata and has prefix property
- B. If M1 is the single tape TM simulating multilape TM M, then time taken by M1 to simulate n moves is (n^3)
- C. Push down automata behaves like a Turning machine when it has one auxiliary memory.
- D. $L = \{a^n b^n c^n : n \geq 1\}$ is not context free but context sensitive.

Choose the correct answer from the options given below:

- 1. A, B and C only
- 2. A, B only
- 3. C, D only
- 4. B, C only

- 1
- 1
- 2
- 2
- 3 (Chosen Option)
- 3 (Chosen Option)
- 4
- 4

Question No. 49 / Question ID 87050

Marks: 2.00

Consider a popular sports news site. At a given moment, 20,000 concurrent users submit a request (a transaction, T) once every 2 minutes on average. Each transaction requires the webapp to download a new article that on average has 3k bytes in length. What is the throughput?

1. 8 megabits per second
2. 4 megabits per second
3. 6 megabits per second
4. 2 megabits per second

Consider a popular sports news site. At a given moment, 20,000 concurrent users submit a request (a transaction, T) once every 2 minutes on average. Each transaction requires the webapp to download a new article that on average has 3k bytes in length. What is the throughput?

1. 8 megabits per second
2. 4 megabits per second
3. 6 megabits per second
4. 2 megabits per second

- 1
1
- 2
2
- 3 (Chosen Option)
3 (Chosen Option)
- 4
4

Question No. 50 / Question ID 87003

Marks: 2.00

How many integral solutions are there to $x + y + z + w = 29$, where $x \geq 1$, $y \geq 2$, $z \geq 3$ and $w \geq 0$?

1. 2400
2. 2600
3. 2800
4. 3000

How many integral solutions are there to $x + y + z + w = 29$, where $x \geq 1$, $y \geq 2$, $z \geq 3$ and $w \geq 0$?

1. 2400
 2. 2600
 3. 2800
 4. 3000
- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 51 / Question ID 87031

Marks: 2.00

Let R (A,B, C,D,F) be a relational schema with following functional dependencies:

$C \rightarrow F, E \rightarrow A, EC \rightarrow D, A \rightarrow B$. Which of the following is a key for R?

1. CD
2. EC
3. AE
4. AC

Let R (A,B, C,D,F) be a relational schema with following functional dependencies:

$C \rightarrow F, E \rightarrow A, EC \rightarrow D, A \rightarrow B$. Which of the following is a key for R?

1. CD
2. EC
3. AE
4. AC

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 52 / Question ID 87018

Marks: 2.00

What is the output of following code?

```
main ()
{
    struct s1
    {
        char * z;
        int i;
    };
    struct s1 * p;
    static struct s1 a [] = {
        {"Nagpur", 1, a+1}
        {"Raipur", 2, a+2}
        {"Kanpur", 3, a}
    };
    struct s1 * ptr = a;
    printf ("%s %s %s \n", a[0].z, ptr->z, a[2].p ->z);
}
```

1. Nagpur Raipur Kanpur
2. Nagpur Nagpur Nagpur
3. Kanpur Kanpur Kanpur
4. Error

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

What is the output of following code?

```
main ()
{
    struct s1
    {
        char * z;
        int i;
    };
    struct s1 * p;
    static struct s1 a [] = {
        {"Nagpur", 1, a+1}
        {"Raipur", 2, a+2}
        {"Kanpur", 3, a}
    };
    struct s1 * ptr = a;
    printf ("%s %s %s \n", a[0].z, ptr->z, a[2].p ->z);
}
```

1. Nagpur Raipur Kanpur
2. Nagpur Nagpur Nagpur
3. Kanpur Kanpur Kanpur
4. Error

Which one of the following is NOT a part of ACID properties of a database transaction?

1. Atomicity
2. Consistency
3. Isolation
4. Deadlock-freedom

Which one of the following is NOT a part of ACID properties of a database transaction?

1. Atomicity
2. Consistency
3. Isolation
4. Deadlock-freedom

- 1
1
- 2
2
- 3
3
- 4 (Chosen Option)
4 (Chosen Option)

Question No. 54 / Question ID 87045

Marks: 2.00

Match List I with List II

LIST I		LIST II	
A.	Critical region	I.	Hoare's monitor
B.	Wait/signal	II.	Mutual exclusion
C.	Working set	III.	Principle of locality
D.	Deadlock	IV.	Circular wait

Match List I with List II

LIST I		LIST II	
A.	Critical region	I.	Hoare's monitor
B.	Wait/signal	II.	Mutual exclusion
C.	Working set	III.	Principle of locality
D.	Deadlock	IV.	Circular wait

Choose the correct answer from the options given below: Choose the correct answer from the options given below:

1. A-IV B-I C-III D-II
2. A-II B-I C-III D-IV
3. A-I B-II C-III D-IV
4. A-IV B-III C-I D-II

1. A-IV B-I C-III D-II
2. A-II B-I C-III D-IV
3. A-I B-II C-III D-IV
4. A-IV B-III C-I D-II

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 55 / Question ID 87078

Marks: 2.00

Consider two hosts P and Q that are connected through a router R. The maximum transfer unit (MTU) value of the link between P and R is 1500 bytes and between R and Q is 820 bytes. A TCP segment of size 1400 bytes is transferred from P to Q through R with IP identification value of 0x1234. Assume that IP header size is 20 bytes. Further the packet is allowed to be fragmented that is Don't fragment (DF) flag in the IP Header is not set by P. Which of the following statement/s is/are true?

- A. Two fragments are created at R and IP datagram size carrying the second fragment is 620 bytes
- B. If the second fragment is lost, then R resends the fragment with IP identification value of 0x1234
- C. If the second fragment lost, then P requires to resend the entire TCP segment.
- D. TCP destination port can be determined by analyzing the second fragment only.

Choose the correct answer from the options given below:

- 1. A, B and C only
- 2. A and C only
- 3. C and D only
- 4. B and D only

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- A. Two fragments are created at R and IP datagram size carrying the second fragment is 620 bytes
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- C. If the second fragment lost, then P requires to resend the entire TCP segment.
- D. TCP destination port can be determined by analyzing the second fragment only.

Choose the correct answer from the options given below:

- 1. A, B and C only
 - 2. A and C only
 - 3. C and D only
 - 4. B and D only
- 1
1
- 2
2
- 3 (Chosen Option)
3 (Chosen Option)
- 4
4

Question No. 56 / Question ID 87086

Marks: 2.00

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: Dendral is an expert system

Reason R: The rationality of an agent is not related to its reaction to the environment.

In the light of the above statements, choose the **correct** answer from the options given below.

- 1. Both A and R are true and R is the correct explanation of A
- 2. Both A and R are true but R is NOT the correct explanation of A
- 3. A is true but R is false
- 4. A is false but R is true

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: Dendral is an expert system

Reason R: The rationality of an agent is not related to its reaction to the environment.

In the light of the above statements, choose the **correct** answer from the options given below.

- 1. Both A and R are true and R is the correct explanation of A
- 2. Both A and R are true but R is NOT the correct explanation of A
- 3. A is true but R is false
- 4. A is false but R is true

- 1
- 2
- 3 (Chosen Option)
- 3 (Chosen Option)
- 4
- 4

Question No. 57 / Question ID 87037

Marks: 2.00

In a multiuser operating system, 20 requests are made to use a particular resource per hour, on an average. The probability that no request is made in 45 minutes is

- 1. e^{-15}
- 2. e^{-5}
- 3. $1-e^{-5}$
- 4. $1-e^{-10}$

In a multiuser operating system, 20 requests are made to use a particular resource per hour, on an average. The probability that no request is made in 45 minutes is

- 1. e^{-15}
- 2. e^{-5}
- 3. $1-e^{-5}$
- 4. $1-e^{-10}$

- 1
- 1
- 2
- 2
- 3 (Chosen Option)
- 3 (Chosen Option)
- 4
- 4

Question No. 58 / Question ID 87036

Marks: 2.00

At a particular time of computation, the value of a counting semaphore is 7. Then 20 P operations and 'x' V operations were completed on this semaphore. If the final value of semaphore is 5. x will be

- 1. 15
- 2. 22
- 3. 18
- 4. 13

At a particular time of computation, the value of a counting semaphore is 7. Then 20 P operations and 'x' V operations were completed on this semaphore. If the final value of semaphore is 5. x will be

- 1. 15
 - 2. 22
 - 3. 18
 - 4. 13
- 1
 - 1
 - 2
 - 2
 - 3 (Chosen Option)
 - 3 (Chosen Option)
 - 4
 - 4

Question No. 59 / Question ID 87085

Marks: 2.00

Which of the following is not a solution representation in a genetic algorithm?

1. Binary valued
2. Real valued
3. Permutation
4. Combinations

Which of the following is not a solution representation in a genetic algorithm?

1. Binary valued
 2. Real valued
 3. Permutation
 4. Combinations
- 1 (Chosen Option)
1 (Chosen Option)
- 2
2
- 3
3
- 4
4

Question No. 60 / Question ID 87072

Marks: 2.00

Which phase of compiler checks the grammar of programming? Which phase of compiler checks the grammar of programming?

- | | |
|---|---|
| <ol style="list-style-type: none">1. Code optimization2. Semantic analysis3. Code generators4. Syntax analysis | <ol style="list-style-type: none">1. Code optimization2. Semantic analysis3. Code generators4. Syntax analysis |
|---|---|
- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 61 / Question ID 87033

Marks: 2.00

Given the basic E R diagram and relational model, which of the the following is incorrect?

1. An attribute of an entity can have more than one value
2. An attribute of an entity can be composite
3. In a row of relational table, an attribute can have more than one value
4. In a row of a relational table, an attribute can have exactly one value or a NULL value

Given the basic E R diagram and relational model, which of the the following is incorrect?

1. An attribute of an entity can have more than one value
 2. An attribute of an entity can be composite
 3. In a row of relational table, an attribute can have more than one value
 4. In a row of a relational table, an attribute can have exactly one value or a NULL value
- 1
1
- 2
2
- 3
3
- 4 (Chosen Option)
4 (Chosen Option)

Question No. 62 / Question ID 87011

Marks: 2.00

A processor chip is used for application in which 30% of execution time is spent on floating point addition. For the new model of the processor, the design team has come up with redesign the floating point adder to make it twice as fast. What will be possible maximum speed up by this redesign?

1. 2.0
2. 1.06
3. 1.18
4. 2.5

A processor chip is used for application in which 30% of execution time is spent on floating point addition. For the new model of the processor, the design team has come up with redesign the floating point adder to make it twice as fast. What will be possible maximum speed up by this redesign?

1. 2.0
2. 1.06
3. 1.18
4. 2.5

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 63 / Question ID 87029

Marks: 2.00

Given below are two statements:

Which of the following concurrency control protocol ensures both conflict serializability and freedom from deadlock?

Statement I: Two phase locking

Statement II: Timestamp ordering

In the light of the above statements, choose the most appropriate answer from the options given below:

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

Given below are two statements:

Which of the following concurrency control protocol ensures both conflict serializability and freedom from deadlock?

Statement I: Two phase locking

Statement II: Timestamp ordering

In the light of the above statements, choose the most appropriate answer from the options given below:

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

- 1
1
- 2
2
- 3
3

- 4 (Chosen Option)
- 4 (Chosen Option)

Question No. 64 / Question ID 87089

Marks: 2.00

Consider the following statements

- A. C-Fuzzy means clustering is a supervised method of learning
- B. PCA is used for dimension reduction
- C. Apriori is not a supervised technique
- D. When a machine learning model becomes so specially tuned to its exact input data that it fails to generalize to other similar data it is called underfitting

Choose the correct answer from the options given below:

- 1. A and B
- 2. B and C
- 3. C and D
- 4. D and A

Consider the following statements

- A. C-Fuzzy means clustering is a supervised method of learning
- B. PCA is used for dimension reduction
- C. Apriori is not a supervised technique
- D. When a machine learning model becomes so specially tuned to its exact input data that it fails to generalize to other similar data it is called underfitting

Choose the correct answer from the options given below:

- 1. A and B
- 2. B and C
- 3. C and D
- 4. D and A

- 1
- 1
- 2
- 2
- 3
- 3
- 4 (Chosen Option)
- 4 (Chosen Option)

Question No. 65 / Question ID 87021

Marks: 2.00

Southerland Hodgeman method is used on Southerland Hodgeman method is used on

- | | |
|---------------------|---------------------|
| 1. Smooth curves | 1. Smooth curves |
| 2. Line segment | 2. Line segment |
| 3. Convex polygons | 3. Convex polygons |
| 4. Concave polygons | 4. Concave polygons |

- 1
- 1
- 2 (Chosen Option)
- 2 (Chosen Option)
- 3
- 3
- 4
- 4

Question No. 66 / Question ID 87074

Marks: 2.00

- A. The set of turning machine codes for TM's that accept all inputs that are palindromes (possible along with some other inputs) is decidable
- B. The language of codes for TM's M that when started with blank tape , eventually write a 1 somewhere on the tape is undecidable
- C. The language accepted by a TM M is $L(M)$ is always recursive
- D. Post's correspondence problem is undecidable

Choose the correct answer from the options given below:

- 1. A, B and C only
- 2. B, C and D only
- 3. A and C only
- 4. B and D only

- A. The set of turning machine codes for TM's that accept all inputs that are palindromes (possible along with some other inputs) is decidable
- B. The language of codes for TM's M that when started with blank tape , eventually write a 1 somewhere on the tape is undecidable
- C. The language accepted by a TM M is $L(M)$ is always recursive
- D. Post's correspondence problem is undecidable

Choose the correct answer from the options given below:

- 1. A, B and C only
- 2. B, C and D only
- 3. A and C only
- 4. B and D only

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 67 / Question ID 87006

Marks: 2.00

Let $G = \frac{\mathbb{R}}{\{0\}}$ and $H = \{-1, 1\}$ be groups under the multiplication. Then, the map $\phi: G \rightarrow H$ defined by $\phi(x) = \frac{x}{|x|}$ is

- 1. Not a homomorphism
- 2. A one-one homomorphism, which is not onto
- 3. An onto homomorphism, which is not one to one
- 4. An homomorphism

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- 1. Not a homomorphism
- 2. A one-one homomorphism, which is not onto
- 3. An onto homomorphism, which is not one to one
- 4. An homomorphism

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 68 / Question ID 87071

Marks: 2.00

Which of the following parser is most powerful parser? Which of the following parser is most powerful parser?

1. Operator precedence
2. SLR
3. Canonical LR
4. LALR

- 1
1
- 2
2
- 3 (Chosen Option)
3 (Chosen Option)
- 4
4

1. Operator precedence
2. SLR
3. Canonical LR
4. LALR

Question No. 69 / Question ID 87017

Marks: 2.00

What is x in the following program?

```
# include < stdio.h>
```

```
int main ()
```

```
{typedef (* (* arrfptr [3]) ()) [10];
```

```
arrfptr x ;
```

```
return 0 ;
```

```
}
```

What is x in the following program?

```
# include < stdio.h>
```

```
int main ()
```

```
{typedef (* (* arrfptr [3]) ()) [10];
```

```
arrfptr x ;
```

```
return 0 ;
```

```
}
```

1. x is a pointer
2. x is a array of three pointer
3. x is an array of three function pointer
4. Error in x declaration

- 1
1
- 2
2
- 3 (Chosen Option)
3 (Chosen Option)
- 4
4

1. x is a pointer
2. x is a array of three pointer
3. x is an array of three function pointer
4. Error in x declaration

Question No. 70 / Question ID 87002

Marks: 2.00

Find the sum of all four digit numbers formed using the digits 1,2,4 and 6.

1. 86,658
2. 88,8858
3. 91,958
4. 93,358

Find the sum of all four digit numbers formed using the digits 1,2,4 and 6.

1. 86,658
2. 88,8858
3. 91,958
4. 93,358

- 1 (Chosen Option)
- 1 (Chosen Option)
- 2
- 2
- 3
- 3
- 4
- 4

Question No. 71 / Question ID 87054

Marks: 2.00

Consider the following statements:

- A. Dynamic metrics are collected by measurements made of a program in execution
- B. Static metrics are collected by measurements made of representations of the system
- C. The assessment of software quality is an objective process
- D. An important part of quality assurance in the selection of standards that should apply to the software development process.

Choose the correct answer from the options given below:

- 1. A, B C only
- 2. B, C and D only
- 3. A, C and D only
- 4. A, B and D only

Consider the following statements:

- A. Dynamic metrics are collected by measurements made of a program in execution
- B. Static metrics are collected by measurements made of representations of the system
- C. The assessment of software quality is an objective process
- D. An important part of quality assurance in the selection of standards that should apply to the software development process.

Choose the correct answer from the options given below:

- 1. A, B C only
- 2. B, C and D only
- 3. A, C and D only
- 4. A, B and D only

- 1 (Chosen Option)
- 1 (Chosen Option)
- 2
- 2
- 3
- 3
- 4
- 4

Question No. 72 / Question ID 87049

Marks: 2.00

The following table shows the time between failures for a software :

Error number	1	2	3	4	5
time since last failure (Hours)	6	4	8	5	6

The reliability of the system for one hour operation assuming an exponential model is-

1. $e^{-9/29}$
2. $e^{-7/29}$
3. $e^{-5/29}$
4. $e^{-3/29}$

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The reliability of the system for one hour operation assuming an exponential model is-

1. $e^{-9/29}$
 2. $e^{-7/29}$
 3. $e^{-5/29}$
 4. $e^{-3/29}$
- 1
 1
 2 (Chosen Option)
 2 (Chosen Option)
 3
 3
 4
 4

Question No. 73 / Question ID 87067

Marks: 2.00

Which of the following statement is correct?

1. Ackermann's function is primitive recursive.
2. $L = \{a^n b^k c^{n+k} : n \geq 0, k \geq 0\}$ is regular language.
3. $L = \{a^n b^j : n = j^2\}$ is not context free language
4. For every context sensitive language L not including λ , there exists some linear bounded automata M such that $L \neq L(M)$.

Which of the following statement is correct?

1. Ackermann's function is primitive recursive.
 2. $L = \{a^n b^k c^{n+k} : n \geq 0, k \geq 0\}$ is regular language.
 3. $L = \{a^n b^j : n = j^2\}$ is not context free language
 4. For every context sensitive language L not including λ , there exists some linear bounded automata M such that $L \neq L(M)$.
- 1
 1
 2
 2
 3
 3
 4 (Chosen Option)
 4 (Chosen Option)

How will you free the memory allocated by the following program? How will you free the memory allocated by the following program?

```
# include <stdio.h>
```

```
#include <stdlib. h>
```

```
#define MAXROW 3
```

```
#define MAXCOL 4
```

```
int main ( )
```

```
{
```

```
int ** p, i, j;
```

```
p= (int **) malloc (MAXROW * size of (int*));
```

```
return 0;
```

```
}
```

```
# include <stdio.h>
```

```
#include <stdlib. h>
```

```
#define MAXROW 3
```

```
#define MAXCOL 4
```

```
int main ( )
```

```
{
```

```
int ** p, i, j;
```

```
p= (int **) malloc (MAXROW * size of (int*));
```

```
return 0;
```

```
}
```

1. memfree (int p);
2. dealloc (p);
3. malloc (p,0);
4. free (p);

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

1. memfree (int p);
2. dealloc (p);
3. malloc (p,0);
4. free (p);

Question No. 75 / Question ID 87082

Marks: 2.00

Which is not a basic approach to the problem of conflict resolution in a production system?

1. Assigning a preference based on the rule that matched
2. Assigning a preference based the object that matched
3. Assigning a preference based on the action that the matched rule would perform
4. Assigning a preference based on the action that the matched object would perform

Which is not a basic approach to the problem of conflict resolution in a production system?

1. Assigning a preference based on the rule that matched
2. Assigning a preference based the object that matched
3. Assigning a preference based on the action that the matched rule would perform
4. Assigning a preference based on the action that the matched object would perform

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 76 / Question ID 87015

Marks: 2.00

Match List I with List II

LIST I		LIST II	
A.	$A \Delta B$	I.	$(A - B) \cup (A - C)$
B.	$A - (B \cup C)$	II.	$(A - B) \cap (A - C)$
C.	$A - (B \cap C)$	III.	$(A - B) \cup (B - A)$
D.	$A \cap (B - C)$	IV.	$(A \cap B) - (A \cap C)$

Match List I with List II

LIST I		LIST II	
A.	$A \Delta B$	I.	$(A - B) \cup (A - C)$
B.	$A - (B \cup C)$	II.	$(A - B) \cap (A - C)$
C.	$A - (B \cap C)$	III.	$(A - B) \cup (B - A)$
D.	$A \cap (B - C)$	IV.	$(A \cap B) - (A \cap C)$

Choose the correct answer from the options given below: Choose the correct answer from the options given below:

1. A-III B-II C-I D-IV

1. A-III B-II C-I D-IV

2. A-II B-III C-IV D-I

2. A-II B-III C-IV D-I

3. A-IV B-III C-I D-II

3. A-IV B-III C-I D-II

4. A-IV B-I C-III D-II

4. A-IV B-I C-III D-II

1 (Chosen Option)

1 (Chosen Option)

2

2

3

3

4

4

Question No. 77 / Question ID 87022

Marks: 2.00

The clipping process in computer graphics is used for The clipping process in computer graphics is used for

1. Adding graphics

1. Adding graphics

2. Copying

2. Copying

3. Zooming

3. Zooming

4. Removing objects and lines

4. Removing objects and lines

1

1

2

2

3

3

4 (Chosen Option)

4 (Chosen Option)

Question No. 78 / Question ID 87039

Marks: 2.00

Consider a disk system with cylinders. The request to access the cylinders occurs in the following sequence:

4,34,10,7,19,73,2,15,6,20

Assuming that the head is currently at cylinder 50, what is the time taken to satisfy all requests if it takes 1 ms to move from one cylinder to adjacent one and shortest seek time first policy is used?

1. 119 ms

2. 120 ms

3. 142 ms

4. 146 ms

Consider a disk system with cylinders. The request to access the cylinders occurs in the following sequence:

4,34,10,7,19,73,2,15,6,20

Assuming that the head is currently at cylinder 50, what is the time taken to satisfy all requests if it takes 1 ms to move from one cylinder to adjacent one and shortest seek time first policy is used?

1. 119 ms

2. 120 ms

3. 142 ms

4. 146 ms

- 1 (Chosen Option)
- 1 (Chosen Option)
- 2
- 2
- 3
- 3
- 4
- 4

Question No. 79 / Question ID 87023

Marks: 2.00

Consider the rectangle with vertices $(0,0)$, $(0,2)$, $(3,0)$, $(3,2)$. There is scaling of 2 towards x-axis and 3 towards y-axis. The new coordinates of the rectangle are

- 1. $(0,0)$, $(6,0)$, $(0,4)$, $(6,4)$
- 2. $(0,0)$, $(6,0)$, $(0,4)$, $(3,2)$
- 3. $(0,0)$, $(6,0)$, $(0,6)$, $(6,6)$
- 4. $(0,0)$, $(4,0)$, $(0,6)$, $(4,6)$

Consider the rectangle with vertices $(0,0)$, $(0,2)$, $(3,0)$, $(3,2)$. There is scaling of 2 towards x-axis and 3 towards y-axis. The new coordinates of the rectangle are

- 1. $(0,0)$, $(6,0)$, $(0,4)$, $(6,4)$
- 2. $(0,0)$, $(6,0)$, $(0,4)$, $(3,2)$
- 3. $(0,0)$, $(6,0)$, $(0,6)$, $(6,6)$
- 4. $(0,0)$, $(4,0)$, $(0,6)$, $(4,6)$

- 1
- 1
- 2 (Chosen Option)
- 2 (Chosen Option)
- 3
- 3
- 4
- 4

Question No. 80 / Question ID 87024

Marks: 2.00

Which of the following transforms in 2 dimension is used to resize a 2-dimensional object?

- 1. Translation
- 2. Rotation
- 3. Scaling
- 4. Shearing

Which of the following transforms in 2 dimension is used to resize a 2-dimensional object?

- 1. Translation
- 2. Rotation
- 3. Scaling
- 4. Shearing

- 1
- 1
- 2
- 2
- 3 (Chosen Option)
- 3 (Chosen Option)
- 4
- 4

Question No. 81 / Question ID 87076

Marks: 2.00

In the standard Ethernet with transmission rate of 10 Mbps, assume that the length of the medium is 2500m and size of a frame is 512 bytes. The propagation speed of a signal in a cable is normally 2×10^8 m/s. The transmission delay and propagation delay are

1. 25.25 μ s and 51.2 μ s
2. 51.2 μ s and 12.5 μ s
3. 10.24 μ s and 50.12 μ s
4. 12.5 μ s and 51.2 μ s

In the standard Ethernet with transmission rate of 10 Mbps, assume that the length of the medium is 2500m and size of a frame is 512 bytes. The propagation speed of a signal in a cable is normally 2×10^8 m/s. The transmission delay and propagation delay are

1. 25.25 μ s and 51.2 μ s
2. 51.2 μ s and 12.5 μ s
3. 10.24 μ s and 50.12 μ s
4. 12.5 μ s and 51.2 μ s

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 82 / Question ID 87009

Marks: 2.00

Consider the following statements.

- A. The identity is unique in any monoid.
- B. A monoid is a group if there exists inverse of each element of monoid.
- C. Semi group has closure, associative and identity properties.
- D. Quasi group has closure property.

Choose the correct answer from the options given below :

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

Consider the following statements.

- A. The identity is unique in any monoid.
- B. A monoid is a group if there exists inverse of each element of monoid.
- C. Semi group has closure, associative and identity properties.
- D. Quasi group has closure property.

Choose the correct answer from the options given below :

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

- 1
1
- 2
2
- 3 (Chosen Option)
3 (Chosen Option)
- 4
4

Question No. 83 / Question ID 87016

Marks: 2.00

What is the output of following code?

```
main ()
{ static float a[] = { 13.24, 1.5,4.5,5.4,3.5}
float *j, *k;
j=a;
k= a+4
j=j*2;
k=k/2;
printf ("% f% f", *j, *k);
}
```

What is the output of following code?

```
main ()
{ static float a[] = { 13.24, 1.5,4.5,5.4,3.5}
float *j, *k;
j=a;
k= a+4
j=j*2;
k=k/2;
printf ("% f% f", *j, *k);
}
```

- | | |
|--|--|
| 1. 13.25, 4.5 | 1. 13.25, 4.5 |
| 2. 1.5, 3.5 | 2. 1.5, 3.5 |
| 3. 13.24, 1.5, 4.5, 5.4, 3.5 | 3. 13.24, 1.5, 4.5, 5.4, 3.5 |
| 4. Illegal use of pointer in main function | 4. Illegal use of pointer in main function |
- 1 (Chosen Option)
 1 (Chosen Option)
- 2
2
- 3
3
- 4
4

Question No. 84 / Question ID 87005

Marks: 2.00

If $A = \{4n + 2 \mid n \text{ is a natural number}\}$ and $B = \{3n \mid n \text{ is a natural number}\}$. Which of the following is correct for $A \cap B$?

- $\{12n^2 + 6n \mid n \text{ is a natural number}\}$
- $\{24n - 12 \mid n \text{ is a natural number}\}$
- $\{60n + 30 \mid n \text{ is a natural number}\}$
- $\{12n - 6 \mid n \text{ is a natural number}\}$

If $A = \{4n + 2 \mid n \text{ is a natural number}\}$ and $B = \{3n \mid n \text{ is a natural number}\}$. Which of the following is correct for $A \cap B$?

- $\{12n^2 + 6n \mid n \text{ is a natural number}\}$
 - $\{24n - 12 \mid n \text{ is a natural number}\}$
 - $\{60n + 30 \mid n \text{ is a natural number}\}$
 - $\{12n - 6 \mid n \text{ is a natural number}\}$
- 1
1
- 2
2
- 3
3
- 4 (Chosen Option)
4 (Chosen Option)

Question No. 85 / Question ID 87064

Marks: 2.00

LIST I		LIST II	
A.	The running time of straight forward recursive method to compute nth Fibonacci number Fn	I.	$O(n^2)$
B.	The running time to compute Fn using memoization	II.	$O(\lg n)$
C.	The running time to compute Fibonacci number Fn using only integer addition and multiplication	III.	$O(n)$
D.	The running time to determine an optimal bitonic tour	IV.	$\Theta(\phi^n)$

Choose the correct answer from the options given below:

1. A-I B-III C-IV D-II
2. A-IV B-III C-II D-I
3. A-I B-II C-IV D-III
4. A-IV B-II C-III D-I

Match List I with List II

LIST I		LIST II	
A.	The running time of straight forward recursive method to compute nth Fibonacci number Fn	I.	$O(n^2)$
B.	The running time to compute Fn using memoization	II.	$O(\lg n)$
C.	The running time to compute Fibonacci number Fn using only integer addition and multiplication	III.	$O(n)$
D.	The running time to determine an optimal bitonic tour	IV.	$\Theta(\phi^n)$

Choose the correct answer from the options given below:

1. A-I B-III C-IV D-II
2. A-IV B-III C-II D-I
3. A-I B-II C-IV D-III
4. A-IV B-II C-III D-I

- 1
 1
 2 (Chosen Option)
 2 (Chosen Option)
 3
 3
 4
 4

Question No. 86 / Question ID 87073

Marks: 2.00

Given below are two statements:

Statement I: If f and g are two functions and $f = O(g)$ but $g \neq o(f)$, we say that the growth rate of g is smaller than that of f

Statement II: The class of all decision problems decided by a TM in exponential time, that is $O(2^k)$, k being a constant.

In the light of the above statements, choose the most appropriate answer from the options given below.

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

Given below are two statements:

Statement I: If f and g are two functions and $f = O(g)$ but $g \neq o(f)$, we say that the growth rate of g is smaller than that of f

Statement II: The class of all decision problems decided by a TM in exponential time, that is $O(2^k)$, k being a constant.

In the light of the above statements, choose the most appropriate answer from the options given below.

1. Both Statement I and Statement II are correct
2. Both Statement I and Statement II are incorrect
3. Statement I is correct but Statement II is incorrect
4. Statement I is incorrect but Statement II is correct

- 1
 1
 2
 2
 3 (Chosen Option)
 3 (Chosen Option)

Question No. 87 / Question ID 87013

Marks: 2.00

256 Mb DRAM is organized as a $32M \times 8$ memory externally and as a $16K \times 16K$ square array internally. Each row must be refreshed at least once every 50 mili second to forestall loss of data; refreshing one row takes 100 nanoseconds. What fraction of the total memory bandwidth is lost to refresh cycles?

- 1. 6.6%
- 2. 3.3%
- 3. 9.9%
- 4. 4.3%

256 Mb DRAM is organized as a $32M \times 8$ memory externally and as a $16K \times 16K$ square array internally. Each row must be refreshed at least once every 50 mili second to forestall loss of data; refreshing one row takes 100 nanoseconds. What fraction of the total memory bandwidth is lost to refresh cycles?

- 1. 6.6%
- 2. 3.3%
- 3. 9.9%
- 4. 4.3%

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 88 / Question ID 87053

Marks: 2.00

Given below are two statements:

Statement I: subsystem models show logical grouping of objects into coherent subsystem

Statement II: State machine models show how objects change their states in response to events.

In the light of the above statements, choose the most appropriate answer from the options given below.

- 1. Both Statement I and Statement II are correct
- 2. Both Statement I and Statement II are incorrect
- 3. Statement I is correct but Statement II is incorrect
- 4. Statement I is incorrect but Statement II is correct

Given below are two statements:

Statement I: subsystem models show logical grouping of objects into coherent subsystem

Statement II: State machine models show how objects change their states in response to events.

In the light of the above statements, choose the most appropriate answer from the options given below.

- 1. Both Statement I and Statement II are correct
- 2. Both Statement I and Statement II are incorrect
- 3. Statement I is correct but Statement II is incorrect
- 4. Statement I is incorrect but Statement II is correct

- 1 (Chosen Option)
1 (Chosen Option)
- 2
2
- 3
3
- 4
4

Question No. 89 / Question ID 87061

Marks: 2.00

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: It is possible to create doubly linked list using only one pointer with every node.

Reason R: By storing the XOR of the addresses of the previous and next nodes.

In the light of the above statements, choose the most appropriate answer from the options given below.

1. Both A and R are true and R is the correct explanation of A
2. Both A and R are true but R is NOT the correct explanation of A
3. A is true but R is false
4. A is false but R is true

Given below are two statements: one is labelled as Assertion A and the other is labelled as Reason R.

Assertion A: It is possible to create doubly linked list using only one pointer with every node.

Reason R: By storing the XOR of the addresses of the previous and next nodes.

In the light of the above statements, choose the most appropriate answer from the options given below.

1. Both A and R are true and R is the correct explanation of A
2. Both A and R are true but R is NOT the correct explanation of A
3. A is true but R is false
4. A is false but R is true

- 1
1
- 2
2
- 3
3
- 4 (Chosen Option)
4 (Chosen Option)

Question No. 90 / Question ID 87070

Marks: 2.00

The compiler for high level language that runs on one machine and produces code for other machine is called-

1. Cross compiler
2. Multipass compiler
3. Optimizing Compiler
4. One pass Compiler

The compiler for high level language that runs on one machine and produces code for other machine is called-

1. Cross compiler
 2. Multipass compiler
 3. Optimizing Compiler
 4. One pass Compiler
- 1
1
- 2
2
- 3
3
- 4 (Chosen Option)
4 (Chosen Option)

Question No. 91 / Question ID 87094

Marks: 2.00

Consider the following program fragment that deals with a table T with 17 rows and 1024 columns, computing an average for each column and printing it to screen (i is row index and j is column index):

```
for j = [ 0..... 1023]{  
temp = 0;  
for i = [0 . . . . 16];  
temp = temp + T [i] [j];  
print (temp/ 17.0) ; }
```

T [i] [j] and temp are 32 bit floating point values and memory is word addressable. The temporary variable temp is kept in a processor register so access to temp does not involve a memory reference. The main memory is page and holds 16 pages of size 1024 words, the page replacement policy is "least recently used ", If T is stored in the virtual address space in row major format.

Consider again that T is stored in column-major format, what is the main memory hit ratio?

1. 80%
2. 95.6%
3. 97.8%
4. 99.9%

Consider the following program fragment that deals with a table T with 17 rows and 1024 columns, computing an average for each column and printing it to screen (i is row index and j is column index):

```
for j = [ 0..... 1023]{  
temp = 0;  
for i = [0 . . . . 16];  
temp = temp + T [i] [j];  
print (temp/ 17.0) ; }
```

T [i] [j] and temp are 32 bit floating point values and memory is word addressable. The temporary variable temp is kept in a processor register so access to temp does not involve a memory reference. The main memory is page and holds 16 pages of size 1024 words, the page replacement policy is "least recently used ", If T is stored in the virtual address space in row major format.

Consider again that T is stored in column-major format, what is the main memory hit ratio?

1. 80%
 2. 95.6%
 3. 97.8%
 4. 99.9%
- 1 (Chosen Option)
1 (Chosen Option)
- 2
2
- 3
3
- 4
4

Consider the following program fragment that deals with a table T with 17 rows and 1024 columns, computing an average for each column and printing it to screen (i is row index and j is column index):

```
for j = [ 0..... 1023]{  
temp = 0;  
for i = [0 . . . . 16];  
temp = temp + T [i] [j];  
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```

T [i] [j] and temp are 32 bit floating point values and memory is word addressable. The temporary variable temp is kept in a processor register so access to temp does not involve a memory reference. The main memory is page and holds 16 pages of size 1024 words, the page replacement policy is "least recently used ", If T is stored in the virtual address space in row major format.

Consider that T is stored in column major format, how many page faults will be encountered?

1. 14
2. 15
3. 16
4. 17

Consider the following program fragment that deals with a table T with 17 rows and 1024 columns, computing an average for each column and printing it to screen (i is row index and j is column index):

```
for j = [ 0..... 1023]{  
temp = 0;  
for i = [0 . . . . 16];  
temp = temp + T [i] [j];  
print (temp/ 17.0) ; }
```

T [i] [j] and temp are 32 bit floating point values and memory is word addressable. The temporary variable temp is kept in a processor register so access to temp does not involve a memory reference. The main memory is page and holds 16 pages of size 1024 words, the page replacement policy is "least recently used ", If T is stored in the virtual address space in row major format.

Consider that T is stored in column major format, how many page faults will be encountered?

1. 14
 2. 15
 3. 16
 4. 17
- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Consider the following program fragment that deals with a table T with 17 rows and 1024 columns, computing an average for each column and printing it to screen (i is row index and j is column index):

```
for j = [ 0..... 1023]{  
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print (temp/ 17.0) ; }
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T [i] [j] and temp are 32 bit floating point values and memory is word addressable. The temporary variable temp is kept in a processor register so access to temp does not involve a memory reference. The main memory is page and holds 16 pages of size 1024 words, the page replacement policy is "least recently used ", If T is stored in the virtual address space in row major format.

How many page faults will be encountered?

1. 16,402
2. 17,408
3. 18,208
4. 18,608

Consider the following program fragment that deals with a table T with 17 rows and 1024 columns, computing an average for each column and printing it to screen (i is row index and j is column index):

```
for j = [ 0..... 1023]{  
temp = 0;  
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print (temp/ 17.0) ; }
```

T [i] [j] and temp are 32 bit floating point values and memory is word addressable. The temporary variable temp is kept in a processor register so access to temp does not involve a memory reference. The main memory is page and holds 16 pages of size 1024 words, the page replacement policy is "least recently used ", If T is stored in the virtual address space in row major format.

How many page faults will be encountered?

1. 16,402
2. 17,408
3. 18,208
4. 18,608

- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Consider the following program fragment that deals with a table T with 17 rows and 1024 columns, computing an average for each column and printing it to screen (i is row index and j is column index):

```
for j = [ 0..... 1023]{  
temp = 0;  
for i = [0 . . . . 16];  
temp = temp + T [i] [j];  
print (temp/ 17.0) ; }
```

T [i] [j] and temp are 32 bit floating point values and memory is word addressable. The temporary variable temp is kept in a processor register so access to temp does not involve a memory reference. The main memory is page and holds 16 pages of size 1024 words, the page replacement policy is "least recently used ", If T is stored in the virtual address space in row major format.

What is fault ratio of row major to column major arrangements ?

1. 1024:1
2. 1301:1
3. 1240:1
4. 9107:8

Consider the following program fragment that deals with a table T with 17 rows and 1024 columns, computing an average for each column and printing it to screen (i is row index and j is column index):

```
for j = [ 0..... 1023]{  
temp = 0;  
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temp = temp + T [i] [j];  
print (temp/ 17.0) ; }
```

T [i] [j] and temp are 32 bit floating point values and memory is word addressable. The temporary variable temp is kept in a processor register so access to temp does not involve a memory reference. The main memory is page and holds 16 pages of size 1024 words, the page replacement policy is "least recently used ", If T is stored in the virtual address space in row major format.

What is fault ratio of row major to column major arrangements ?

1. 1024:1
 2. 1301:1
 3. 1240:1
 4. 9107:8
- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Consider the following program fragment that deals with a table T with 17 rows and 1024 columns, computing an average for each column and printing it to screen (i is row index and j is column index):

```
for j = [ 0..... 1023]{  
temp = 0;  
for i = [0 . . . . 16];  
temp = temp + T [i] [j];  
print (temp/ 17.0) ; }
```

T [i] [j] and temp are 32 bit floating point values and memory is word addressable. The temporary variable temp is kept in a processor register so access to temp does not involve a memory reference. The main memory is page and holds 16 pages of size 1024 words, the page replacement policy is "least recently used ", If T is stored in the virtual address space in row major format.

What is the main memory hit ratio?

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

Consider the following program fragment that deals with a table T with 17 rows and 1024 columns, computing an average for each column and printing it to screen (i is row index and j is column index):

```
for j = [ 0..... 1023]{  
temp = 0;  
for i = [0 . . . . 16];  
temp = temp + T [i] [j];  
print (temp/ 17.0) ; }
```

T [i] [j] and temp are 32 bit floating point values and memory is word addressable. The temporary variable temp is kept in a processor register so access to temp does not involve a memory reference. The main memory is page and holds 16 pages of size 1024 words, the page replacement policy is "least recently used ", If T is stored in the virtual address space in row major format.

What is the main memory hit ratio?

1. 0
 2. 1
 3. 2
 4. 3
- 1
1
- 2
2
- 3 (Chosen Option)
3 (Chosen Option)
- 4
4

IP datagram has arrived with following partial information in the header (in hexadecimal)

45000054000300002006.....

How many more routers can the packet travel to?

1. 22
2. 26
3. 30
4. 32

IP datagram has arrived with following partial information in the header (in hexadecimal)

45000054000300002006.....

How many more routers can the packet travel to?

1. 22
 2. 26
 3. 30
 4. 32
- 1
1
- 2 (Chosen Option)
2 (Chosen Option)
- 3
3
- 4
4

Question No. 97 / Question ID 87099

Marks: 2.00

IP datagram has arrived with following partial information in the header (in hexadecimal)

45000054000300002006.....

What is the protocol of the payload being carried by the packet?

1. ICMP
2. SCTP
3. TCP protocol
4. IGMP

IP datagram has arrived with following partial information in the header (in hexadecimal)

45000054000300002006.....

What is the protocol of the payload being carried by the packet?

1. ICMP
 2. SCTP
 3. TCP protocol
 4. IGMP
- 1 (Chosen Option)
1 (Chosen Option)
- 2
2
- 3
3
- 4
4

IP datagram has arrived with following partial information in the header (in hexadecimal)

45000054000300002006.....

What is the size of datagram?

1. 64 bytes
2. 74 bytes
3. 84 bytes
4. 104 bytes

IP datagram has arrived with following partial information in the header (in hexadecimal)

45000054000300002006.....

What is the size of datagram?

1. 64 bytes
 2. 74 bytes
 3. 84 bytes
 4. 104 bytes
- 1 (Chosen Option)
1 (Chosen Option)
- 2
2
- 3
3
- 4
4

IP datagram has arrived with following partial information in the header (in hexadecimal)

45000054000300002006.....

What is the header size ?

1. 10 bytes
2. 20 bytes
3. 30 bytes
4. 40 bytes

IP datagram has arrived with following partial information in the header (in hexadecimal)

45000054000300002006.....

What is the header size ?

1. 10 bytes
 2. 20 bytes
 3. 30 bytes
 4. 40 bytes
- 1
1
- 2 (Chosen Option)
2 (Chosen Option)

- 3
- 4

Question No. 100 / Question ID 87100

Marks: 2.00

IP datagram has arrived with following partial information in the header (in hexadecimal)

45000054000300002006.....

What is the efficiency of this datagram?

- 1. 76.19%
- 2. 80.50%
- 3. 82.24%
- 4. 85.45%

IP datagram has arrived with following partial information in the header (in hexadecimal)

45000054000300002006.....

What is the efficiency of this datagram?

- 1. 76.19%
- 2. 80.50%
- 3. 82.24%
- 4. 85.45%

- 1
- 2 (Chosen Option)
- 3
- 4

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NATIONAL TESTING AGENCY**UGC NET June 2023 - Final Answer Keys on which the result compiled**

Exam Date : 17-06-2023

Shift : First

Subject : 087 - COMPUTER SCIENCE AND APPLICATIONS

Ques. ID	Correct Option	Ques. ID	Correct Option	Ques. ID	Correct Option
GENERAL PAPER		COMPUTER SCIENCE AND		COMPUTER SCIENCE AND	
1701	4	87001	2	87051	1
1702	2	87002	1	87052	2
1703	Dropped	87003	2	87053	1
1704	2	87004	4	87054	4
1705	1	87005	4	87055	3
1706	1	87006	3	87056	2
1707	3	87007	2	87057	1
1708	4	87008	1	87058	4
1709	3	87009	1	87059	3
1710	2	87010	4	87060	1
1711	3	87011	3	87061	1
1712	2	87012	3	87062	2
1713	3	87013	2	87063	1
1714	3	87014	4	87064	2
1715	4	87015	1	87065	3
1716	4	87016	4	87066	2
1717	4	87017	3	87067	3
1718	3	87018	2	87068	3
1719	3	87019	2	87069	1
1720	4	87020	4	87070	1
1721	3	87021	3	87071	3
1722	2	87022	4	87072	4
1723	2	87023	3	87073	2
1724	1	87024	3	87074	4
1725	3	87025	3	87075	Dropped
1726	3	87026	1	87076	2
1727	1	87027	1	87077	1
1728	4	87028	4	87078	2
1729	3	87029	4	87079	3
1730	4	87030	4	87080	2
1731	2	87031	2	87081	4
1732	2	87032	4	87082	4
1733	3	87033	3	87083	1
1734	4	87034	2	87084	1
1735	3	87035	2	87085	4
1736	3	87036	3	87086	3
1737	2	87037	1	87087	1
1738	3	87038	2	87088	4
1739	4	87039	1	87089	2
1740	4	87040	2	87090	3
1741	2	87041	4	87091	2
1742	4	87042	2	87092	1
1743	3	87043	2	87093	4
1744	2	87044	3	87094	4
1745	4	87045	2	87095	1
1746	4	87046	3	87096	2
1747	3	87047	3	87097	3
1748	2	87048	4	87098	4
1749	3	87049	3	87099	3
1750	3	87050	2	87100	1