Indian Institute of Technology, Madras - BS in Data Science and Applications

Notations :

1.Options shown in green color and with ✔ icon are correct.

2.Options shown in red color and with ✖ icon are incorrect.

Question Paper Name :	IIT M DIPLOMA AN4 EXAM QPD4 06 Aug 2023
Subject Name :	2023 Aug: IIT M DIPLOMA AN4 EXAM QPD4
Creation Date :	2023-08-01 17:28:49
Duration :	240
Total Marks :	682
Display Marks:	Yes
Share Answer Key With Delivery Engine :	Yes
Actual Answer Key :	Yes
Calculator :	Scientific
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No

Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

Group I

Group Number :	1
Group Id :	64065313871
Group Maximum Duration :	0
Group Minimum Duration :	90
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	682
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No
Revisit allowed for group Instructions? :	Yes
Maximum Instruction Time :	0
Minimum Instruction Time :	0
Group Time In :	Minutes
Navigate To Group Summary From Last Question? :	No
Disable Submit Button During Assessment? :	No
Section Selection Time? :	0
No of Optional sections to be attempted :	0

Statistics1

Section Id :	64065339737
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	11
Number of Questions to be attempted :	11
Section Marks :	40
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384561
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 1 Question Id : 640653587427 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : STATISTICS FOR DATA SCIENCE I (COMPUTER BASED EXAM) "

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?
CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531959839. ✔ YES

6406531959840. ✖ NO

Sub-Section Number : 2

Sub-Section Id : 64065384562

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 2 Question Id : 640653587428 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Out of 8 boys and 5 girls, how many queues of 3 boys and 2 girls can be formed?

Options :

6406531959841. ✖ 560

6406531959842. ✖ 1200

6406531959843. ✔ 67200

6406531959844. ✖ 6720

Question Number : 3 Question Id : 640653587433 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

A locker can be opened by 3 digit number between 000 to 999. A thief want to steal the locker. During the background check about the locker, he found that all the digits of the pass code are unique and one of the digit is 4. What is the probability that the thief will open the locker?

Options :

6406531959852. ✖ $\frac{1}{729}$

6406531959853. ✖ $\frac{1}{243}$

6406531959854. ✖ $\frac{1}{192}$

6406531959855. ✔ $\frac{1}{216}$

Question Number : 4 Question Id : 640653587437 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

An analyst wants to conduct a survey for testing the maintenance of hospitals in a particular district in Madhya Pradesh, for which he selects 15 hospitals randomly from that district. Identify the sample and population.

Options :

6406531959862. ✖ The population is all the hospitals in Madhya Pradesh and the sample is all the hospitals in the district.

6406531959863. ✖ The population is all the hospitals in Madhya Pradesh and the sample is 15 selected hospitals in Madhya Pradesh.

6406531959864. ✔ The population is all hospitals in the district of Madhya Pradesh and the sample is 15 selected hospitals in the district.

6406531959865. ✖ None of these

Sub-Section Number : 3

Sub-Section Id :	64065384563
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 5 Question Id : 640653587429 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Ajay speaks truth in 50% cases, while Vijay speaks truth in 90% cases. What is the probability that Ajay and Vijay will contradict in stating the same fact?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.5

Question Number : 6 Question Id : 640653587431 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

In how many ways can letters in the word “ADAMANT” be arranged such that no two A’s are adjacent to each other?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

240

Question Number : 7 Question Id : 640653587435 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

In a gaming room, 2 brothers and 4 other boys are playing together. In a particular game, how many ways can all the boys be seated in a circular order so that two brothers are not seated together?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

72

Sub-Section Number :	4
Sub-Section Id :	64065384564
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 8 Question Id : 640653587432 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

The sum of three natural numbers (starting from 1) is 9. How many ordered triplets (a,b,c) exist?

(**Note:** $a = b$ or $b = c$, also, $a = b = c$ is allowed. For example, ordered triplet, (4,3,2) and (2,4,3) are different.)

Options :

6406531959848. ✖ 24

6406531959849. ✔ 28

6406531959850. ✖ 22

6406531959851. ✖ 31

Sub-Section Number : 5

Sub-Section Id : 64065384565

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 9 Question Id : 640653587434 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

A logo is to be designed with five horizontal stripes using some or all of the colours Black, Blue, Red, and Green. In how many ways that can be done such that no two adjacent stripes have same colour?

Options :

6406531959856. ✖ 324

6406531959857. ✖ 516

6406531959858. ✔ 528

6406531959859. ✖ 243

Sub-Section Number : 6

Sub-Section Id : 64065384566

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 10 Question Id : 640653587430 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Short Answer Question

A blood test indicates the presence of Amyotrophic lateral sclerosis (ALS) 93% of the time when ALS is actually present. The same test indicates the presence of ALS 0.5% of the time when ALS is not actually present. One percent of the population actually has ALS. Calculate the probability that a person actually has ALS given that the test indicates the presence of ALS. (Enter your answer correct to two decimal places)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.62 to 0.68

Sub-Section Number :	7
Sub-Section Id :	64065384567
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 11 Question Id : 640653587436 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

The dataset consists of three distinct observations, say x, y and z, and the sum of their frequencies is 100. Relative frequencies corresponding to x and z are 35% and 45% respectively. Find the cumulative frequency(in %)of y and z.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

65

Maths2

Section Id :	64065339738
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	9
Number of Questions to be attempted :	9
Section Marks :	25
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384568
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 12 Question Id : 640653587438 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : MATHEMATICS FOR DATA

SCIENCE II (COMPUTER BASED EXAM)"

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CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531959866. ✔ YES

6406531959867. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065384569
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 13 Question Id : 640653587439 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

If A is a 2×3 matrix of rank 1, then what is the nullity of AA^T?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Sub-Section Number :	3
Sub-Section Id :	64065384570
Question Shuffling Allowed :	Yes

Is Section Default? : null

Question Number : 14 Question Id : 640653587440 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following options is/are true?

Options :

6406531959869. ✔ There exists an onto linear transformation $T : \mathbb{R}^3 \to \mathbb{R}^2$.

6406531959870. ✔ There does not exist a one-one linear transformation $T : \mathbb{R}^3 \to \mathbb{R}$.

6406531959871. ✖ There exists a linear transformation $T : \mathbb{R}^3 \to \mathbb{R}^2$ such that $rank(T) = nullity(T)$.

6406531959872. ✖ There does not exist a linear transformation $T : \mathbb{R}^2 \to \mathbb{R}^3$ such that $rank(T) = nullity(T)$.

Question Number : 15 Question Id : 640653587454 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the vector space $V = \left\{ \begin{pmatrix} a & b \\ c & a \end{pmatrix} \mid c = a + b, a, b, c \in \mathbb{R} \right\}$ and $T : V \to \mathbb{R}^4$ defined by $T(A) = (a, b, c, a + b - c)$.

Choose the correct option(s).

Options :

6406531959892. ✖ T is onto but not one-one

6406531959893. ✔ T is one-one but not onto.

6406531959894. ✖ Nullspace of T is a 2 dimensional subspace of V.

6406531959895. ✔ Range of T is a 2 dimensional subspace of $\mathbb{R}^4$.

Question Number : 16 Question Id : 640653587455 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let A be a 3×3 rotation matrix. Choose the correct option(s).

Options :

6406531959896. ✔ The rows of A are orthogonal.

6406531959897. ✔ A is an orthogonal matrix.

6406531959898. ✖ The columns of A are not orthonormal.

6406531959899. ✖ $\det(A) = 0$.

Sub-Section Number :	4
Sub-Section Id :	64065384571
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 17 Question Id : 640653587450 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

An inner product on a vector space V is a function $\langle \cdot, \cdot \rangle : V \times V \to \mathbb{R}$ satisfying the following conditions:

Condition 1: $\langle v, v \rangle > 0$ for all $v \in V \setminus \{0\}$; $\langle v, v \rangle = 0$ if and only if $v = 0$.

Condition 2: $\langle v_1 + v_2, v_3 \rangle = \langle v_1, v_3 \rangle + \langle v_2, v_3 \rangle$, $\forall v_1, v_2, v_3 \in V$.

Condition 3: $\langle v_1, v_2 \rangle = \langle v_2, v_1 \rangle$, $\forall v_1, v_2 \in V$.

Condition 4: $\langle cv_1, v_2 \rangle = c\langle v_1, v_2 \rangle$, $\forall v_1, v_2 \in V$.

Let $V = \mathbb{R}^2$ and consider the function defined as:

$$\langle \cdot, \cdot \rangle : V \times V \to \mathbb{R}$$
$$\langle (x_1, x_2), (y_1, y_2) \rangle = x_1 y_1 - x_2 y_1 - x_2 y_2.$$

Which of the following is/are satisfied by the above function?

Options :

6406531959886. ✖ Condition 1 is satisfied.

6406531959887. ✔ Condition 2 is satisfied.

6406531959888. ✖ Condition 3 is satisfied.

6406531959889. ✔ Condition 4 is satisfied.

Sub-Section Number :	5
Sub-Section Id :	64065384572
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653587441 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (18 to 22)

Question Label : Comprehension

Let V_1 denote the vector space of solutions of $AX = 0$, where $A = \begin{pmatrix} 2 & 1 & 4 \\ -1 & 1 & 0 \\ 1 & 2 & 4 \end{pmatrix}$ and $X = \begin{pmatrix} x_1 \\ x_2 \\ x_3 \end{pmatrix}$. Let V_2 denote the vector space of solutions of the system $BY = 0$, where $B = \begin{pmatrix} 1 & 1 & 1 \\ -1 & 0 & 1 \\ 1 & 2 & 3 \end{pmatrix}$ and $Y = \begin{pmatrix} y_1 \\ y_2 \\ y_3 \end{pmatrix}$. Answer the given subquestions.

Sub questions

Question Number : 18 Question Id : 640653587442 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

What is the nullity of *A*?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 19 Question Id : 640653587443 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

What is the rank of *B*?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 20 Question Id : 640653587444 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following forms a basis β for V_1?

Options :

6406531959875. ✖ $\{(1,5,2)\}$

6406531959876. ✔ $\{(-\frac{4}{3},-\frac{4}{3},1)\}$

6406531959877. ✔ $\{(\frac{1}{5},1,\frac{2}{5})\}$

6406531959878. ✖ $\{(-4,-4,3)\}$

Question Number : 21 Question Id : 640653587445 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Define a linear transformation
$T : V_2 \to \mathbb{R}^2$ by $T(x, y, z) = (x, x + y + z)$.
What is the rank of T?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 22 Question Id : 640653587446 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

Let $S : V_1 \to V_2$ be a linear transformation. If $m \times n$ is the order of the matrix D of the linear transformation S with respect to some ordered basis α_1 for V_1 and an ordered basis α_2 for V_2, what is $2m - 3n$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-1

Sub-Section Number :	6
Sub-Section Id :	64065384573
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653587447 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (23 to 24)

Question Label : Comprehension

Let $T : \mathbb{R}^3 \to \mathbb{R}^3$ be the linear transformation defined by
$T(x, y, z) = (x + y + z, x - y - z, x)$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 23 Question Id : 640653587448 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

If $A = \begin{pmatrix} a & b & c \\ d & e & f \\ g & h & i \end{pmatrix}$ denotes the matrix of T
with respect to $\{(1, 1, 1), (1, 1, 0), (1, 0, 0)\}$
for domain and co-domain, then what is
$2b + 2e + 2h$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 24 Question Id : 640653587449 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let B denote the matrix of T with respect to the standard ordered basis for both domain and co-domain. Choose the correct option(s).

Options :

6406531959882. ✔ A is similar to B.

6406531959883. ✖ A is not similar to B.

6406531959884. ✔ $\det(A) = \det(B) = 0$.

6406531959885. ✖ $\det(A) = \det(B) = 2$.

Question Id : 640653587451 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (25 to 26)

Question Label : Comprehension

Let W be the subspace of $\mathbb{R}^4$ with the standard inner product, spanned by the ordered set $\beta = \{(1,-1,0,0),(0,1,1,0)\}$. Let $\{v_1, v_2\}$ denote the orthonormal basis of W obtained by applying the Gram-Schmidt process on β.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 25 Question Id : 640653587452 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

Let $P_W : \mathbb{R}^4 \to W$ denote the projection map. What is the nullity of P_W?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 26 Question Id : 640653587453 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

If $P_W(0, 1, 0, 1) = (a, b, c, d)$, what is $3(a + b + c + d)$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Statistics2

Section Id :	64065339739
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory

Number of Questions :	12
Number of Questions to be attempted :	12
Section Marks :	40
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384574
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 27 Question Id : 640653587456 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

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CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531959900. ✔ YES

6406531959901. ✖ NO

Question Number : 28 Question Id : 640653587457 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

Discrete random variables:

Distribution	PMF ($f_X(k)$)	CDF ($F_X(x)$)	$E[X]$	$\mathrm{Var}(X)$
Uniform(A) $A=\{a,a+1,\ldots,b\}$	$\frac{1}{n}, \quad x=k$ $n=b-a+1$ $k=a,a+1,\ldots,b$	$\begin{cases}0 & x<0\\ \frac{k-a+1}{n} & k\le x<k+1\\ & k=a,a+1,\ldots,b-1,b\\ 1 & x\ge n\end{cases}$	$\frac{a+b}{2}$	$\frac{n^2-1}{12}$
Bernoulli(p)	$\begin{cases}p & x=1\\ 1-p & x=0\end{cases}$	$\begin{cases}0 & x<0\\ 1-p & 0\le x<1\\ 1 & x\ge 1\end{cases}$	p	$p(1-p)$
Binomial(n,p)	${}^nC_k p^k(1-p)^{n-k}$, $k=0,1,\ldots,n$	$\begin{cases}0 & x<0\\ \sum_{i=0}^{k} {}^nC_i p^i(1-p)^{n-i} & k\le x<k+1\\ & k=0,1,\ldots,n\\ 1 & x\ge n\end{cases}$	np	$np(1-p)$
Geometric(p)	$(1-p)^{k-1}p$, $k=1,\ldots,\infty$	$\begin{cases}0 & x<0\\ 1-(1-p)^k & k\le x<k+1\\ & k=1,\ldots,\infty\end{cases}$	$\frac{1}{p}$	$\frac{1-p}{p^2}$
Poisson(λ)	$\frac{e^{-\lambda}\lambda^k}{k!}$, $k=0,1,\ldots,\infty$	$\begin{cases}0 & x<0\\ e^{-\lambda}\sum_{i=0}^{k}\frac{\lambda^i}{i!} & k\le x<k+1\\ & k=0,1,\ldots,\infty\end{cases}$	λ	λ

Continuous random variables:

Distribution	PDF ($f_X(k)$)	CDF ($F_X(x)$)	$E[X]$	$\mathrm{Var}(X)$
Uniform$[a,b]$	$\frac{1}{b-a}, a\le x\le b$	$\begin{cases}0 & x\le a\\ \frac{x-a}{b-a} & a<x<b\\ 1 & x\ge b\end{cases}$	$\frac{a+b}{2}$	$\frac{(b-a)^2}{12}$
Exp(λ)	$\lambda e^{-\lambda x}, x>0$	$\begin{cases}0 & x\le 0\\ 1-e^{-\lambda x} & x>0\end{cases}$	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$
Normal(μ,σ^2)	$\frac{1}{\sigma\sqrt{2\pi}}\exp\left(\frac{-(x-\mu)^2}{2\sigma^2}\right)$, $-\infty<x<\infty$	No closed form	μ	σ^2
Gamma(α,β)	$\frac{\beta^\alpha}{\Gamma(\alpha)}x^{\alpha-1}e^{-\beta x}, x>0$		$\frac{\alpha}{\beta}$	$\frac{\alpha}{\beta^2}$
Beta(α,β)	$\frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)}x^{\alpha-1}(1-x)^{\beta-1}$ $0<x<1$		$\frac{\alpha}{\alpha+\beta}$	$\frac{\alpha\beta}{(\alpha+\beta)^2(\alpha+\beta+1)}$

1. Markov's inequality: Let X be a discrete random variable taking non-negative values with a finite mean μ. Then,

$$P(X \geq c) \leq \frac{\mu}{c}$$

2. Chebyshev's inequality: Let X be a discrete random variable with a finite mean μ and a finite variance σ^2. Then,

$$P(|X - \mu| \geq k\sigma) \leq \frac{1}{k^2}$$

3. Weak Law of Large numbers: Let $X_1, X_2, \ldots, X_n \sim$ iid X with $E[X] = \mu, \text{Var}(X) = \sigma^2$.

Define sample mean $\overline{X} = \frac{X_1 + X_2 + \ldots + X_n}{n}$. Then,

$$P(|\overline{X} - \mu| > \delta) \leq \frac{\sigma^2}{n\delta^2}$$

4. Using CLT to approximate probability: Let $X_1, X_2, \ldots, X_n \sim$ iid X with $E[X] = \mu, \text{Var}(X) = \sigma^2$.

Define $Y = X_1 + X_2 + \ldots + X_n$. Then,

$$\frac{Y - n\mu}{\sqrt{n}\sigma} \approx \text{Normal}(0, 1).$$

Useful data:

1. Use the following values of F_Z if required:
   $F_Z(1.40) = 0.9192, F_Z(1.41) = 0.9207, F_Z(1.42) = 0.9222$
2. $\int x^n dx = \frac{x^{n+1}}{n+1}$.

Options :

6406531959902. ✔ Useful Data has been mentioned above

6406531959903. ✖ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number :	2
Sub-Section Id :	64065384575
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 29 Question Id : 640653587458 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Let $X, Y, Z \sim$ i.i.d. Geometric $\left(\frac{1}{2}\right)$. Define a new random variable $U = \min(X, Y, Z)$.

What is the value of $\frac{1}{P(U \geq 3)}$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

64

Sub-Section Number :	3
Sub-Section Id :	64065384576
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 30 Question Id : 640653587459 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Suppose $X \sim$ Bernoulli(0.4) and $(Y|X = x) \sim$ Uniform$[x - 1, x + 1]$. Find the density of Y.

Options :

$$f_Y(y) = \begin{cases} \frac{1}{3}, & -1 \leq y \leq 2, \\ 0, & \text{otherwise.} \end{cases}$$

6406531959905. ✖

6406531959906. ✔

$$f_Y(y) = \begin{cases} 0.3, & -1 \le y < 0, \\ 0.5, & 0 \le y < 1, \\ 0.2, & 1 \le y < 2, \\ 0, & \text{otherwise.} \end{cases}$$

6406531959907. ✖

$$f_Y(y) = \begin{cases} 0.2, & -1 \le y < 0, \\ 0.5, & 0 \le y < 1, \\ 0.3, & 1 \le y < 2, \\ 0, & \text{otherwise.} \end{cases}$$

6406531959908. ✖

$$f_Y(y) = \begin{cases} 0.5, & -1 \le y \le 1, \\ 0, & \text{otherwise.} \end{cases}$$

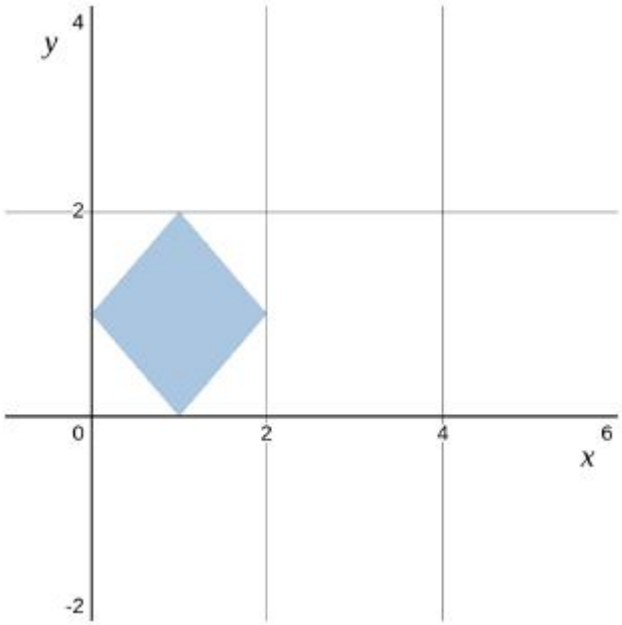
Question Number : 31 Question Id : 640653587460 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

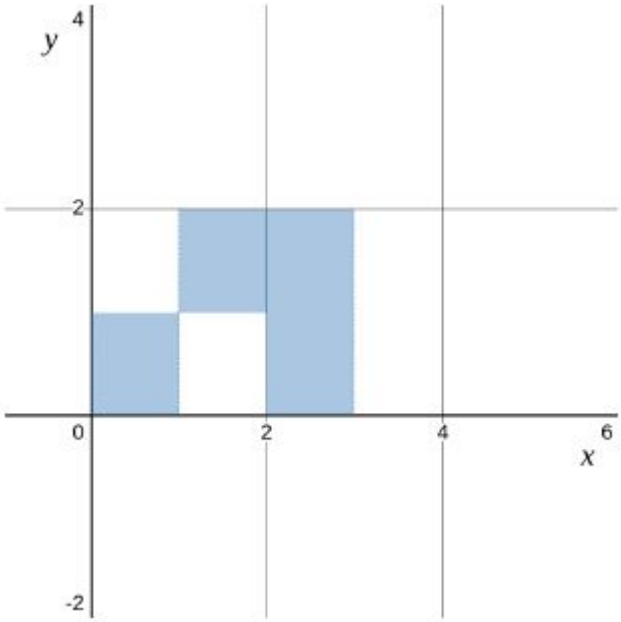
Question Label : Multiple Choice Question

Let $(X, Y) \sim \text{Uniform}(D)$. Which of the following may represent a region D such that X and Y are independent?

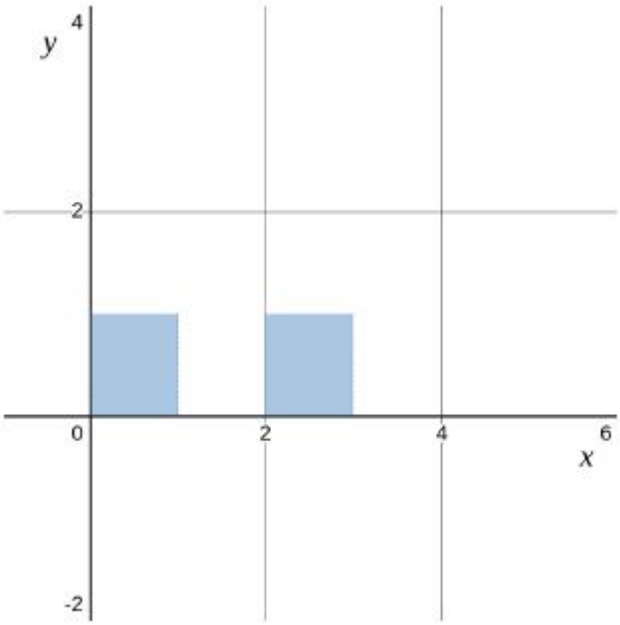
Options :



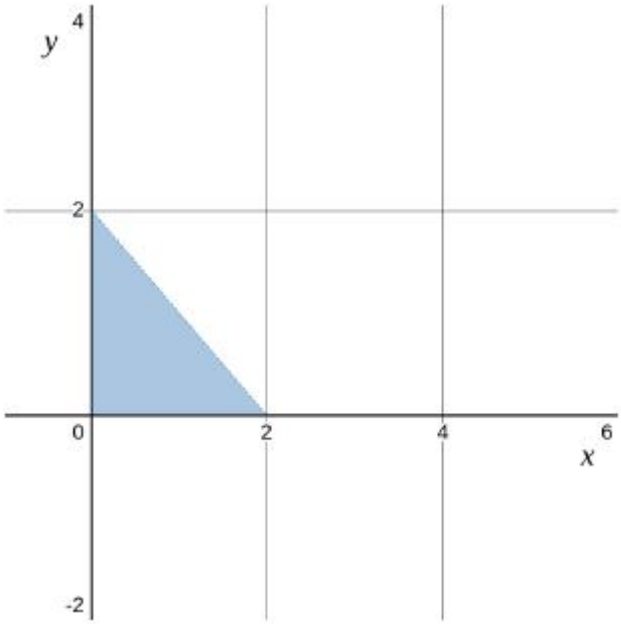
6406531959909. ✖



6406531959910. ✖



6406531959911. ✔



6406531959912. ✖

Question Number : 32 Question Id : 640653587462 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Suppose X is a discrete random variable and has moment generating function

$$M_X(\lambda) = \frac{1}{7} + \frac{3}{7}e^{2\lambda} + \frac{2}{7}e^{4\lambda} + \frac{1}{7}e^{6\lambda}.$$

What is the PMF of X?

Options :

x	1	2	4	6
$f_X(x)$	1/7	3/7	2/7	1/7

6406531959917. ✖

x	0	2	4	6
$f_X(x)$	1/7	3/7	2/7	1/7

6406531959918. ✔

6406531959919. ✖

x	0	2	4	6
$f_X(x)$	1/7	3/7	1/7	2/7

6406531959920. ✖

x	1	2	4	6
$f_X(x)$	1/7	3/7	1/7	2/7

Sub-Section Number : 4

Sub-Section Id : 64065384577

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 33 Question Id : 640653587461 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Suppose $X_1, X_2, X_3, X_4 \sim$ i.i.d X such that $E[X] = 10$ and $\text{Var}[X] = 4$. Define a random variable $S = 3X_1 - 2X_2 - X_3 + 2X_4$. Choose the correct option(s) from below:

Options :

6406531959913. ✔ $E[S] = 20$

6406531959914. ✖ $\text{Var}[S] = 32$

6406531959915. ✔ $\text{Var}[S] = 72$

6406531959916. ✖ $E[S] = 180$

Sub-Section Number : 5

Sub-Section Id : 64065384578

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653587463 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (34 to 35)

Question Label : Comprehension

A weather forecaster wants to predict the rainfall in a local area in the month of July. Suppose a random variable X represents the amount of rainfall (in inches) in the local area and the PDF of X is

$$f(x) = \begin{cases} ke^{-x/20}, & 0 < x < \infty, \\ 0, & \text{otherwise.} \end{cases}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 34 Question Id : 640653587464 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Find the value of k such that $f(x)$ is a valid PDF.
Hint: $\int e^{ax}\,dx = \dfrac{e^{ax}}{a}$

Options :

6406531959921. ✖ 20

6406531959922. ✔ $\frac{1}{20}$

6406531959923. ✖ 1

6406531959924. ✖ Cannot be determined.

Question Number : 35 Question Id : 640653587465 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What is the probability that rainfall in the local area will be at most 10 inches? (Enter the answer correct to 3 decimal places)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.388 to 0.398

Question Id : 640653587466 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (36 to 37)

Question Label : Comprehension

Let $(X, Y) \sim \text{Uniform}(D)$, where $D := [1, 2] \times [1, 3]$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 36 Question Id : 640653587467 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Find the joint density function $f_{XY}(x, y)$.

Options :

6406531959926. ✖

$$f_{XY}(x,y) = \begin{cases} 2, & 1 < x < 2, 1 < y < 3, \\ 0, & \text{otherwise.} \end{cases}$$

6406531959927. ✔

$$f_{XY}(x,y) = \begin{cases} \frac{1}{2}, & 1 < x < 2, 1 < y < 3, \\ 0, & \text{otherwise.} \end{cases}$$

6406531959928. ✖

$$f_{XY}(x,y) = \begin{cases} 6, & 1 < x < 2, 1 < y < 3, \\ 0, & \text{otherwise.} \end{cases}$$

6406531959929. ✖

$$f_{XY}(x,y) = \begin{cases} \frac{1}{6}, & 1 < x < 2, 1 < y < 3, \\ 0, & \text{otherwise.} \end{cases}$$

Question Number : 37 Question Id : 640653587468 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Find $P(|X - Y| < 1)$. Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.75

Question Id : 640653587469 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (38 to 39)

Question Label : Comprehension

Let a random variable X represent the temperature change and let Y represent the pressure change during a chemical process. The joint density for X and Y is given by

$$f_{XY}(x,y) = \begin{cases} cxy, & 0 < x < 2, 0 < y < 2, \\ 0, & \text{otherwise.} \end{cases}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 38 Question Id : 640653587470 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the value of *c*. Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.25

Question Number : 39 Question Id : 640653587471 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What is the probability that the pressure change during the chemical process is more than 0.5, given that the temperature change is equal to 0.5? Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.92 to 0.96

Question Id : 640653587472 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (40 to 41)

Question Label : Comprehension

Let $X_1, X_2, \ldots, X_{20} \sim$ i.i.d. Uniform$[8, 12]$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 40 Question Id : 640653587473 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Find the expected value of
$Y = \sum_{i=1}^{10} X_i + \sum_{i=11}^{20} 2X_i$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

300

Question Number : 41 Question Id : 640653587474 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Using Chebyshev's inequality, find an upper bound for $P(|\overline{X} - 10| > 2)$, where $\overline{X} = \frac{X_1 + X_2 + \ldots + X_{20}}{20}$ is the sample mean. Enter the answer correct to 3 decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.014 to 0.02

Question Id : 640653587475 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (42 to 43)

Question Label : Comprehension

In a large city, it is expected that 10% of children have defective eye-sight. Suppose a random sample of 300 children is selected from the city.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 42 Question Id : 640653587476 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Let a random variable *X* denote the total number of children who have normal eye-sight in the selected sample. Which of the following is true?

Options :

6406531959935. ✖ $X \sim \text{Binomial}(300, 0.1)$

6406531959936. ✔ $X \sim \text{Binomial}(300, 0.9)$

6406531959937. ✖ $X \sim \text{Binomial}(300, 0.5)$

6406531959938. ✖ $X \sim \text{Binomial}(300, 0.01)$

Question Number : 43 Question Id : 640653587477 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Using the Central Limit Theorem, find the approximate probability that in a random sample of 300 selected children at least 30 will have defective eye-sight. Enter the answer correct to 1 decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.5

CT

Section Id :	64065339740
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	14
Number of Questions to be attempted :	14
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384579
Question Shuffling Allowed :	No

Is Section Default? : null

Question Number : 44 Question Id : 640653587478 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : COMPUTATIONAL THINKING (COMPUTER BASED EXAM)"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?

CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531959940. ✔ YES

6406531959941. ✖ NO

Sub-Section Number : 2

Sub-Section Id : 64065384580

Question Shuffling Allowed : No

Is Section Default? : null

Question Number : 45 Question Id : 640653587479 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

Scores

RowNo	Name	Gender	DateOfBirth	CityTown	Mathematics	Physics	Chemistry	Total
0	Bhuvanesh	M	7 Nov	Erode	68	64	78	210
■ ■ ■								
29	Naveen	M	13 Oct	Vellore	72	66	81	219

Words

RowNo	Word	PartOfSpeech	LetterCount
0	It	Pronoun	2
■ ■ ■			
64	cane.	Noun	4

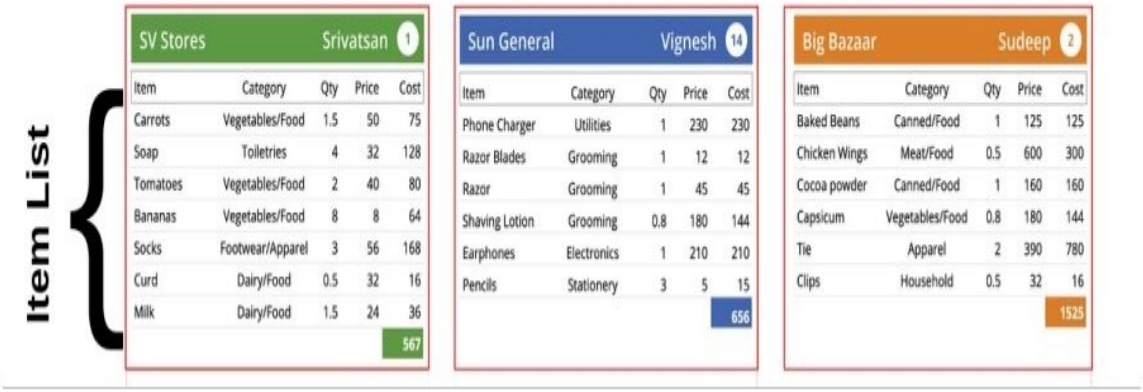
Library

RowNo	Name	Author	Genre	Language	Pages	Publisher	Year
0	Igniting Minds	Kalam	Nonfiction	English	178	Penguin	2002
■ ■ ■							
29	Malgudi Days	Narayan	Fiction	English	150	Indian Thought	1943

Olympics

Seq. No.	Name	Gender	Nationality	Host country	Year	Sport	Medal
0	Karnam Malleswari	F	Indian	Australia	2000	Weightlifting	Bronze
			- - -				
49	Michael Phelps	M	American	China	2008	Swimming	Gold

Three sample cards out of 30 for Shopping Bills dataset



Options :

6406531959942. ✔ Useful Data has been mentioned above.

6406531959943. ✖ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 3

Sub-Section Id : 64065384581

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 46 Question Id : 640653587480 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

What will be the value of **mList** be at the end of the given pseudocode ?

```
L = [[1, 100, 'A'], [2, 99, 'B'], [3, 98, 'C'], [4, 97, 'D'], [5, 96, 'E']]
mList = [ ]
foreach element in L{
    z = DoSomething(element)
    mList = mList ++ [z]
}

Procedure DoSomething(X)
    a = rest(X)
    return(first(a))
End DoSomething
```

Options :

6406531959944. ✖

```
[[1, 100, 'A'], [2, 99, 'B'], [3, 98, 'C'], [4, 97, 'D'], [5, 96, 'E']]
```

6406531959945. ✖

```
[1, 100, 'A', 2, 99, 'B', 3, 98, 'C', 4, 97, 'D', 5, 96, 'E']
```

6406531959946. ✖

```
[ 'A',  'B', 'C',  'D',  'E' ]
```

6406531959947. ✔

```
[ 100, 99, 98, 97, 96 ]
```

Sub-Section Number :	4
Sub-Section Id :	64065384582
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 47 Question Id : 640653587481 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

The following pseudocode is executed using the "Words" dataset and **explode**(**X**) returns the list of letters in the word **X**. For example **explode**("sweet") will return ['s', 'w', 'e', 'e', 't']. What will **count** represent at the end of the execution?

```
count = 0, letterList = []
while(Table 1 has more rows){
    Read the first row X in Table 1
    letterList = explode(X.Word)
    count = count + checkSomething(letterList)
    Move X to Table 2
}

Procedure checkSomething(L)
    lastLetter = first(L)
    restList = rest(L)
    foreach letter in restList{
        if(letter == lastLetter){
            return(1)
        }
        lastLetter = letter
    }
    return(0)
End checkSomething
```

Options :

6406531959948. ✖ Number of words with at most two consecutive occurrences of the same letter

6406531959949. ✔ Number of words with at least two consecutive occurrences of the same letter

6406531959950. ✖ Number of words with exactly two consecutive occurrences of the same letter

6406531959951. ✖ Number of words with no consecutive occurrences of the same letter

Question Number : 48 Question Id : 640653587488 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

The following pseudocode is executed using the "Words" dataset. What will **count** represent at the end of execution?

```
A = 10000, count = 0
L = []
while(Table 1 has more rows){
    Read the first row X in Table 1
    L = addSomething(L, X)
    if(X.Word ends with a full stop){
        if(length(L) == A){
            count = count + 1
        }
        if(length(L) < A){
            A = length(L)
            count = 1
        }
        L = []
    }
    Move X to Table 2
}

Procedure addSomething(M, Y)
    i = 1
    while(i <= Y.LetterCount){
        p = ith letter of Y.Word
        if(not (member(M, p))){
            M = M ++ [p]
        }
        i = i + 1
    }
    return(M)
End addSomething
```

Options :

6406531959981. ✖ Number of sentences which have minimum number of letters

6406531959982. ✖ Number of sentences which have minimum number of words

6406531959983. ✔ Number of sentences which have minimum number of distinct letters

6406531959984. ✖ Number of sentences which have minimum number of distinct words

Sub-Section Number : 5

Sub-Section Id : 64065384583

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 49 Question Id : 640653587482 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

The following pseudocode is executed using the "Olympics" dataset. The template of "Olympics" dataset is attached in the beginnning of this paper. At the end of the execution, **medalDict** stores a dictionary with player's name as key mapped to another dictionary. The nested dictionary stores the medal type as key mapped to a list of years in which the player won that medal. For example if player Xyz has won a silver medal in 2006, a gold medal in 2008, and another silver medal in 2011, then

medalDict = {"Xyz" : {"Silver" : [2006, 2011], "Gold" : [2008]}, ... }

Assume that every player has a distinct name. But the pseudocode may have mistakes. Identify all such mistakes (if any). Assume that all statements not listed in the options below are free of errors. It is a Multiple Select Question (MSQ).

```
1  medalDict = {}
2  while(Table 1 has more rows){
3      Read the first row X in Table 1
4      if(isKey(medalDict, X.Name)){
5          if(not(iskey(medalDict[X.Name], X.Medal))){
6              medalDict[X.Name][X.Medal] = medalDict[X.Name][X.Medal] ++
   [X.Year]
7          }
8          else{
9              medalDict[X.Name][X.Medal] = [X.Year]
10         }
11     }
12     else{
13         medalDict[X.Name][X.Medal] = [X.Year]
14     }
15     Move X to Table 2
16 }
```

Options :

6406531959952. ✖ Line 1: Incorrect initialization of **medalDict**

6406531959953. ✔

Line 6: The current statement should be replaced by

```
1 medalDict[X.Name][X.Medal] = [X.Year]
```

Line 9: The current statement should be replaced by

6406531959954. ✔

```
1 medalDict[X.Name][X.Medal] = medalDict[X.Name][X.Medal] ++ [X.Year]
```

Line 13: The current statement should be replaced by

6406531959955. ✔

```
1 medalDict[X.Name] = {X.Medal : [X.Year]}
```

6406531959956. ✖ No Mistakes

Question Number : 50 Question Id : 640653587487 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let **LA** be a sorted list of integers in ascending order, and **X** be an integer. The procedure **insert(LA, X)** returns a list **LB** where **X** is added to **LA** such that the **LB** remains sorted. But the procedure may have mistakes. Identify all such mistakes (if any). Assume that all statements not listed in the options below are free of errors.

It is a Multiple Select Question (MSQ).

```
1  Procedure insert(LA, X)
2      LB = {}
3      flag = True
4      foreach A in LA{
5          if(flag){
6              if(X <= A){
7                  LB = LB ++ [A]
8                  flag = False
9              }
10         }
11         LB = LB ++ [A]
12     }
13     if(not flag){
14         LB = LB ++ [X]
15     }
16     return(LB)
17 End insert
```

Options :

6406531959975. ✔ Line 2: **LB** should be initiated as an empty list

6406531959976. ✖ Line 5: Conditional expression should use "not" operator

6406531959977. ✔ Line 7: **X** should be appended to the list **LB**

6406531959978. ✖ Line 11: **X** should be appended to the list **LB**

6406531959979. ✔ Line 13: Incorrect Conditional expression

6406531959980. ✖ Line 16: **LA** should be returned

Sub-Section Number :	6
Sub-Section Id :	64065384584
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 640653587483 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

The following pseudocode is executed using the "Olympics" dataset. The template of "Olympics" dataset is attached in the beginnning of this paper. What will **B** represent at the end of execution?

```
D = { }
while (Table 1 has more rows) {
    Read the first row X in Table 1
    D = updateDict(D, X.Sport)
    Move X to Table 2
}
B = findAValue(D)

Procedure updateDict(D, a)
    if(isKey(D, a)) {
        D[a] = D[a] + 1
    }
    else {
        D[a] = 1
    }
    return (D)
End updateDict

Procedure findAValue(D)
    v = 0
    foreach a in keys(D) {
        if(D[a] > v) {
            v = D[a]
        }
    }
    return (v)
End findAValue
```

Options :

6406531959957. ✖ Number of players in each Sport

6406531959958. ✖ Total count of players in the Olympics dataset

6406531959959. ✔ Number of the players in the most frequent sport

6406531959960. ✖ Number of frequent sports

Sub-Section Number : 7

Sub-Section Id : 64065384585

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 52 Question Id : 640653587484 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

The following pseudocode is executed on the "Words" dataset. What will **Count1** represent at the end of the execution?

```
D = {}
A = 0, Total = 0, Count = 0
while(Table 1 has more rows){
    Read the first row X in Table 1
    Total = Total + X.LetterCount
    Count = Count + 1
    if(isKey(D, X.Word)){
        D[X.Word]["Freq"] = D[X.Word]["Freq"] + 1
    }
    else{
        D[X.Word] = {}
        D[X.Word]["Freq"] = 1
        D[X.Word]["LC"] = X.LetterCount
    }
    if(D[X.Word]["Freq"] > A){
        A = D[X.Word]["Freq"]
    }
    Move row X to Table 2
}
Avg = Total / Count
Count1 = 0, Count2 = 0
foreach k in Keys(D){
    if(D[k]["Freq"] == A){
        if(D[k]["LC"] > Avg){
            Count1 = Count1 + 1
        }
        else{
            Count2 = Count2 + 1
        }
    }
}
```

Options :

6406531959961. ✖ Number of maximum frequency words with letter count less than average letter count

6406531959962. ✔ Number of maximum frequency words with letter count greater than average letter count

6406531959963. ✖ Number of minimum frequency words with letter count less than average letter count

6406531959964. ✖ Number of minimum frequency words with letter count greater than average letter count

Sub-Section Number :	8
Sub-Section Id :	64065384586
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 53 Question Id : 640653587485 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

We have a non-empty list, **Location** that stores the city name in each card from the "Scores" dataset, sorted in alphabetical order. This results in many duplicates. The following procedure attempts to extract the unique list of cities, while preserving the sorted order. The pseudocode may have mistakes. Identify all such mistakes (if any). It is a Multiple Select Question.

```
1  uniqueList = []
2  uniqueList = uniqueList ++ [first(Location)]
3  prev = last(Location)
4  foreach  x in rest(Location){
5      if(x != prev){
6          uniqueList = uniqueList ++ x
7      }
8      prev = x
9  }
```

Options :

6406531959965. ✔ Error in line 3

6406531959966. ✖ Error in line 4

6406531959967. ✖ Error in line 5

6406531959968. ✔ Error in line 6

6406531959969. ✖ Error in line 8

6406531959970. ✖ The pseudocode is error free

Question Number : 54 Question Id : 640653587486 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Alice and Bob are two friends. They decide to play a game of toss, in which each of them holds a coin. They toss their coins alternately for a fixed number of times, and the results of the series of tosses are recorded in **alist** (which is a list of lists). Each entry in the inner list results the outcome of one pair of coin tosses of the form **[i, j]** where **i** stores the outcome for Alice and **j** stores the outcome for Bob.

For example, **alist** = [['H', 'T'], ['T', 'T'], ['T', 'H']] implies that at the first trial Alice has a outcome 'H' and Bob has an outcome 'T', at the second trial Alice has a outcome 'T' and Bob has a outcome 'T', and at third trial Alice has a outcome 'T' and Bob has a outcome 'H'.

To determine the winner, a procedure **findWinner(x)** is called that accepts **aList** as a parameter and returns **c**. If **c** = 0, then Bob is the winner; if **c** = 1, then Alice is the winner; and **c** = 2 if it is a draw. Which of the following procedure(s) correctly identify/identifies the winner? It is a Multiple Select Question (MSQ).

Options :

6406531959971. ✖

```
Procedure findWinner(alist)
    alice_sum = 0
    bob_sum = 0
    c = 2
    foreach toss in alist{
        if(first(toss)== 'H'){
            alice_sum = alice_sum + 1
        }
        else{
            bob_sum = bob_sum + 1
        }
    }
    if(bob_sum < alice_sum){
        c = 1
    }
    else{
        c = 0
    }
    return(c)
end findWinner
```

```
Procedure findWinner(alist)
    alice_sum = 0
    bob_sum = 0
    c = 2
    foreach toss in alist{
        if(first(toss)== 'H'){
            alice_sum = alice_sum + 1
        }
        if(last(toss)== 'H'){
            bob_sum = bob_sum + 1
        }
    }
    if(bob_sum > alice_sum){
        c = 0
    }
    if(bob_sum < alice_sum){
        c = 1
    }
    return(c)
end findWinner
```

6406531959972. ✔

6406531959973. ✖

```
Procedure findWinner(alist)
    alice_sum = 0
    bob_sum = 0
    c = -1
    foreach toss in alist{
        if(first(toss)== 'H'){
            alice_sum = alice_sum + 1
        }
        if(last(toss)== 'H'){
            bob_sum = bob_sum + 1
        }
    }
    if(bob_sum > alice_sum){
        c = 0
    }
    if(bob_sum < alice_sum){
        c = 1
    }
    else{
        c = 2
    }
    return(c)
end findWinner
```

```
Procedure findWinner(alist)
    alice_sum = 0
    bob_sum = 0
    c = -1
    foreach toss in alist{
        if(first(toss)== 'H'){
            alice_sum = alice_sum + 1
        }
        else{
            bob_sum = bob_sum + 1
        }
    }
    if(bob_sum < alice_sum){
        c = 0
    }
    if(bob_sum > alice_sum){
        c = 1
    }
    else{
        c = 2
    }
    return(c)
end findWinner
```

6406531959974.

Question Number : 55 Question Id : 640653587489 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a dictionary **dict** = { 'A' : [1, 2, 3, 4, 5], 'B' : [6, 7, 8, 9], 'C' : 19 }. The following procedure **DoSomething(X)** is executed on the dictionary **dict**. What does the procedure **DoSomething(X)** return?

It is a Multiple Select Question.

```
procedure DoSomething(dict)
  foreach i in keys(dict){
    return(dict[i])
  }
end DoSomething
```

Options :

6406531959985. ✔ The procedure may return [6,7,8,9]

6406531959986. ✖ The procedure always returns [1,2,3,4,5] since the key A comes first alphabetically

6406531959987. ✖ The procedure may return [1,2,3,5]

6406531959988. ✔ The procedure may return 19

Sub-Section Number :	9
Sub-Section Id :	64065384587
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 56 Question Id : 640653587490 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

The following pseudocode is executed using the "Library" dataset. The template of "Library" dataset is attached in the beginnning of this paper. **p** is a list of authors who have written books in English. **dict[X]** stores the number of books having at least 100 pages and written on or before 2000 by author **X**. Choose the correct code fragment(s) to complete the pseudocode.

It is a Multiple Select Question (MSQ).

```
dict = { }
foreach author in p{
    dict[author] = 0
}
while(Table 1 has more rows){
    Read the first row X from Table 1
     ********************************
     *        Fill the Code         *
     ********************************
    Move X to Table 2
}
```

Options :

6406531959989. ✔

```
if(isKey(dict, X.Author) and (X.Pages >= 100 and X.Year <= 2000)){
    dict[author] = dict[author] + 1
}
```

6406531959990. ✖

```
if(isKey(dict, X.Author) or (X.Pages >= 100 and X.Year <= 2000)){
    dict[author] = dict[author] + 1
}
```

6406531959991. ✔

```
C = False, D = False
if(isKey(dict, X.Author) and (X.Pages >= 100)){
    C = True
}
if(isKey(dict, X.Author) and (X.Year <= 2000)){
    D = True
}
if(C and D){
    dict[author] = dict[author] + 1
}
```

6406531959992. ✖

```
C = False, D = False
if(isKey(dict, X.Author) and (X.Pages >= 100)){
    C = True
}
if(isKey(dict, X.Author) and (X.Year <= 2000)){
    D = True
}
if(C or D){
    dict[author] = dict[author] + 1
}
```

Sub-Section Number :	10
Sub-Section Id :	64065384588
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653587491 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (57 to 59)

Question Label : Comprehension

The following pseudocode is executed using the "Words" dataset. Answer the subquestions.

```
sList = [ ], wList = [ ], flag = 0, count = 0
while(Table 1 has more rows){
    Read the first row X from Table 1
    if(X.PartOfSpeech == "Adjective"){
        count = count + 1
    }
    wList = wList ++ [X.Word]
    if(X.Word ends with a full stop){
        flag = count
        sList = sList ++ [wList]
        wList = [ ]
        count = 0
    }
    Move row X to Table 2
}
```

Sub questions

Question Number : 57 Question Id : 640653587492 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

What will **flag** represent at the end of each sentence ?

Options :

6406531959993. ✖ Number of words in each sentence

6406531959994. ✔ Number of adjective(s) in each sentence

6406531959995. ✖ Number of non-adjective(s) in each sentence

6406531959996. ✖ Number of adjective(s) that are not repeated in each sentence

Question Number : 58 Question Id : 640653587493 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

wList will contain all words of last sentence of "Words" dataset at the end of execution of given pseudocode.

Options :

6406531959997. ✖ TRUE

6406531959998. ✔ FALSE

Question Number : 59 Question Id : 640653587494 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

The value of **length(sList)** will be same as the number of sentences in the "Words" dataset at the end of execution of given pseudocode.

Options :

6406531959999. ✔ TRUE

6406531960000. ✖ FALSE

DBMS

Section Id :	64065339741
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384589
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 60 Question Id : 640653587495 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : DATABASE MANAGEMENT SYSTEMS (COMPUTER BASED EXAM)"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?

CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531960001. ✔ YES

6406531960002. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065384590
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 61 Question Id : 640653587496 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

The Reserve Bank of India (RBI) maintains a database of financial transactions carried out by various banks across the country. The database contains transaction records of varying magnitudes. The RBI decides to normalize the database to eliminate data redundancy and improve data integrity.

Original database structure:

Transaction$(Transaction\_ID, Bank\_Name, Bank\_Location, Amount, Date)$

The functional dependencies applicable to **Transaction** are:
$F = \{Bank\_Name \rightarrow Bank\_Location,$
$Transaction\_ID \rightarrow Amount, Date\}$

Normalized database structure:

Table 1: **Bank** $(Bank\_Name, Bank\_Location)$

Table 2: **Transaction** $(Transaction\_ID, Bank\_Name, Amount, Date)$

Which of the following normal forms has the RBI achieved by the new normalized database structure?

Options :

6406531960003. ✔ 1NF

6406531960004. ✖ 2NF

6406531960005. ✖ 3NF

6406531960006. ✖ BCNF

Question Number : 62 Question Id : 640653587497 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

The G20 is a global forum that brings together the world's major economies to discuss and cooperate on international economic and financial issues. The organizers of the G20 event have designed a database to store information about the participants, their countries, and the issues discussed.
The original database is
G20Participants (*Participant_ID*, *Participant_Name*, *Participant_Email*, *Participant_Country*, *Country_Leader_Name*, *Country_GDP*, *Issue_Discussed*)

The functional dependencies are:
F = {*Participant_ID* → *Participant_Name*, *Participant_Email*
Participant_Country → *Country_Leader_Name*, *Country_GDP*}

The initial design of the database is as follows:
Table 1:
Participants (*Participant_ID*, *Participant_Name*, *Participant_Email*)

Table 2:
Country (*Participant_Country*, *Country_Leader_Name*, *Country_GDP*, *Issue_Discussed*)

The database designers have identified that this design violates the third normal form (3NF) of database normalization.

Which of the following changes would bring the database design into 3NF?

Options :

6406531960007. ✔ Remove *Issue_Discussed* from **Country** and create a new table for the issues discussed and link it to the **Participants** and **Country** tables using a foreign key.

6406531960008. ✖ Create a new table for the issues discussed and link it to the **Participants** and **Country** tables using a foreign key.

6406531960009. ✖ Split the **Country** table into two tables, one for the issue discusses and the other for their respective countries.

6406531960010. ✖ Remove *Issue_Discussed* and add *Participant_ID* in **Country** table. And create a new table for the issues discussed and link it to the **Participants**.

Question Number : 63 Question Id : 640653587502 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the relational schema $\mathbf{R}(J, K, L, M, N)$
and the set of functional dependencies
$\mathcal{F} = \{$
$J \rightarrow K,$
$JK \rightarrow L,$
$M \rightarrow LJ,$
$MN \rightarrow JK$
$\}$
Which of the following functional dependency sets is
equivalent to the given set of functional dependencies?

Options :

6406531960024. ✖ $\mathcal{F} = \{J \rightarrow K, J \rightarrow L, M \rightarrow K, N \rightarrow K\}$

6406531960025. ✖ $\mathcal{F} = \{J \rightarrow L, M \rightarrow J, M \rightarrow K\}$

6406531960026. ✖ $\mathcal{F} = \{J \rightarrow K, J \rightarrow L, M \rightarrow K, MN \rightarrow K\}$

6406531960027. ✔ $\mathcal{F} = \{J \rightarrow K, J \rightarrow L, M \rightarrow J, MN \rightarrow K\}$

Question Number : 64 Question Id : 640653587505 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the relational schema $\mathbf{Z} = (P, Q, R, S, T, U, V, W, X)$ and has the set of functional dependencies $\mathrm{F} = \{ PQ \rightarrow R, P \rightarrow ST, U \rightarrow VW, Q \rightarrow U, S \rightarrow X \}$.

The relation **Z** is decomposed into three relations Z_1, Z_2, and Z_3 as

$Z_1 = \{ P,Q,R,S,T \}$

$Z_2 = \{ Q,U,V,W \}$

$Z_3 = \{ S, X \}$

This decomposition of Z is :

Options :

6406531960036. ✔ Lossless and dependency preserving

6406531960037. ✖ Lossless and not dependency preserving

6406531960038. ✖ Lossy and dependency preserving

6406531960039. ✖ Lossy and not dependency preserving

Question Number : 65 Question Id : 640653587510 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider a disk having 16 platters, 2 surfaces per platter, 16 tracks per surface, 2048 sectors per track and 512 bytes/sector. Let A denote the minimum number of bits required to access a sector, B denote the number of cylinders required in the disk and C denote the storage capacity of the disk. Find the appropriate triplet for <A, B, C>.

Options :

6406531960053. ✖ <20, 20, 512 MB>

6406531960054. ✖ <16, 20, 512 GB >

6406531960055. ✖ <20, 16, 512 GB>

6406531960056. ✔ <20, 16, 512 MB>

Sub-Section Number : 3

Sub-Section Id : 64065384591

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 66 Question Id : 640653587499 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements is/are true regarding temporal relations?

Options :

6406531960015. ✖ A uni-temporal relation can have only valid time.

6406531960016. ✖ A uni-temporal relation can have only transaction time.

6406531960017. ✔ A uni-temporal relation can have either valid transaction time or transaction time.

6406531960018. ✔ A bi-temporal relation can have both valid transaction time and transaction time.

Question Number : 67 Question Id : 640653587508 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following are correct about a linked list ?

Options :

6406531960045. ✖ Stores data in contiguous memory location always

6406531960046. ✔ Each node contains a *link* to another node

6406531960047. ✖ Allows random access using its index which is fast

6406531960048. ✔ Flexible in size

Sub-Section Number : 4

Sub-Section Id : 64065384592

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 68 Question Id : 640653587500 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

In Python Postgres database connectivity, the 'cursor.fetchmany()' method is used to retrieve data from a table. The method 'cursor.fetchmany()' returns-

Options :

6406531960019. ✖ A dictionary

6406531960020. ✖ A tuple

6406531960021. ✔ List of tuple

6406531960022. ✖ List of dictionary

Sub-Section Number : 5

Sub-Section Id : 64065384593

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 69 Question Id : 640653587501 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Consider an instance of **student** Table in the **school_management** database.

roll_no	name	marks
1	Ram	50
2	Rakesh	65
3	Lily	45
4	Pranav	89
5	Emily	99

Table 1: **student**

After executing the Python code below, it is observed that the new tuple didn't get updated in the table. Check the code and find out the possible error and write it down. Note: Write the code in lowercase and without space. Just mention the command that is missing

```
import psycopg2
def insertrecord(roll,name,marks):
    conn=None
    try:
        conn=psycopg2.connect(database="school_management",
                              user="postgres",
                              password="root",
                              host="127.0.0.1",
                              port="5432")
        cur=conn.cursor() # create a new cursor
        cur.execute(''' insert into student
        values(%s,%s,%s)''',(roll,name,marks))
        #write down the code here
        cur.close()
    except(Exception, psycopg2.DatabaseError) as error:
        print(error)
    finally:
        if conn is not None:
            conn.close()
insertrecord(6,"Pranav",89)
```

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : Yes

Text Areas : PlainText

Possible Answers :

conn.commit()

Sub-Section Number : 6

Sub-Section Id : 64065384594

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 70 Question Id : 640653587503 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a relation **students**$(name, age, marks, house\_name)$. If all students have the same age, no two students have the same marks and two or more students have the same name, then which of the following functional dependency/dependencies hold(s) in the **students** relation?

Options :

6406531960028. ✔ $name \rightarrow age$

6406531960029. ✖ $name \rightarrow marks$

6406531960030. ✔ $marks \rightarrow name$

6406531960031. ✖ $name \rightarrow house\_name$

Sub-Section Number : 7

Sub-Section Id : 64065384595

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 71 Question Id : 640653587504 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the relational schema $R(A,B,C,D,E,F,G,H,I)$ and the set of functional dependencies $F' = \{ A \rightarrow B, AB \rightarrow CD, F \rightarrow GH, AB \rightarrow E \}$ holds on R.
Which of the following are valid and can be logically implied by F' ?

1. $A \rightarrow A$
2. $A \rightarrow BCD$
3. $B \rightarrow C$
4. $AB \rightarrow CDE$
5. $IF \rightarrow IG$
6. $F \rightarrow GI$

Options :

6406531960032. ✖ Only 1 and 6 are valid

6406531960033. ✖ Only 2, 3, 5, and 6 are valid

6406531960034. ✔ Only 1, 2, 4, and 5 are valid

6406531960035. ✖ 1 to 6 all are valid

Question Number : 72 Question Id : 640653587507 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

The following numbers are inserted into an empty binary search tree in the given order.

76, 86, 42, 112, 120, 21, 78, 38, 45, 80, 77, 79

Let X, Y denote the number of nodes in the left and right sub tree of node 86 respectively.
Find the value of $|X - Y|$.

Options :

6406531960041. ✔ 2

6406531960042. ✖ 3

6406531960043. ✖ 4

6406531960044. ✖ 5

Sub-Section Number : 8

Sub-Section Id : 64065384596

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 73 Question Id : 640653587506 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Consider a sequence of pending block references in the given order:

4, 3, 1, 4, 7, 7, 1, 4, 5, 2, 3, 4, 7, 4, 2, 4, 1, 4, 2, 5

The system has a buffer with 4 slots. Assume that initially, the buffer is empty. If the Least Recently Used (LRU) buffer replacement policy is used, then how many misses/page fault will occur while referencing all the requested blocks ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Sub-Section Number : 9

Sub-Section Id : 64065384597

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 74 Question Id : 640653587498 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a relation $\mathbf{R}(A, B, C, D, E)$ with the following multivalued dependencies (MVD):
$A \rightarrow\rightarrow B$
$B \rightarrow\rightarrow D$
Suppose relation R contains the tuples (0, 1, 2, 3, 4) and (0, 5, 6, 7, 8). Which of the following tuple(s) must also be in R such that given MVD satisfied?

Options :

6406531960011. ✖ (0,1,2,7,8)

6406531960012. ✔ (0,5,2,3,4)

6406531960013. ✖ (0,1,6,3,4)

6406531960014. ✔ (0,1,6,3,8)

Question Number : 75 Question Id : 640653587509 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following elements added to a data structure, Y in the given order.

$$120,\ 56,\ 78,\ 109,\ 5,\ 100,\ 80,\ 76,\ 23,\ 90,\ 256,\ 16,\ 25$$

Identify the correct statement(s).

Options :

6406531960049. ✔ If Y = Stack, then Y(top) = 25

6406531960050. ✖ If Y = Queue, then the element to be deleted first is 25

6406531960051. ✔ If Y = Array, the time to search 5, would be linear time.

6406531960052. ✔ If Y = BST, the number of comparisons to search 90, would be 7

PDSA

Section Id :	64065339742
Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	17
Number of Questions to be attempted :	17
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384598
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 76 Question Id : 640653587511 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : PROGRAMMING, DATA STRUCTURES AND ALGORITHMS USING PYTHON (COMPUTER BASED EXAM)"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?

CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531960057. ✔ YES

6406531960058. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065384599
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 77 Question Id : 640653587512 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following strategy to solve the single source shortest path problem with positive integer edge weights from a source vertex s:

Replace each edge with weight w by w edges of weight 1 connected by new intermediate nodes. Run BFS(s) on the modified graph to find the shortest path to each of the original vertices in the graph.

Which of the following statement is true?

Options :

6406531960059. ✖ This strategy will not solve the problem correctly.

6406531960060. ✖ This strategy will only work if the graph is acyclic.

6406531960061. ✖ This strategy will solve the problem correctly and is as efficient as Dijkstra's algorithm.

6406531960062. ✔ This strategy will solve the problem correctly, but is not as efficient as Dijkstra's algorithm.

Sub-Section Number : 3

Sub-Section Id : 64065384600

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 78 Question Id : 640653587513 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements is **true** about Dijkstra's algorithm to find the shortest path?

Options :

6406531960063. ✔ Dijkstra's algorithm may fail for graphs with negative weights because it does not reconsider a node once it marks it as visited, even if a shorter path exists than the previous one.

6406531960064. ✖ The shortest path between two vertices *u* and *v* in a graph *G* always remains unaltered when all the edges of *G* are incremented by an equal amount.

6406531960065. ✔ The shortest path between two vertices *u* and *v* in a graph *G* always remains unaltered when all the edges of *G* are multiplied by a positive integer.

6406531960066. ✔ To decide which node to visit next, Dijkstra's algorithm selects the node with the smallest known distance.

Sub-Section Number : 4

Sub-Section Id : 64065384601

Question Shuffling Allowed : Yes

Is Section Default? : null

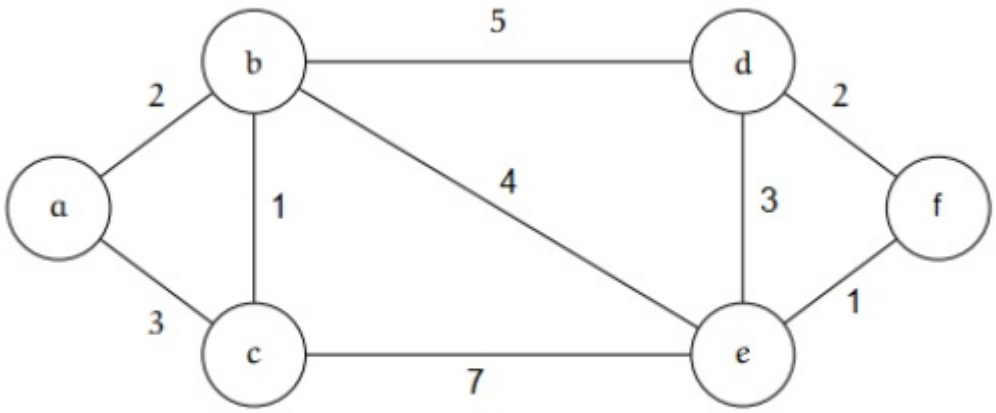
Question Number : 79 Question Id : 640653587514 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Consider the graph G given below.



Let α denote the number of minimum spanning trees of G and β denote the weight of such a minimum spanning tree.

The value of $\alpha + \beta$ is _____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

11

Sub-Section Number :	5
Sub-Section Id :	64065384602
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 80 Question Id : 640653587515 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Let G = (V, E) be an undirected graph having distinct positive edge weights. Let V be partitioned into two non-empty sets X and Y. Let e = (s, t) be the minimum cost edge, with s belonging to X and t belonging to Y. Which of the following statement(s) is/are true?

1. The edge e must definitely belong to each path from s to t.
2. The edge e must definitely belong to the minimum cost spanning tree of G.

Options :

6406531960068. ✖ Only 1

6406531960069. ✔ Only 2

6406531960070. ✖ Both 1 and 2

6406531960071. ✖ Neither 1 nor 2

Sub-Section Number :	6
Sub-Section Id :	64065384603
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 81 Question Id : 640653587516 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider a max-heap represented as the following list:

[30, 20, 25, 5, 15, 23, 10, 3, 2]

What are the leaf nodes of the resultant max-heap after the following operations are done on it?

1. delete_max()
2. Insert(24)

Options :

6406531960072. ✔ 2, 3, 5, 10, 15

6406531960073. ✖ 2, 3, 10, 15, 23

6406531960074. ✖ 2, 3, 5, 10, 20

6406531960075. ✖ 2, 3, 5, 10, 23

Sub-Section Number : 7

Sub-Section Id : 64065384604

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 82 Question Id : 640653587517 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following operation can be performed in $O(log\ n)$ time on min-heap? Consider the size of min-heap is n and implemented using an array.

Options :

6406531960076. ✔ Inserting a new element

6406531960077. ✔ Deleting the smallest element

6406531960078. ✔ Update the value at the known index

6406531960079. ✖ Finding the largest element

Sub-Section Number : 8

Sub-Section Id : 64065384605

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 83 Question Id : 640653587518 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

The maximum element of a BST is always guaranteed to be_____.

Options :

6406531960080. ✖ a leaf node

6406531960081. ✖ the root node

6406531960082. ✔ a node without a right child

6406531960083. ✖ a node without a left child

Sub-Section Number :	9
Sub-Section Id :	64065384606
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 84 Question Id : 640653587519 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Define the height of a binary search tree to be the number of nodes in the longest path from root to leaf. Suppose we have a binary search tree T of height h. Note that T need not be balanced. Which of the following statements is true?

Options :

6406531960084. ✖ The number of elements is at most 2^{h-1}.

6406531960085. ✔ The number of elements is at least h.

6406531960086. ✖ The number of elements is at least $h + 1$.

6406531960087. ✖ The number of elements is at most $h \ log \ h$.

6406531960088. ✔ The number of elements is at most $2^h - 1$.

Sub-Section Number : 10

Sub-Section Id : 64065384607

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 85 Question Id : 640653587520 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Define the **height balance factor** or **slope** of a node as the absolute difference in height of the left subtree and the right subtree of the node.

Create a binary search tree by inserting the following elements in the given order one at a time (Do not perform any rotations on this tree as you insert the items. It's just a binary search tree, not necessarily a balanced BST)

3, 1, 2, 4, 6, 5, 7, 8

What is the height balance factor or slope of the root node of this tree? Consider that the height of the empty tree is 0.

Options :

6406531960089. ✖ 0

6406531960090. ✖ 1

6406531960091. ✔ 2

6406531960092. ✖ 3

Sub-Section Number : 11

Sub-Section Id : 64065384608

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 86 Question Id : 640653587521 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Create an AVL tree by inserting the following elements in the given order (one at a time):

4, 7, 1, 3, 5, 6, 2, 8

What would be the sum of elements stored in leaf nodes of the resultant AVL tree?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

17

Sub-Section Number : 12

Sub-Section Id : 64065384609

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 87 Question Id : 640653587522 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

An entire message is created using characters from the set S = {A, B, C, D, E}. The probability of occurrence of each character is given in the table below.

A	B	C	D	E
0.22	0.21	0.16	0.30	0.11

How many bits will be used to encode the message ABCDE using Huffman codes?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

12

Sub-Section Number :	13
Sub-Section Id :	64065384610
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 88 Question Id : 640653587523 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Meetings M1, M2, ..., M10 are to be conducted in a single available meeting room. The table below gives the start and end times of these meetings. If any activity finishes at time `T`, then other activities can be started at time `T` or afterward.

	M1	M2	M3	M4	M5	M6	M7	M8	M9	M10
start	3	2	8	4	10	1	12	3	1	6
end	6	3	11	6	11	2	13	5	3	9

How many meetings can be scheduled at most by following the timing constraints given above?

Options :

6406531960095. ✖ 4

6406531960096. ✖ 5

6406531960097. ✔ 6

6406531960098. ✖ 7

Sub-Section Number : 14

Sub-Section Id : 64065384611

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 89 Question Id : 640653587524 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

In a list `L`, two elements `L[i]` and `L[j]` form an inversion if `L[i] > L[j]` and `i < j`. Consider a list `L` of length `n` in which all elements are distinct. List `L` has exactly 21 inversions. The minimum possible value of `n` is ___.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

7

Sub-Section Number :	15
Sub-Section Id :	64065384612
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 90 Question Id : 640653587525 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Maximum subarray sum:- Given an array of integers, the goal is to find a contiguous subarray (i.e., a subarray with elements positioned adjacent to each other in the original array) that has the largest possible sum.

Consider the following implementation `max_subarray_sum` to find the maximum subarray sum in an array:

```
def max_crossing_sum(arr, low, mid, high):
    left_sum = float('-inf')
    curr_sum = 0
    for i in range(mid-1, low - 1, -1):
        curr_sum += arr[i]
        if curr_sum > left_sum:
            left_sum = curr_sum

    right_sum = float('-inf')
    curr_sum = 0
    for i in range(mid, high):
        curr_sum += arr[i]
        if curr_sum > right_sum:
            right_sum = curr_sum
    return left_sum + right_sum

# In First call low = 0, high = len(arr)
def max_subarray_sum(arr, low, high):
    if high - low <= 1:
        return arr[low]

    mid = (low + high) // 2

    left_sum = max_subarray_sum(arr, low, mid)
    right_sum = max_subarray_sum(arr, mid, high)
    cross_sum = max_crossing_sum(arr, low, mid, high)

    return max(left_sum, right_sum, cross_sum)
```

What is the worst-case time complexity of this algorithm when applied to an array of size n?

Options :

6406531960100. ✖ $O(n)$

6406531960101. ✖ $O(log\ n)$

6406531960102. ✔ $O(n\ log\ n)$

6406531960103. ✖ $O(n^2)$

Sub-Section Number : 16

Sub-Section Id : 64065384613

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 91 Question Id : 640653587526 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following statements and choose the correct ones.

Options :

6406531960104. ✖ The worst case running time of Quick select algorithm to find the kth largest number is $O(n)$

6406531960105. ✔ The time taken to find the median in an unsorted list using Median of Medians(MoM) algorithm is $O(n)$

6406531960106. ✔ Quick select algorithm is an example of the divide-and-conquer approach to solving problems

6406531960107. ✔ Using Fast Select (Quick Select using MoM for pivot selection) strategy, the worst-case running time will be $O(n)$.

Sub-Section Number : 17

Sub-Section Id : 64065384614

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 92 Question Id : 640653587527 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following recurrences and choose the correct option.

1. $T_1(n) = 3T_1(n/3) + O(n)$
2. $T_2(n) = 2T_2(n/4) + O(n^2)$

Base Case:- $T_1(1) = T_2(1) = 1$

Options :

6406531960108. ✖ $T_1 = O(n)$ and $T_2 = O(n^2)$

6406531960109. ✔ $T_1 = O(n\ log\ n)$ and $T_2 = O(n^2)$

6406531960110. ✖ $T_1 = O(n)$ and $T_2 = O(n\ log\ n)$

6406531960111. ✖ $T_1 = O(n^2)$ and $T_2 = O(n^2)$

AppDev1

Section Id :	64065339743
Section Number :	7
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	17
Number of Questions to be attempted :	17
Section Marks :	50
Display Number Panel :	Yes

Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384615
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 93 Question Id : 640653587528 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : MODERN APPLICATION DEVELOPMENT I (COMPUTER BASED EXAM) "

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?
CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531960112. ✔ YES

6406531960113. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065384616
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 94 Question Id : 640653587529 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the following flask application and select the correct option if the application is running locally on `http://127.0.0.1:5000`.

```
from flask import Flask

app = Flask(__name__)

@app.route('/work')
@app.route('/home')
def my_task():
    return "<h1>Hello! Reporting for my task</h1>"

app.run()
```

Options :

6406531960114. ✖ The application will return `200 OK` status code for `/home` endpoint only

6406531960115. ✖ The application will return `200 OK` status code for `/work` endpoint only

6406531960116. ✔ The application will return `200 OK` status code for both the endpoints

6406531960117. ✖ The application will throw an `AssertionError` for both the endpoints

Question Number : 95 Question Id : 640653587530 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following statements about OpenAPI Specification (OAS) is true?

Options :

6406531960118. ✖ OAS is a programming language used for building APIs.

6406531960119. ✔ OAS is a way to describe interfaces for building RESTful APIs.

6406531960120. ✖ OAS is a tool used for testing the performance of APIs.

6406531960121. ✖ OAS is a software library used for authenticating API requests.

Question Number : 96 Question Id : 640653587533 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Map the terms in column A with their correct interpretations in column B.

	Column A		Column B
a	Scale up	1	financial transactions
b	ACID	2	adding more physical servers
c	Scale out	3	increasing RAM
d	BASE	4	social media

Options :

6406531960130. ✔ a → 3, b → 1, c → 2, d → 4

6406531960131. ✖ a → 4, b → 2, c → 1, d → 3

6406531960132. ✖ a → 4, b → 3, c → 1, d → 2

6406531960133. ✖ a → 3, b → 2, c → 1, d → 4

Question Number : 97 Question Id : 640653587539 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the following view function.

```
@app.route('/student', methods = ['GET', 'POST'])
def show_student():
    std = request.args
    details = {
                'Department': std['dept'],
                'Course-level': std['level'],
                'Course': std['course']
            }
    return details
```

If this flask app is running locally on http://127.0.0.1:5000, which of the following URLs will be handled by the controller correctly?

Options :

6406531960154. ✖ `http://127.0.0.1:5000/student/Electrical/Diploma/MAD1`

6406531960155. ✖ `http://127.0.0.1:5000/Electrical/Diploma/MAD1`

6406531960156. ✔ `http://127.0.0.1:5000/student?dept=Electrical&level=Diploma&course=MAD1`

6406531960157. ✖ `http://127.0.0.1:5000?endpoint=student&dept=Electrical&level=Diploma&course=MAD1`

Sub-Section Number :	3
Sub-Section Id :	64065384617
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 98 Question Id : 640653587531 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

What will be the output of the following Python code snippet on the terminal?

```
def modify(n):
    def modifier(n):
        ser = [0,1]
        for i in range(n-2):
            new = ser[i]+ser[i+1]
            ser.append(new)
        print(ser)
    return modifier

@modify
def list_num(n):
    nums = []
    for i in range(n):
        nums.append(i+1)
    print(nums)

list_num(10)
```

Options :

6406531960122. ✖ `[0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10]`

6406531960123. ✖ `[1, 2, 3, 4, 5, 6, 7, 8, 9, 10]`

6406531960124. ✖ `[0, 1, 1, 2, 3, 5, 8, 13, 21]`

6406531960125. ✔ `[0, 1, 1, 2, 3, 5, 8, 13, 21, 34]`

Question Number : 99 Question Id : 640653587534 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following HTML Document file given below.

index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Document</title>
    <style>
        input:invalid {
            background: red;
        }
        input:valid {
            background: green;
        }
    </style>
</head>
<body>
    <form>
        <label for="uname">Enter a valid e-mail:</label>
        <input type="text" name="uname" minlength="8">
    </form>
</body>
</html>
```

Suppose the index.html is rendered on the browser. What will be the background color of the input box when the user enters the name “madcourse.mail.com”?

Options :

6406531960134. ✖ red

6406531960135. ✖ white

6406531960136. ✔ green

6406531960137. ✖ insufficient information

Question Number : 100 Question Id : 640653587536 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following Python code snippet.

```
from flask import Flask
from flask_restful import Api, Resource

app = Flask(__name__)
api = Api(app)

class MyApi(Resource):
    def get(self):
        return {"greet":"Hello from GET Api!"}

    def put(self):
        return {"greet":"Hello from PUT Api!"}

api.add_resource(MyApi, '/api/get', '/api/put', '/api/post')

app.run()
```

If this application is running locally on `http://127.0.0.1:5000`, which of the following curl commands will throw an error?

1. `curl http://127.0.0.1:5000/api/get -X get`
2. `curl http://127.0.0.1:5000/api/put -X put`
3. `curl http://127.0.0.1:5000/api/post -X post`
4. `curl http://127.0.0.1:5000/api/get -X put`
5. `curl http://127.0.0.1:5000/api/put -X get`
6. `curl http://127.0.0.1:5000/api/post -X get`

Options :

6406531960142. ✔ Only 3

6406531960143.

✖ Only 3 and 4

6406531960144. ✖ Only 5 and 6

6406531960145. ✖ Only 3, 4, 5 and 6

Question Number : 101 Question Id : 640653587538 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following code.

```
from flask import Flask
app = Flask(__name__)

@app.route('/')
def generate1():
    return "This is generate1"

@app.route('//')
def generate2():
    return "This is generate2"

@app.errorhandler(404)
def page_not_found(e):
    # setting 404 status explicitly
    return 'page not found'

app.run()
```

If the flask application is running on http://127.0.0.1:5000, what will browser render for URL http://127.0.0.1:5000//

Options :

6406531960150. ✖ Page not found

6406531960151. ✖ This is generate2

6406531960152. ✔ This is generate1

6406531960153. ✖ Code will throw error

Question Number : 102 Question Id : 640653587544 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

In the code snippet given below, what should come in place of *code 1* and *code 2* such that one parent can have multiple children and the converse does not hold true?

```
from sqlalchemy import ForeignKey
from sqlalchemy import Integer, Column
from sqlalchemy.orm import DeclarativeBase
from sqlalchemy.orm import relationship

class Base(DeclarativeBase):
    pass

class Parent(Base):
    __tablename__ = "parent_table"
    id = Column(Integer, primary_key=True)
    # write your code 1 here

class Child(Base):
    __tablename__ = "child_table"
    id = Column(Integer, primary_key=True)
    # write your code 2 here
```

Options :

6406531960171. ✖

```
code 1: parent_id=Column(Integer, ForeignKey("child_table.id"))
code 2: children = relationship("Parent")
```

6406531960172. ✔

```
code 1: children = relationship("Child")
code 2: parent_id=Column(Integer, ForeignKey("parent_table.id"))
```

6406531960173. ✖

```
code 1: parent_id=Column(Integer, ForeignKey("parent_table.id"))
code 2: children = relationship("Child")
```

```
code 1: children = relationship("Parent")
code 2: parent_id=Column(Integer, ForeignKey("child_table.id"))
```

6406531960174. ✖

Sub-Section Number : 4

Sub-Section Id : 64065384618

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 103 Question Id : 640653587532 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following models `Brand` and `Cellphone` corresponding to tables brand and cellphone in SQLite database.

```
class Brand(db.Model):
    id = db.Column(db.Integer(), primary_key = True)
    name = db.Column(db.String(), unique = True)

class Cellphone(db.Model):
    id = db.Column(db.Integer(), primary_key = True)
    name = db.Column(db.String(), unique = True)
    brand = db.Column(db.Integer(), unique = True, db.ForeignKey("brand.id"))
```

Based on the model schemas, what relationship do the classes `Brand` and `Cellphone` share?

Options :

6406531960126. ✔ One-to-One

6406531960127. ✖ One-to-Many

6406531960128. ✖ Many-to-Many

6406531960129. ✖ The tables are not at all related

Question Number : 104 Question Id : 640653587540 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the schema for the Class Student.

```
CREATE TABLE "student" (
      "s_id"      INTEGER,
      "roll_number"     TEXT NOT NULL UNIQUE,
      "first_name"      TEXT NOT NULL,
      "last_name" TEXT NOT NULL,
      PRIMARY KEY("s_id" AUTOINCREMENT)
);
```

What will be the output of the flask_sqlalchemy command given below?

```
>>> s1 = Student(roll_number = M01, first_name = "Yash", last_name = "Raj")
>>> db.session.add(s1)
>>> s2 = Student(roll_number = M02, first_name = "Yash", last_name = "Maurya")
>>> db.session.add(s2)
>>> s3 = Student(roll_number = M03, first_name = "Ansh", last_name = "Raj")
>>> db.session.add(s3)
>>> db.session.commit()
>>> user1= Student.query.filter_by(first_name="Yash").first()
>>> user1.first_name= "Ansh"
>>> user1.last_name= "Maurya"
>>> db.session.commit()
>>> s1 = Student.query.all()
>>> for student in s1:
       print(student.first_name)
       print(student.last_name)
```

Options :

6406531960158. ✖

```
Yash
Raj
Yash
Maurya
Ansh
Raj
```

6406531960159. ✔

```
Ansh
Maurya
Yash
Maurya
Ansh
Raj
```

6406531960160. ✖

```
Ansh
Maurya
Ansh
Maurya
Ansh
Raj
```

6406531960161. ✖ None

Sub-Section Number : 5

Sub-Section Id : 64065384619

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 105 Question Id : 640653587535 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4.5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following route in the flask for a signup page and select the correct option.

```
@app.route('/signup', methods=['GET', 'POST'])
def signup():
      if request.method == 'GET':
            return """<form action='/signup' method='POST'>
              <label for='username'>Username</label>
              <input type='text' name='username' required>
              <label for='password'>Password</label>
              <input type='text' name='password' required minlength="8">
              <input type='submit' value='Submit'>
              </form>
              """
      if request.method == 'POST':
            if request.form.get('username') is None:
                  return redirect(url_for(signup))
            if request.form.get('password') is None:
                  return redirect(url_for(signup))
            if len(request.form.get('password')) < 8:
                  return redirect(url_for(signup))
            return f"<h1>Welcome, {request.form.get('username')}!</h1>"
```

Options :

6406531960138. ✔ The signup page is dynamically generated.

6406531960139. ✔ The signup page uses server-side rendering.

6406531960140. ✖ The signup page uses frontend validation only.

6406531960141. ✔ The signup page uses backend validation.

Question Number : 106 Question Id : 640653587537 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4.5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following flask app. Given that `test_request_context()` allows text to be printed on the terminal, which of the following statements is/are correct?

```
from flask import Flask, url_for

app = Flask(__name__)

@app.route('/home')
def index():
    return 'Mad-I welcomes you!'

@app.route('/user/<username>')
def profile(username):
    return f'{username}\'s profile'

with app.test_request_context():
    #== print statement ==#
```

Options :

6406531960146. ✖ If `#== print statement ==#` is replaced by `print(url_for('home'))`, the output on the terminal will be `Mad-I welcomes you!`.

6406531960147. ✔ If `#== print statement ==#` is replaced by `print(url_for('profile', username='Harry'))`, the output on the terminal will be `/user/Harry`

6406531960148. ✖ If `#== print statement ==#` is replaced by `print(url_for('profile', username='Harry', next='course'))`, the output on the terminal will be `/user/Harry/course`

6406531960149. ✔ If `#== print statement ==#` is replaced by `print(url_for('index', username='Harry'))`, the output on the terminal will be `/home?username=Harry`

Sub-Section Number : 6

Sub-Section Id : 64065384620

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 107 Question Id : 640653587541 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is/are valid JSON format.

Options :

6406531960162. ✔

```
{
  "Age": 27,
  "firstName": "John",
  "lastName": "Pollard",
  "married": false,
  "phone_numbers": ["212-555-1234", "212-666-5678"]
}
```

6406531960163. ✔

```
{
    "RollNumber": 11,
    "firstName": "Nick",
    "lastName": "Paul",
    "phone_numbers": [2125551234, "2124441234"]
}
```

6406531960164. ✖

```
{
  "firstName": "Will",
  "lastName": "Smith",
  "address": [
    "addressLine": "Lake Union Hill Way",
    "city": "Atlanta",
    "zipCode": 50005
  ]
}
```

6406531960165. ✔

```
{
  "firstName": "Hannah",
  "lastName": "Smith",
  "cities": ["Dallas", "San Antonio", "Irving"],
  "phone_numbers": ["212-555-1234", "212-666-5678"]
}
```

Question Number : 108 Question Id : 640653587543 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following flask application.

```
from flask import Flask, render_template, request
app = Flask(__name__)

@app.route('/')
def out():
        val = request.args

        if val['num'] == '':
            return "<html><body> <h1>Invalid number</h1></body></html>"
        elif val['num'].isalpha()==True:
            return "<html><body><h1>Enter a valid number</h1></body></html>"
        else:
            out = int(val['num']) * int(val['num'])
            return f'<html><body> <h1>The output is {out}</h1></body></html>'

if(__name__ == "__main__"):
    app.run(debug=True)
```

If this flask app is running locally on http://localhost:5000, then which of the following statements is/are correct?

Options :

6406531960167. ✖ For URL: http://localhost:5000/?num=abc
Output is: **Invalid number**

6406531960168. ✔ For URL: http://localhost:5000/?num=abc
Output is: **Enter a valid number**

6406531960169. ✔ For URL: http://localhost:5000/?num=
Output is: **Invalid number**

6406531960170. ✖ For URL: http://localhost:5000/?num=12
Output is: **The output is 1212**

Sub-Section Number :	7
Sub-Section Id :	64065384621
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 109 Question Id : 640653587542 Question Type : SA Calculator : None
Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Consider the following flask application.

```
from flask import Flask, redirect, url_for
app = Flask(__name__)

@app.route('/admin')
def hello_admin():
   return 'Hello Admin'

@app.route('/guest/<guest>')
def hello_guest(guest):
   return 'Hello ' +guest+ ' as Guest'

@app.route('/user/<name>')
def hello_user(name):
   if name =='admin':
      return redirect(url_for('hello_admin'))
   else:
      return redirect(url_for('hello_guest', guest = name))

if __name__ == '__main__':
   app.run(debug = True)
```

If this flask app is running locally on http://localhost:5000, what is the output for the following URL?
For input: http://localhost:5000/user/admin?guest=appdev1

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

Hello Admin

MLF

Section Id : 64065339744

Section Number : 8

Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	11
Number of Questions to be attempted :	11
Section Marks :	40
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384622
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 110 Question Id : 640653587545 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : MACHINE LEARNING FOUNDATIONS (COMPUTER BASED EXAM) "

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?
CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531960175. ✔ YES

6406531960176. ✖ NO

Sub-Section Number : 2

Sub-Section Id : 64065384623

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 111 Question Id : 640653587546 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which among the following is/are true for a Hermitian matrix?

Options :

6406531960177. ✔ The eigenvalues of a Hermitian matrix are always real.

6406531960178. ✔ The diagonal elements of a Hermitian matrix are always real.

6406531960179. ✖ All symmetric matrices are Hermitian.

6406531960180. ✖ All Hermitian matrices are symmetric.

Question Number : 112 Question Id : 640653587548 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following options are true?

Options :

6406531960182. ✖ A matrix that is both unitary and Hermitian must be a diagonal matrix.

6406531960183. ✔ A matrix that is both unitary and Hermitian need not be a diagonal matrix.

6406531960184. ✔ If matrix A is unitary, then A^* is unitary.

6406531960185. ✖ If matrix A is unitary then, A^* may not be unitary.

Question Number : 113 Question Id : 640653587551 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which among the following statements is/are true?

Options :

6406531960194. ✔ If a function is positive semidefinite, then it only has a global minimum.

6406531960195. ✖ If a function is positive semidefinite, then it has both global minimum and global maximum.

6406531960196. ✔ If a function is negative semidefinite, then it only has a global maximum.

6406531960197. ✖ If a function is negative semidefinite, then it has both global minimum and global maximum.

Sub-Section Number :	3
Sub-Section Id :	64065384624
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 114 Question Id : 640653587547 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

Consider a 2×2 matrix $A = \frac{1}{k}\begin{bmatrix} 2 & -2+i \\ i+2 & 2 \end{bmatrix}$. Find the value of k such that A is a unitary matrix.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 115 Question Id : 640653587559 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

If $f([1,2,3]^T) = 10$ and $\nabla f([1,2,3]^T) = [1,5,7]^T$, then find the value of $f([2,2,2]^T)$ using first order taylor series expansion.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number :	4
Sub-Section Id :	64065384625
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 116 Question Id : 640653587549 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which among the following functions are positive definite?

Options :

6406531960186. ✖ $Q(x,y) = xy$

6406531960187. ✔ $Q(x,y) = x^2 - xy + y^2$

6406531960188. ✖ $Q(x,y) = x^2 - 2xy + y^2$

6406531960189. ✖ $Q(x,y) = x^2 + xy$

Sub-Section Number :	5
Sub-Section Id :	64065384626
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 117 Question Id : 640653587550 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Given the following information about a 4×2 matrix A:

- The characteristic polynomial of A^TA is $(\lambda - 48)(\lambda - 12)$.
- Eigenvectors of A^TA corresponding to eigenvalues $\lambda = 48$, $\lambda = 12$ are $q_1 = \begin{pmatrix} 1/\sqrt{2} \\ 1/\sqrt{2} \end{pmatrix}$ and $q_2 = \begin{pmatrix} 1/\sqrt{2} \\ -1/\sqrt{2} \end{pmatrix}$, respectively.
- $Aq_1 = \begin{pmatrix} 4/\sqrt{2} \\ -8/\sqrt{2} \\ 0 \\ 4/\sqrt{2} \end{pmatrix}$, $Aq_2 = \begin{pmatrix} -2/\sqrt{2} \\ 0 \\ 4/\sqrt{2} \\ 2/\sqrt{2} \end{pmatrix}$

What is the matrix A?

Options :

6406531960190. ✖

$$\begin{bmatrix} 1 & 3 \\ 0 & 0 \\ 2 & -2 \\ 1 & -1 \end{bmatrix}$$

6406531960191. ✖ $\begin{bmatrix} 2 & 2 \\ -4 & -4 \\ 0 & 0 \\ 2 & 2 \end{bmatrix}$

6406531960192. ✖ $\begin{bmatrix} -1 & 1 \\ 0 & 0 \\ 2 & -2 \\ 1 & -1 \end{bmatrix}$

6406531960193. ✔ $\begin{bmatrix} 1 & 3 \\ -4 & -4 \\ 2 & -2 \\ 3 & 1 \end{bmatrix}$

Sub-Section Number :	6
Sub-Section Id :	64065384627
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 118 Question Id : 640653587552 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Suppose you have a 3-dimensional dataset $\{x_1, x_2, \ldots x_n\}$ with mean zero.

Suppose the covariance matrix $C = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$. For projection using PCA onto a line, what is the projected variance?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 119 Question Id : 640653587558 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

What is the maximum area of a circle that can be inscribed in a closed region formed by two parabolas, $y = 2 - x^2$ and $y = x^2 - 2$?
Hint: The circle will be centered at origin.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5.3 to 5.7

Sub-Section Number :	7
Sub-Section Id :	64065384628
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653587553 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (120 to 123)

Question Label : Comprehension

Anwer the given subquestions.

Sub questions

Question Number : 120 Question Id : 640653587554 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the dataset
$\mathcal{D} = \{(-1, 1), (0, 1), (1, 1)\}$.
What is the first principal component (i.e., the direction corresponding to the largest eigenvalue of the covariance matrix) for the given dataset?

Options :

6406531960199. ✔ $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$

6406531960200. ✖ $\begin{pmatrix} 0 \\ 1 \end{pmatrix}$

6406531960201. ✖ $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$

6406531960202. ✖ $\begin{pmatrix} -1 \\ 0 \end{pmatrix}$

Question Number : 121 Question Id : 640653587555 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

If you change the dataset to $\mathcal{D}' = \{(-1,1),(0,0),(1,1)\}$, what will be the first principal component?

Options :

6406531960203. ✔ $\begin{pmatrix}1\\0\end{pmatrix}$

6406531960204. ✖ $\begin{pmatrix}0\\1\end{pmatrix}$

6406531960205. ✖ $\begin{pmatrix}1\\1\end{pmatrix}$

6406531960206. ✖ $\begin{pmatrix}-1\\0\end{pmatrix}$

Question Number : 122 Question Id : 640653587556 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

For the dataset $\mathcal{D}'$, let $\tilde{x_1}, \tilde{x_2}$ and $\tilde{x_3}$ be the projection of data points on the first principal component, then which among the following is true?

Options :

6406531960207. ✖

$$\tilde{x_1} = \begin{pmatrix} -1 \\ 2/3 \end{pmatrix}, \tilde{x_2} = \begin{pmatrix} 1 \\ 2/3 \end{pmatrix}, \tilde{x_3} = \begin{pmatrix} 1/2 \\ 2/3 \end{pmatrix}$$

6406531960208. ✔ $\tilde{x_1} = \begin{pmatrix} -1 \\ 2/3 \end{pmatrix}, \tilde{x_2} = \begin{pmatrix} 0 \\ 2/3 \end{pmatrix}, \tilde{x_3} = \begin{pmatrix} 1 \\ 2/3 \end{pmatrix}$

6406531960209. ✖ $\tilde{x_1} = \begin{pmatrix} 1 \\ 2/3 \end{pmatrix}, \tilde{x_2} = \begin{pmatrix} 0 \\ 2/3 \end{pmatrix}, \tilde{x_3} = \begin{pmatrix} -1 \\ 0 \end{pmatrix}$

6406531960210. ✖ $\tilde{x_1} = \begin{pmatrix} 1 \\ 2/3 \end{pmatrix}, \tilde{x_2} = \begin{pmatrix} 1 \\ 2/3 \end{pmatrix}, \tilde{x_3} = \begin{pmatrix} -1 \\ 2/3 \end{pmatrix}$

Question Number : 123 Question Id : 640653587557 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

What is the reconstruction error after projecting $\mathcal{D}'$ along the first principal component?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.20 to 0.24

Java

Section Id :	64065339745
Section Number :	9
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384629
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 124 Question Id : 640653587560 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : PROGRAMMING CONCEPTS USING JAVA (COMPUTER BASED EXAM)"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?

CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531960214. ✔ YES

6406531960215. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065384630
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 125 Question Id : 640653587561 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
interface Computable{
    void compute();
}
class Phone implements Computable{
    public void compute() {
         System.out.println("Phone compute");
    }
}
class Laptop implements Computable{
    public void compute() {
        System.out.println("Laptop compute");
    }
}
class DeviceList{
    private Object[] cArr = {new Phone(), new Laptop()};
    public void getCompute(){
        for(int i = 0; i < cArr.length; i++){
            //LINE 1
        }
    }
}
public class Test{
    public static void main(String[] args) {
        DeviceList dList = new DeviceList();
        dList.getCompute();
    }
}
```

Identify the appropriate option to fill in place of LINE 1 such that the output is

```
Phone compute
Laptop compute
```

Options :

6406531960216. ✖ `cArr[i].compute();`

6406531960217. ✔ `((Computable)cArr[i]).compute();`

6406531960218. ✖ `((Phone)cArr[i]).compute();`

6406531960219. ✖
```
((Laptop)cArr[i]).compute();
```

Question Number : 126 Question Id : 640653587562 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
public class Example{
   public <T extends Comparable> void sortArray(T[] obj){
     // Sorts obj
   }
   public <T> void elementDisplay(T[] arr){
      // Displays the elements of arr
   }
   public <T extends Number> T sum(List<T> lst){
      // Returns the sum of elements of lst
   }
}
```

How does class `Example` look after type erasure?

Options :

6406531960220. ✖
```
public class Example{
    public void sortArray(Object[] obj){
        // Sorts obj
    }
    public void elementDisplay(Object[] arr){
        // Displays the elements of arr
    }
    public Object sum(List<Object> lst){
        // Returns the sum of elements of lst
    }
}
```

6406531960221. ✔

```
public class Example{
    public void sortArray(Comparable[] obj){
        // Sorts obj
    }
    public void elementDisplay(Object[] arr){
        // Displays the elements of arr
    }
    public Number sum(List<Number> lst){
        // Return the sum of elements of lst
    }
}
```

6406531960222.

```
public class Example{
    public void sortArray(Comparable[] obj){
        // Sorts obj
    }
    public void elementDisplay(Object[] arr){
        // Displays the elements of arr
    }
    public T sum(List<Number> lst){
        // Return the sum of elements of lst
    }
}
```

6406531960223.

```
public class Example{
    public void sortArray(T[] obj){
        // Sorts obj
    }
    public void elementDisplay(T[] arr){
        // Displays the elements of arr
    }
    public T sum(List<T> lst){
        // Return the sum of elements of lst
    }
}
```

Question Number : 127 Question Id : 640653587564 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the code given below

```
interface Shape{
  public abstract int area();
}
class Square implements Shape, Cloneable{
  int side;
  public Square(int s){
    side = s;
  }
  public int area(){
    return side * side;
  }
  public Square clone() throws CloneNotSupportedException{
    return (Square)super.clone();
  }
}
public class Test{
  public static void main(String[] args){
    Square s1 = new Square(5);
    try{
      Square s2 = s1.clone();
      s1.side = 3;
      System.out.print(s1.area() + s2.area());
    }
    catch(CloneNotSupportedException e){
      System.out.println("Cloning not supported");
    }
  }
}
```

What will the output be?

Options :

6406531960228. ✖ 18

6406531960229. ✖ 50

6406531960230. ✔ 34

6406531960231. ✖ Cloning not supported

Question Number : 128 Question Id : 640653587568 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class Arithmetic{
    public static void div(int a, int b) throws Exception {
        System.out.println(a/b);
    }
    public static void getResult() throws Exception {
        try {
            div(10, 0);
            div(12, 6);
        } catch(Exception e) {
            System.out.println("caught in getResult");
            throw e;
        }
    }
}
public class ExceptionTest {
    public static void main(String[] args) throws Throwable {
        try {
            Arithmetic.getResult();
        } catch(Exception e) {
            System.out.println("caught in main");
        }
    }
}
```

Choose the correct option.

Options :

6406531960244. ✖ This program generates the output:
caught in main
caught in getResult

6406531960245. ✖

This program generates the output:

```
caught in getResult
caught in main
2
```

6406531960246. ✖

This program generates the output:

```
caught in getResult
2
caught in main
```

6406531960247. ✖

This program terminates abnormally due to unhandled exceptions.

6406531960248. ✔

This program generates the output:

```
caught in getResult
caught in main
```

Question Number : 129 Question Id : 640653587569 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class SelectionException extends Exception{
    public SelectionException(String str){
        super(str);
    }
}
class Player{
    private String name;
    private int runs;
    private double strikerate;
    //Constructor to initialize name, runs and strikerate
    public void selection() throws SelectionException{
        System.out.println("Hello "+this.name);
        if(this.runs > 300) {
            if(this.strikerate > 150) {
                System.out.println("You have selected in to the team");
            }
            else {
                throw new SelectionException("You have less strike rate");
            }
        }
        else {
            throw new SelectionException("You have scored less runs");
        }
    }
}
public class UserExceptionTest {
    public static void main(String[] args) {
        Player p1=new Player("Dhoni", 340, 98.9);
        Player p2=new Player("Russel", 295, 100.8);
        try {
            p1.selection();
            p2.selection();
        }
        catch(SelectionException e){
            System.out.println(e.getMessage());
        }
    }
}
```

What will the output be?

Options :

6406531960249. ✔

```
Hello Dhoni
You have less strike rate
```

6406531960250. ✖

```
Hello Russel
You have less strike rate
You have scored less runs
```

6406531960251. ✖

```
Hello Dhoni
You have less strike rate
Hello Russel
You have less strike rate
You have scored less runs
```

6406531960252. ✖

```
Hello Dhoni
You have less strike rate
Hello Russel
You have scored less runs
```

Question Number : 130 Question Id : 640653587572 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
import java.util.*;
class Student{
    String name;
    double cgpa;
    //Constructor to initialize name and cgpa
    public String toString() {
        return name;
    }
}
public class IteratorTest {
    public static boolean property(double x) {
        if(x < 7.0)
            return false;
        return true;
    }
    public static List<Student> getFinalList(List<Student> sList){
        Iterator<Student> it = sList.iterator();
        while (it.hasNext()) {
            Student s = it.next();
            if(!property(s.cgpa))
                ------------------------------ //LINE 1
        }
        return sList;
    }
    public static void main(String[] args) {
        var list = new ArrayList<Student>();
        list.add(new Student("Sandeep", 9.78));
        list.add(new Student("Navadeep", 5.78));
        list.add(new Student("Randeep", 7.0));
        list.add(new Student("Gunadeep", 7.0));
        System.out.println(getFinalList(list));
    }
}
```

Choose the correct option to be filled in place of `LINE 1` so that the output is:

```
[Sandeep, Randeep, Gunadeep]
```

Options :

6406531960262. ✖ `it.remove(s)`

6406531960263. ✔ `it.remove()`

6406531960264. ✖ sList.remove()

6406531960265. ✖ sList.remove(s)

Question Number : 131 Question Id : 640653587573 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class UPIUser{
    private String name, phone;
    public UPIUser(String n, String p) {
        this.name = n;
        this.phone = p;
    }
    public String getUpiID() {
        assert name != null : "Invalid name"; //LINE 1
        assert phone.length() == 10 :"Should be 10 digits" ; //LINE 2
        assert phone != null :"Invalid phone number" ; //LINE 3
        return phone+"@ybl";
    }
}
public class AssertionTest {
    public static void main(String[] args) {
        UPIUser u1 = new UPIUser("", "730007311");
        UPIUser u2 = new UPIUser("Sudarshan", null);
        System.out.println(u1.getUpiID()); // LINE 4
        System.out.println(u2.getUpiID()); // LINE 5
    }
}
```

Choose the correct option when the program is executed as:

```
java -ea AssertionTest
```

Options :

6406531960266. ✖ LINE 1 throws AssertionError when LINE 4 is executed.

6406531960267. ✔ LINE 2 throws AssertionError when LINE 4 is executed.

6406531960268. ✖ LINE 2 throws AssertionError when LINE 5 is executed.

6406531960269. ✖ LINE 3 throws AssertionError when LINE 5 is executed.

Question Number : 132 Question Id : 640653587574 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
import java.util.*;
public class MapTest{
    public static void printPlayers(Map<String, Integer> m) {
        var map1 = new LinkedHashMap<String, Integer>();
        var map2 = new TreeMap<String, Integer>();
        String[] players = {"Buttler", "Roy", "Dhoni"};
        for(String p: players) {
            map1.put(p, m.getOrDefault(p, 0));
            map2.put(p, m.getOrDefault(p, 0));
        }
        System.out.println(map1);
        System.out.println(map2);
    }
    public static void main(String[] args) {
        var map = new HashMap<String, Integer>();
        map.put("Roy", 78);
        map.put("Surya", 56);
        map.put("Buttler", 14);
        printPlayers(map);
    }
}
```

What will the output be?
You may make use of the method description given below.
`getOrDefault(Object key, V defaultValue)`: Returns the value to which the specified `key` is mapped, or `defaultValue` if this map contains no mapping for the key.

Options :

6406531960270. ✖
```
{Buttler=14, Dhoni=0, Roy=78}
{Buttler=14, Roy=78, Dhoni=0}
```

6406531960271. ✖
```
{Buttler=14, Roy=78, Dhoni=0, Surya=56}
{Buttler=14, Dhoni=0, Roy=78, Surya=56}
```

6406531960272. ✔
```
{Buttler=14, Roy=78, Dhoni=0}
{Buttler=14, Dhoni=0, Roy=78}
```

{Buttler=14, Roy=78, Dhoni=0, Surya=0}

6406531960273. ✖ {Buttler=14, Dhoni=0, Roy=78, Surya=0}

Question Number : 133 Question Id : 640653587575 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below that checks whether the input number is a palindrome or not.

```
import java.util.*;
public class QTest {
    public static boolean checkPalindrome(Deque<Character> q) {
        //CODE BLOCK
        return q.isEmpty();
    }
    public static void main(String[] args) {
        String num1 = "34543";
        String num2 = "12312";
        Deque<Character> q1 = new ArrayDeque<Character>();
        Deque<Character> q2 = new ArrayDeque<Character>();
        for(int i = 0 ;i < 5; i++) {
            q1.add(num1.charAt(i));
            q2.add(num2.charAt(i));
        }
        System.out.println(checkPalindrome(q1));
        System.out.println(checkPalindrome(q2));
    }
}
```

Choose the correct option(s) to fill in place of `CODE BLOCK` so that the output is:

```
true
false
```

You may make use of the descriptions of the methods given below. These are methods inside type `Deque`.

`pollLast()`: Retrieves and removes the last element of this deque, or returns null if this deque is empty.

`poll()`: Retrieves and removes the head of the queue represented by this deque (in other words, the first element of this deque), or returns null if this deque is empty.

`isEmpty()`: Returns true if this deque contains no elements.

Options :

```
if(q.size() > 0) {
    if(q.poll() != q.pollLast())
        break;
}
```

6406531960274. ✖

6406531960275. ✖

```
while(q.size() < 0) {
    if(q.poll() != q.pollLast())
        break;
}
```

```
while(q.size() > 0) {
    if(q.poll() != q.pollLast())
        break;
}
```

6406531960276. ✔

```
if(q.size() > 0) {
    while(q.poll() != q.pollLast())
        break;
}
```

6406531960277. ✖

Sub-Section Number : 3

Sub-Section Id : 64065384631

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 134 Question Id : 640653587563 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the Java code given below that prints the salaries of employees and managers. From among the options, identify the appropriate function header for function `printSalary` that takes as input a list of employees and managers, and prints their salaries.

```
import java.util.*;
class Employee{
  double salary;
  public Employee(double s){
    salary = s;
  }
  public double getSalary(){
    return salary;
  }
}
class Manager extends Employee{
  public Manager(double s){
    super(s);
  }
}
class Test {
    // FUNCTION HEADER for function printSalary
    {
        for(int i = 0; i < lst.size(); i++){
            System.out.println(lst.get(i).getSalary());
        }
    }
    public static void main(String[] args) {
        List<Employee> e = new ArrayList<Employee>();
        e.add(new Employee(12000));
        e.add(new Employee(2000));
        List<Manager> m = new ArrayList<Manager>();
        m.add(new Manager(13000));
        m.add(new Manager(1200));
        printSalary(e);
        printSalary(m);
    }
}
```

Choose the correct option(s).

Options :

6406531960224. ✖ `public static void printSalary(List<Employee> lst)`

6406531960225. ✔ `public static <T extends Employee> void printSalary(List<T> lst)`

6406531960226. ✔ `public static void printSalary(List<? extends Employee> lst)`

6406531960227. ✖ `public static void printSalary(List<Manager> lst)`

Question Number : 135 Question Id : 640653587565 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the Java code given below that prints the highest payment charge among a set of given `PaymentApp` objects. From among the options, identify the appropriate function header for function `printHighCharge` that takes as input an array of `PaymentApp` objects and prints the highest charge.

```
import java.util.*;
interface PaymentApp {
    public abstract double paymentCharges();
}
class XPay implements PaymentApp{
double payAmount;
    // Constructor
    // method paymentCharges() that returns 5% of payAmount
}
class YPay extends XPay{
    // Constructor
    // method paymentCharges() that returns 6% of payAmount
}
public class Test{
    // LINE 1: FUNCTION HEADER
    {
        // invokes method paymentCharges()
        // to print the value of highest payment charge
    }
    public static void main(String[] args) {
        PaymentApp[] p = {new XPay(1200), new YPay(1200)};
        printHighCharge(p);
    }
}
```

Choose the correct option(s).

Options :

6406531960232. ✖
```
public static void printHighCharge(<?> p)
```

6406531960233. ✔
```
public static <T extends PaymentApp> void printHighCharge(T[] p)
```

6406531960234. ✖
```
public static <T extends XPay> void printHighCharge(T[] p)
```

6406531960235. ✔
```
public static void printHighCharge(PaymentApp[] p)
```

Question Number : 136 Question Id : 640653587566 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the Java code given below that should print the names of teachers whose experience is between 2 and 4 (both inclusive).

```
import java.util.*;
class Teacher{
    String name;
    double experience;
    public Teacher(String name, double exp) {
        this.name = name;
        this.experience = exp;
    }
}
public class Stream {
    public static void main(String[] args) {
        List<Teacher> tList = new ArrayList<Teacher>();
        tList.add(new Teacher("T1", 3.5));
        tList.add(new Teacher("T2", 4.2));
        tList.add(new Teacher("T3", 2.6));
        tList.add(new Teacher("T4", 3.4));
        tList.add(new Teacher("T5", 1.5));
        //CODE BLOCK
    }
}
```

Choose the correct option(s) to fill in place of `CODE BLOCK` to obtain the right answer.

Options :

6406531960236. ✖

```
tList.stream()
    .map(i -> i.experience >= 2 && i.experience <= 4)
    .forEach(t->System.out.println(t.name));
```

6406531960237. ✔

```
tList.stream()
    .filter(i -> i.experience >= 2 && i.experience <= 4)
    .forEach(t->System.out.println(t.name));
```

6406531960238. ✔

```
tList.stream()
    .filter(i -> i.experience >= 2)
    .filter(i -> i.experience <= 4)
    .forEach(t->System.out.println(t.name));
```

6406531960239. ✖

```
tList.stream()
    .filter(i -> i.experience >= 2)
    .map(i -> i.experience <= 4)
    .forEach(t->System.out.println(t.name));
```

Sub-Section Number : 4

Sub-Section Id : 64065384632

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 137 Question Id : 640653587570 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the three Java programs given below.

A.java:

```
package pack1;
import java.util.List;
public class A {
    private void getMessage() { //METHOD-1
        System.out.println("getMessage with private");
    }
    public void getMessage(int x) { //METHOD-2
        System.out.println("getMessage with public");
    }
    void getMessage(String y) { //METHOD-3
        System.out.println("getMessage with default");
    }
    protected void getMessage(List<String> z) { //METHOD-4
        System.out.println("getMessage with protected");
    }
}
```

B.java:

```
package pack1;
public class B {
}
```

C.java:

```
package pack2;
import pack1.A;
public class C extends A{
}
```

Choose the correct option with respect to `METHODs` 1, 2, 3, and 4 inside class `A`.

Options :

6406531960253. ✖ Class `B` can access `METHODs 1, 2 and 4`

6406531960254. ✖ Class `C` can access `METHODs 2, 3 and 4`

6406531960255. ✖ Class `B` and `C` both can access all the four methods.

6406531960256. ✔ Class B can access METHODs 2, 3 and 4

6406531960257. ✔ Class C can access METHODs 2, 4

Sub-Section Number : 5

Sub-Section Id : 64065384633

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 138 Question Id : 640653587567 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

From among the options, choose the code segment(s) that give(s) the same output as is given by the Java code inside the CODE BLOCK.

```
import java.util.*;
import java.util.stream.*;

public class Test{
    public static void main(String[] args){
        //CODE BLOCK begins here
        Stream.iterate(1, n -> n+1)
              .map(n -> n * n)
              .limit(4)
              .forEach(i -> System.out.println(i));
        //CODE BLOCK ends here
    }
}
```

Options :

6406531960240. ✖

```
Stream.iterate(1, n -> n+1)
      .map(n -> n * n)
      .filter(n -> n <= 4)
      .forEach(i -> System.out.println(i));
```

6406531960241. ✔

```
Stream.iterate(1, n -> n <= 4, n -> n+1)
      .map(n -> n * n)
      .forEach(i -> System.out.println(i));
```

6406531960242. ✔

```
Stream.iterate(1, n -> n+1)
      .takeWhile(n -> n <= 4)
      .map(n -> n * n)
      .forEach(i -> System.out.println(i));
```

6406531960243. ✖

```
Stream.iterate(1, n -> n+1)
      .map(n -> n * n)
      .dropWhile(n -> n <= 16)
      .forEach(i -> System.out.println(i));
```

Sub-Section Number :	6
Sub-Section Id :	64065384634
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 139 Question Id : 640653587571 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the Java code given below.

```
import java.util.*;
public class SetExample {
    public static void main(String[] args) {
        LinkedList<String> list=new LinkedList<String>();
        list.add("Python");
        list.add("Programming");
        list.add("Java");
        list.add("Programming");
        Set<String> set1=new LinkedHashSet<String>();
        Set<String> set2=new TreeSet<String>();
        for(String str:list) {
            set1.add(str);
            set2.add(str);
        }
        for(String str:set1) {
            System.out.print(str+" ");
        }
        System.out.println();
        for(String str:set2) {
            System.out.print(str+" ");
        }
    }
}
```

What will the output be?

Options :

6406531960258. ✖
```
Java Programming Python
Python Programming Java
```

6406531960259. ✔
```
Python Programming Java
Java Programming Python
```

6406531960260. ✖
```
Python Programming Programming Java
Java Programming Programming Python
```

6406531960261. ✖
```
Java Programming Programming Python
Python Programming Programming Java
```

AppDev2

Section Id :	64065339746
Section Number :	10
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	17
Number of Questions to be attempted :	17
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384635
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 140 Question Id : 640653587576 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : MODERN APPLICATION DEVELOPMENT II (COMPUTER BASED EXAM) "

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?

CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531960278. ✔ YES

6406531960279. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065384636
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 141 Question Id : 640653587577 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the below javascript program.

```
function data(d) {
  return new Promise((res) => {
    setTimeout(() => res('Your Data'), d * 1000)
  })
}

function delta(d) {
  return new Promise((res) => {
    if (d > 3) {
      setTimeout(() => res('delta'), d * 500)
    } else {
      return res('delta')
    }
  })
}
async function getData(d) {
  const start = Date.now()
  const _delta = await delta(d)
  const _data = await data(d)
  const end = Date.now()
  const timeDifference = end - start
}

getData(4)
```

What will be the approximate value of the variable “timeDifference”?

Options :

6406531960280. ✖ Less than 4000

6406531960281. ✖ Is equal to 4000

6406531960282. ✔ Greater than or equal to 6000

6406531960283. ✖ None of these

Question Number : 142 Question Id : 640653587580 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following Vue application with javascript file “app.js” and markup file “index.html”.

app.js:

```
const Teams = {
  template: `<ol><li v-for='team in
teams'>{{team.name}}</li></ol>`,
  data() {
    return {
      teams: [
        { name: 'India', points: 827 },
        { name: 'Australia', points: 820 },
      ],
    }
  },
}
const Rankings = {
  template: `<ol><li v-for='team in sortedTeams'>
{{team.name}}</li></ol>`,
  data() {
    return Teams.data()
  },
  computed: {
    sortedTeams() {
      return this.teams.sort((team1, team2) => {
        return team1.points - team2.points // Statement 1
      })
    },
  },
}

const router = new VueRouter({
  routes: [
    { path: '/', component: Teams },
    { path: '/ranking', component: Rankings },
  ],
})

new Vue({
  el: '#app',
  template: `<div> <router-view /> </div>`,
  router,
})
```

index.html:

```
<div id="app"></div>
```

Suppose the application is running on “http://localhost:8080”. If the developer wants to display the teams in descending order with respect to the points of team, for the URL “http://localhost:8080/#/ranking”. What should be the value of return statement in “sortedTeams” computed property (Marked by statement1)?

Options :

6406531960292. ✖ team1.points - team2.points

6406531960293. ✔ team2.points - team1.points

6406531960294. ✖ team1 > team2

6406531960295. ✖ team2 < team1

Question Number : 143 Question Id : 640653587581 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following Vue application with javascript file “app.js” and markup file “index.html”.

index.html:

```
<body>
    <div id="app"></div>
</body>
```

app.js:

```
const Category = {
  template:
  `<div>{{$route.params.name}}<router-view></router-view></div>
  `,
}

const Error = {
  template: `<div><slot> Page Not Found </slot></div>`,
}
const Product = {
  template: `
  <div>
    <div v-if='filteredProducts.length > 0'>
        <div v-for='product in filteredProducts'>
            Name: {{product.name}}, Price: {{product.price}}
        </div>
    </div>
    <Error v-else> No {{keyword}} Found </Error>
  </div>`,
  data() {
    return {
      keyword: this.$route.params.name,
      products: [
        { category: 'Mobile', name: 'Samsung', price: '10K' },
```

```
        { category: 'Mobile', name: 'Apple', price: '50K' },
        { category: 'Laptop', name: 'Lenovo', price: '70K' },
      ],
    }
  },
  computed: {
    filteredProducts() {
      return this.products.filter(
        (product) =>
          product.category.toLowerCase() ==
  this.keyword.toLowerCase()
      )
    },
  },
  components: {
    Error,
  },
}
const router = new VueRouter({
  routes: [
    {
      path: '/category/:name',
      component: Category,
      children: [{ path: 'product', component: Product }],
    },
    { path: '*', component: Error },
  ],
})

new Vue({
  el: '#app',
  template: '<div><router-view /></div>',
  router,
})
```

Suppose the application is running on "http://localhost:8080". What will be rendered by the browser for the URL "http://localhost:8080/#/"?

Options :

6406531960296. ✔ Page Not Found

6406531960297. ✖ laptop
Name: Lenovo, Price: 70K

6406531960298. ✖

desktop
No desktop Found

6406531960299. ✖

mobile
Name: Samsung, Price: 10K
Name: Apple, Price: 50K

Question Number : 144 Question Id : 640653587583 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following Vue application with javascript file “app.js” and markup file “index.html”.

index.html:

```
<body>
    <div id="app"></div>
</body>
```

app.js:

```
const Category = {
  template:
  `<div>{{$route.params.name}}<router-view></router-view></div>`,
}

const Error = {
  template: `<div><slot> Page Not Found </slot></div>`,
}

const Product = {
  template: `
  <div>
    <div v-if='filteredProducts.length > 0'>
        <div v-for='product in filteredProducts'>
            Name: {{product.name}}, Price: {{product.price}}
        </div>
    </div>
    <Error v-else> No {{keyword}} Found </Error>
  </div>`,
  data() {
    return {
      keyword: this.$route.params.name,
      products: [
        { category: 'Mobile', name: 'Samsung', price: '10K' },
        { category: 'Mobile', name: 'Apple', price: '50K' },
        { category: 'Laptop', name: 'Lenovo', price: '70K' },
      ],
    }
  },
```

```
  computed: {
    filteredProducts() {
      return this.products.filter(
        (product) =>
          product.category.toLowerCase() ==
  this.keyword.toLowerCase()
      )
    },
  },
  components: {
    Error,
  },
}

const router = new VueRouter({
  routes: [
    {
      path: '/category/:name',
      component: Category,
      children: [{ path: 'product', component: Product }],
    },
    { path: '*', component: Error },
  ],
})

new Vue({
  el: '#app',
  template: '<div><router-view /></div>',
  router,
})
```

Suppose the application is running on "http://localhost:8080". What will be rendered by the browser for the URL "http://localhost:8080/#/category/desktop/product"?

Options :

6406531960304. ✖ Page Not Found

6406531960305. ✖ laptop
Name: Lenovo, Price: 70K

6406531960306. ✔

desktop
No desktop Found

mobile
Name: Samsung, Price: 10K
Name: Apple, Price: 50K

6406531960307. ✖

Question Number : 145 Question Id : 640653587584 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following Vue application with javascript file “app.js” and markup file “index.html”.

index.html

```
<body>
    <div id="app"></div>
</body>
```

app.js

```
const Product = {
  template: `<div>
    <slot name="title">No title</slot>
    <slot>No Description Given</slot>
    <slot name="price">Flexible</slot>
    </div>`,
}

new Vue({
  el: '#app',
  template: `
  <Product>
    <p>
       <b>Lenovo Desktop</b>
       8GB RAM, 512GB SSD
    </p>
    <template v-slot:price>
       61K
    </template>
  </Product>`,
  components: {
    Product,
  },
})
```

Suppose the application is running on “http://localhost:8080”. What will be rendered by the browser for the URL “http://localhost:8080/#/”?

Options :

6406531960308. ✔

No title
Lenovo Desktop 8GB RAM, 512GB SSD
61K

6406531960309. ✖

Lenovo Desktop
8GB RAM, 512GB SSD
61K

6406531960310. ✖

Lenovo Desktop
8GB RAM, 512GB SSD
Flexible

6406531960311. ✖

No title
Lenovo Desktop 8GB RAM, 512GB SSD
Flexible

Question Number : 146 Question Id : 640653587588 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the below javascript program, and predict the output, if executed.

```
const data = {
    count: 10
};

const newData = {}

Object.defineProperty(newData, 'count', {
    get() {
        return data.count;
    },
    set(newValue) {
        data.count = newValue;
    },
});
console.log("Before Update:", newData.count);
newData.count = 20;
console.log("After Update:", data.count);
```

Options :

6406531960324. ✖ Before Update: 10

After Update: 10

6406531960325. ✖ Before Update: 10

Error

6406531960326. ✔ Before Update: 10

After Update: 20

6406531960327. ✖ Before Update: 10

After Update: undefined

Sub-Section Number : 3

Sub-Section Id : 64065384637

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 147 Question Id : 640653587578 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following is correct regarding the finally block of Promise?

Options :

6406531960284. ✖ It allows scheduling a function after the promise is rejected.

6406531960285. ✖ It allows scheduling a function after the promise is resolved.

6406531960286. ✔ It allows scheduling a function when promise is either fulfilled or rejected.

6406531960287. ✖ None of these

Question Number : 148 Question Id : 640653587591 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following statements is true?

Options :

6406531960336. ✖ The data stored in session storage gets lost as soon as the page is refreshed.

6406531960337. ✖ The data stored in local storage gets lost as soon as the system shuts down.

6406531960338. ✔ The data stored in session cookies gets lost as soon as the browser is closed.

6406531960339. ✖ All of these

Sub-Section Number :	4
Sub-Section Id :	64065384638
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 149 Question Id : 640653587579 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following Vue application with javascript file “app.js” and markup file “index.html”.

```
const Teams = {
  template: `<ol><li v-for='team in
teams'>{{team.name}}</li></ol>`,
  data() {
    return {
      teams: [
        { name: 'India', points: 827 },
        { name: 'Australia', points: 820 },
      ],
    }
  },
}
const Rankings = {
  template: `<ol><li v-for='team in sortedTeams'>
{{team.name}}</li></ol>`,
  data() {
    return Teams.data()
  },
  computed: {
    sortedTeams() {
      return this.teams.sort((team1, team2) => {
        return team1.points - team2.points // Statement 1
      })
    },
  },
}

const router = new VueRouter({
  routes: [
    { path: '/', component: Teams },
    { path: '/ranking', component: Rankings },
  ],
})

new Vue({
  el: '#app',
  template: `<div> <router-view /> </div>`,
  router,
})
```

index.html:

```
<div id="app"></div>
```

Suppose the application is running on “http://localhost:8080”. What will be rendered by the browser for the url “http://localhost:8080/#/ranking”

Options :

6406531960288. ✖ Australia

6406531960289. ✖ India

6406531960290.

1. Australia
2. India

6406531960291.

1. India
2. Australia

Question Number : 150 Question Id : 640653587582 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following Vue application with javascript file “app.js” and markup file “index.html”.

index.html:

```
<body>
    <div id="app"></div>
</body>
```

app.js:

```
const Category = {
  template:
  `<div>{{$route.params.name}}<router-view></router-view></div>
  `,
}

const Error = {
  template: `<div><slot> Page Not Found </slot></div>`,
}

const Product = {
  template: `
  <div>
    <div v-if='filteredProducts.length > 0'>
        <div v-for='product in filteredProducts'>
            Name: {{product.name}}, Price: {{product.price}}
        </div>
    </div>
    <Error v-else> No {{keyword}} Found </Error>
  </div>`,
  data() {
    return {
      keyword: this.$route.params.name,
      products: [
        { category: 'Mobile', name: 'Samsung', price: '10K' },
        { category: 'Mobile', name: 'Apple', price: '50K' },
        { category: 'Laptop', name: 'Lenovo', price: '70K' },
      ],
    }
  },
```

```
  computed: {
    filteredProducts() {
      return this.products.filter(
        (product) =>
          product.category.toLowerCase() ==
  this.keyword.toLowerCase()
      )
    },
  },
  components: {
    Error,
  },
}

const router = new VueRouter({
  routes: [
    {
      path: '/category/:name',
      component: Category,
      children: [{ path: 'product', component: Product }],
    },
    { path: '*', component: Error },
  ],
})

new Vue({
  el: '#app',
  template: '<div><router-view /></div>',
  router,
})
```

Suppose the application is running on "http://localhost:8080". What will be rendered by the browser for the URL "http://localhost:8080/#/category/mobile/product"?

Options :

6406531960300. ✖ Page Not Found

6406531960301. ✖ laptop
Name: Lenovo, Price: 70K

6406531960302. ✖
desktop
No desktop Found

6406531960303. ✔
mobile
Name: Samsung, Price: 10K
Name: Apple, Price: 50K

Question Number : 151 Question Id : 640653587585 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the below javascript program, and predict the output, if executed.

```
let x = 50;

const obj1 = {
    x : 10,
    func : function (x) {
        console.log(x, "and", this.x)
    }
}

const obj2 = {
    x : 20,
    func : function () {
            console.log(x, "and", this.x)
            obj1.func.call(this)
        }
}

obj2.func.call(obj1)
```

Options :

6406531960312. ✖ 50 and 10

undefined and 20

6406531960313. ✔ 50 and 10

undefined and 10

6406531960314. ✖ 50 and 20

50 and 20

6406531960315. ✖ 20 and 10

50 and 10

Question Number : 152 Question Id : 640653587590 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the below javascript program.

```
async function result (x) {
    const y = 6;
    return new Promise ((reject, resolve) => {
        if (((x * 28) / (7 * x) - 2) == 1)
            reject(y ** 2)
        console.log("Inside Promise")
        resolve(y ** 3)
    })
}

result(x).then(
rej => console.log("Promise rejected with the value", rej),
res => console.log("Promise resolved with the value", res)
).then(data => {
    console.log("Data received is", data);
    return "6"
}).finally(data => {
    console.log("Data received is", data);
    return "34"
}).then(data => console.log("Data received is", data))
```

Assuming the variable "x" passed to the "result" function is a whole number between 1 and 99 (including 1 and 99), what will be shown on the console, if the above program is executed?

Options :

6406531960332. ✖ Promise resolved with the value 36

Data received is 36

Data received is 6

Data received is 34

6406531960333. ✖ Inside Promise

Promise rejected with the value 36

Data received is undefined

Data received is undefined

Data received is 34

6406531960334. ✖ Promise rejected with the value 216

Data received is undefined

Data received is undefined

Data received is 34

6406531960335. ✔ Inside Promise

Promise rejected with the value 216

Data received is undefined

Data received is undefined

Data received is 6

Sub-Section Number :	5
Sub-Section Id :	64065384639
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 153 Question Id : 640653587586 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are true regarding javascript?

Options :

6406531960316. ✖ The “this” reference always refers to the global object inside an arrow function.

6406531960317. ✔ The “call” and “apply” functions are the same, if the calling function doesn’t accept any arguments.

6406531960318. ✔ A variable, declared using “var” outside any function, is accessible throughout the program.

6406531960319. ✖ All of these

Question Number : 154 Question Id : 640653587589 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are true regarding JavaScript language?

```
function rule (num, obj) {
   // some code here
}
rule(num, obj);
```

Options :

6406531960328. ✔ In the above function call, the variable “num” is passed by value, assuming it to be holding a string literal.

6406531960329. ✔ In the above function call, the variable “obj” is passed by reference, assuming it to be holding an object.

6406531960330. ✖ A variable declared using the keyword “var” will have the value “null”, until it is initialized.

6406531960331. ✖ All of these

Sub-Section Number :	6
Sub-Section Id :	64065384640
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 155 Question Id : 640653587587 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the below Vue class bindings:

Code 1:

```
<div :class="[isActive ? 'activeClass' : '', 'errorClass']"></div>
```

Code 2:

```
<div :class="[{ 'activeClass': isActive }, 'errorClass']"></div>
```

Which of the following statement(s) is/are true?

Options :

6406531960320. ✔ Both the code snippets will render the same HTML.

6406531960321. ✖ Both the code snippets will render the different HTML.

6406531960322. ✖ The code snippet 2 will always render the element div with class “activeClass”, and “errorClass” will only be applied, if the data variable “isActive” is truthy.

6406531960323. ✔ The code snippet 1 will always render the element div with class “errorClass”, and “activeClass” will only be applied”, if the data variable “isActive” is truthy.

Question Number : 156 Question Id : 640653587592 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are correct in the context of REST and GraphQL?

Options :

6406531960340. ✖ Both REST and GraphQL are software architectural styles.

6406531960341. ✔ Both REST and GraphQL are in general used for fetching data from a remote storage.

6406531960342. ✖ Every API must adhere to all the REST principles.

6406531960343. ✔ In GraphQL, a write operation should be performed explicitly via a mutation, in general.

MLT

Section Id :	64065339747
Section Number :	11
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	13
Number of Questions to be attempted :	13
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384641
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 157 Question Id : 640653587593 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : MACHINE LEARNING TECHNIQUES (COMPUTER BASED EXAM)"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?

CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531960344. ✔ YES

6406531960345. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065384642
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 158 Question Id : 640653587594 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider a training dataset of n points for a regression problem. Assume that the model is linear. Let $\mathbf{w}_1$ and $\mathbf{w}_2$ be the optimal weight vectors obtained from solving the following optimization problems.

$$\mathbf{w}_1 = \arg\min_{\mathbf{w}} \sum_{i=1}^{n} (\mathbf{w}^T \mathbf{x}_i - y_i)^2$$

$$\mathbf{w}_2 = \arg\min_{\mathbf{w}} \sum_{i=1}^{n} (\mathbf{w}^T \mathbf{x}_i - y_i)^3$$

Choose the most appropriate answer.

Options :

6406531960346. ✔ $\mathbf{w}_1$ will generalize better than $\mathbf{w}_2$ on the test dataset.

6406531960347. ✖ $\mathbf{w}_2$ will generalize better than $\mathbf{w}_1$ on the test dataset.

6406531960348. ✖ Both models will show identical performance on the test dataset.

Question Number : 159 Question Id : 640653587595 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

The training dataset for a binary classification problem is as follows:

$$\{ (\mathbf{u}, 1), \quad (-\mathbf{u}, 0), \quad (2\mathbf{u}, 1), \quad (-2\mathbf{u}, 0) \}$$

where, $\mathbf{u} \in \mathbb{R}^d$ is a non zero constant and each element in the set given above is a data-point of the form $(\mathbf{x}_i, y_i)$. The labels lie in $\{0, 1\}$. Consider a linear classifier with weight vector $\mathbf{w}$. What condition should the weight vector satisfy for the zero-one loss to be zero on this dataset?

Options :

6406531960349. ✖ $\mathbf{w}^T\mathbf{u} < 0$

6406531960350. ✔ $\mathbf{w}^T\mathbf{u} > 0$

6406531960351. ✖ $\mathbf{w}^T\mathbf{u} = 0$

6406531960352. ✖ We can never find a $\mathbf{w}$ for which the zero-one loss becomes zero on this dataset.

Sub-Section Number : 3

Sub-Section Id : 64065384643

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 160 Question Id : 640653587596 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a linear regression model that was trained on dataset X of shape (d, n). Which of the following techniques could potentially decrease the loss on the training data (assuming the loss is the squared error)?

Options :

6406531960353. ✔ Adding a dummy feature in the dataset and learning the intercept w_0 as well.

6406531960354. ✖ Penalizing the model weights with L2 regularization.

6406531960355. ✖ Penalizing the model weights with L1 regularization.

6406531960356. ✔ Training the kernel regression model of degree 2.

Question Number : 161 Question Id : 640653587598 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements are true about the decision tree algorithm?

Options :

6406531960361. ✖ Decision trees are prone to overfit if the maximum depth is set too low.

6406531960362. ✔ Decision trees are prone to underfit if the maximum depth is set too low.

6406531960363. ✔ Decision trees are sensitive to small perturbations in the dataset and can result in different tree structures.

6406531960364. ✔ Decision trees can handle both numerical and categorical features.

Sub-Section Number : 4

Sub-Section Id : 64065384644

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 162 Question Id : 640653587597 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4.5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements is/are true regarding solution of Ridge regression problem?

Options :

6406531960357. ✔ If there are multiple w solutions for minimizing mean square error, then w_R will be the one with least norm.

6406531960358. ✖ If there are multiple w solutions for minimizing mean square error, then w_R will be the one with highest norm.

6406531960359. ✔ Prior for w is $\mathrm{N}(0, \gamma^2 I)$ and $y_i|x_i \sim \mathrm{N}(w^T x_i, \sigma^2)$

6406531960360. ✖ Prior for w is $\mathrm{N}(1, \gamma^2 I)$ and $y_i|x_i \sim \mathrm{N}(0, \sigma^2)$

Sub-Section Number : 5

Sub-Section Id : 64065384645

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 163 Question Id : 640653587599 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4.5

Question Label : Short Answer Question

Consider kernel regression with the kernel function $(\mathbf{x}_1^T\mathbf{x}_2 + 2)^2$ applied on the following dataset.

$$\mathbf{X} = \begin{bmatrix} 1 & 0 & 2 & 0 & 3 & 0 \\ 0 & 1 & 0 & 2 & 0 & 3 \\ 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$$

The optimal weight vector $\mathbf{w}^*$ is given by:

$$\mathbf{w}^* = \phi(X)[0.1, 2, 3.9, 5, 6, 8]^T$$

where ϕ is transformation mapping corresponding to the given kernel. What will be the prediction for the data point $[0, 0, 1]^T$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Sub-Section Number : 6

Sub-Section Id : 64065384646

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 164 Question Id : 640653587600 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Consider a ridge regression model with the loss $L(\mathbf{w}) = ||X^T\mathbf{w} - \mathbf{y}||^2 + \lambda||\mathbf{w}||^2$ is trained on a given dataset with $\lambda = 0.1, 0, 1, 10, 100$. Which of the following value of λ is more likely to underfit the model?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

100

Question Number : 165 Question Id : 640653587601 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Short Answer Question

Consider the following data set:

$X = [8, 6, 10]$

Assuming a ridge penalty $\lambda = 100$, what will be the value of $\frac{\hat{w}_{ridge}}{\hat{w}_{MLE}}$?

Here $\hat{w}_{ridge}$ and $\hat{w}_{MLE}$ are the Ridge and MLE estimates of the weight vectors, respectively. Assume that the label vector y of shape $(3, 1)$ is known. Enter your answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.65 to 0.70

Sub-Section Number :	7
Sub-Section Id :	64065384647
Question Shuffling Allowed :	Yes

Is Section Default? : null

Question Number : 166 Question Id : 640653587602 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2.5

Question Label : Short Answer Question

A binary classification dataset contains only one feature and the data points given the label follow the Gaussian distributions whose means and variances are already estimated as:

$$x|(y=0) \sim \mathrm{N}(0,1)$$
$$x|(y=1) \sim \mathrm{N}(2,2)$$

What will be the prediction for the point $x = 1$? Assume that $\hat{p}$, an estimate for $P(y=1)$, is 0.5.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Sub-Section Number : 8

Sub-Section Id : 64065384648

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653587603 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (167 to 168)

Question Label : Comprehension

Consider a binary classification problem and a decision tree that is being trained to classify the points. In one of the internal nodes in this tree, 75% of the data-points belong to one of the two classes and the rest belong to the other class. You are not given the information about which class

is more numerous in this node.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 167 Question Id : 640653587604 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1.5

Question Label : Multiple Choice Question

Do you have enough information to find the entropy of this node?

Options :

6406531960369. ✔ Yes

6406531960370. ✖ No

Question Number : 168 Question Id : 640653587605 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

If the answer to the previous questions is "Yes", find the entropy of the node. Use $\log_2$ and enter your answer correct to three decimal places.

If the answer to the previous question is "No", enter -1 as your answer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.79 to 0.83

Sub-Section Number : 9

Sub-Section Id : 64065384649

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653587606 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (169 to 171)

Question Label : Comprehension

Consider a probability distribution over (X, y) where features are one-dimensional and $y \in \{+1, -1\}$. Let $X|(y = 1)$ follow a uniform distribution over $[0, 4]$ and $X|(y = -1)$ follows a uniform distribution over $[2, 4]$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 169 Question Id : 640653587607 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

If $p = P(y = 1)$ is estimated to be 0.4, what will be the prediction for the point $x = 3$ using the Bayes classifier? Enter 1 or -1.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-1

Question Number : 170 Question Id : 640653587608 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Let $x = 2$ and let $\hat{p}$ be the estimate for $p = P(y = 1)$. Find conditions on $\hat{p}$ such that the Bayes classifier predicts 1 for this x. Consider that the tie-breaker is predicted in class 1.

Options :

6406531960373. ✖ $\hat{p} \leq \frac{1}{4}$

6406531960374. ✖ $\hat{p} \geq \frac{1}{4}$

6406531960375. ✖ $\hat{p} \leq \frac{2}{3}$

6406531960376. ✔ $\hat{p} \geq \frac{2}{3}$

Question Number : 171 Question Id : 640653587609 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

If $p = P(y = 1)$ is estimated to be 0.5 using MLE on a given training dataset, what will be the training error of the Bayes classifier for this problem?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.5

Sub-Section Number :	10
Sub-Section Id :	64065384650
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653587610 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (172 to 173)

Question Label : Comprehension

Consider a naive Bayes model is trained on the following data matrix X of shape (d, n) and corresponding label vector y:

$$X = \begin{bmatrix} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix} \quad y = [1 \quad 0 \quad 1 \quad 0]^T$$

Assume that $\hat{p}$ and $\hat{p}_j^{y_i}$ are estimates for $P(y = 1)$ and $P(f_j = 1|y = y_i)$, respectively. Here, $f_i;\ i = 1, 2, 3$ is the i^{th} feature. These parameters are estimated using MLE. Do not apply any smoothing on the dataset.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 172 Question Id : 640653587611 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Calculate the value of $\hat{p}_2^0$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.5

Question Number : 173 Question Id : 640653587612 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Calculate the value of $\hat{p}_2^1$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

MLP

Section Id :	64065339748
Section Number :	12
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	24

Number of Questions to be attempted :	24
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384651
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 174 Question Id : 640653587613 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : MACHINE LEARNING PRACTICE (COMPUTER BASED EXAM) "

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?
CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531960380. ✔ YES

6406531960381. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065384652
Question Shuffling Allowed :	Yes

Is Section Default? : null

Question Number : 175 Question Id : 640653587614 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Consider the following code and its output:
Code:

```
from sklearn.datasets import load_iris
from sklearn.linear_model import LogisticRegression

X, y = load_iris(return_X_y=True)
clf = LogisticRegression(random_state=0).fit(X, y)

print(y[70:80])
print(clf.predict(X[70:80, :]))
```

Output:

```
[1 1 1 1 1 1 1 1 1 1]
[2 1 1 1 1 1 1 2 1 1]
```

What will be the output of the following code? Enter your answer correct to one decimal place.

```
print(clf.score(X[70:80, :], y[70:80]))
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.8

Question Number : 176 Question Id : 640653587623 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

What might be the possible output of the following code:

```
from sklearn.metrics import precision_score
y_true = [1,1,0,1,0,0,1,0,1]
y_pred = [1,1,0,0,0,0,0,0,1]
print(precision_score(y_true,y_pred))
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1.00

Question Number : 177 Question Id : 640653587625 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

What will be the output of the following code ?

```
from sklearn.neighbors import KNeighborsClassifier
X_train = [[1,100],[4,400],[5,500],[6,600],[8,800],[9,900],
           [11,1100],[12,1200],[15,1500], [18,1800],[19,1900]]
y_train = [0,0,1,1,1,2,2,2,2,2,2]

X_test = [[2,200]]

knn = KNeighborsClassifier(n_neighbors= len(y_train),
                           metric="euclidean",
                           weights= 'uniform')
knn.fit(X_train,y_train)

print(knn.predict(X_test))
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 178 Question Id : 640653587628 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

What will be the output of the following code?

```
import numpy as np
from sklearn.impute import KNNImputer
X = np.array([[5,6,3],[np.nan,1,5],[0,2,8],[4,4,2]])
knn = KNNImputer(n_neighbors=2,weights="uniform")
X_trf= knn.fit_transform(X)
print(X_trf[1][0])
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sub-Section Number :	3
Sub-Section Id :	64065384653
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 179 Question Id : 640653587615 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

The parameter `C` in a logistic regression is:

Options :

6406531960383. ✖ similar to the parameter `alpha` in a ridge regressor.

6406531960384. ✔ similar to `1 / alpha` where `alpha` is the parameter of a ridge regressor.

6406531960385. ✖ not controlling the regularization.

6406531960386. ✖ Weights associated with classes while fitting the model.

Question Number : 180 Question Id : 640653587617 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Your task to design a model that can predict label of an article, in order to help an online news website. The labels could be "**political**", "**sports**" and "**international**".

Following is the label matrix for random 3 articles:

$$\begin{bmatrix} 1 & 0 & 0 \\ 1 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

What type of classification problem is this?

Options :

6406531960391. ✖ Binary class, single label classification.

6406531960392. ✖ Binary class, multi label classification.

6406531960393. ✔ Multi class, multi label classification.

6406531960394. ✖ Multi class, single label classification.

Question Number : 181 Question Id : 640653587619 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

How does strong correlation between features given the labels impact the classification performance in Naive Bayes?

Options :

6406531960399. ✖ It has no impact because Naive Bayes assumes feature independence.

6406531960400. ✖ It improves the classification performance.

6406531960401. ✔ It degrades the classification performance.

6406531960402. ✖ It depends on the type of Naive Bayes variant used.

Question Number : 182 Question Id : 640653587620 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

When might the Precision-Recall curve be more informative than the ROC curve?

Options :

6406531960403. ✔ When the dataset is imbalanced.

6406531960404. ✖ When the dataset has equal numbers of positive and negative instances.

6406531960405. ✖ When the classifier has high accuracy.

6406531960406. ✖ When the classifier produces balanced precision and recall values.

Question Number : 183 Question Id : 640653587621 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Given ordinal data of the sizes of cups used in a coffee shop. Which of the following code will correctly transform the dataset as given in output array ?

dataset = [['Small'],['Large'],['Large'],['Large'],['Normal'],['Small'],['Large'],['Normal']]

output = [[0],[2],[2],[2],[1],[0],[2],[1]]

Options :

6406531960407. ✖

```
from sklearn.preprocessing import OrdinalEncoder
oe = OrdinalEncoder()
print(oe.fit_transform(dataset))
```

6406531960408. ✔

```
from sklearn.preprocessing import OrdinalEncoder
oe = OrdinalEncoder(categories = [['Small','Normal','Large']])
print(oe.fit_transform(dataset))
```

6406531960409. ✖

```
from sklearn.preprocessing import OrdinalEncoder
oe = OrdinalEncoder()
print(oe.transform(dataset))
```

6406531960410. ✖

```
from sklearn.preprocessing import OrdinalEncoder
oe = OrdinalEncoder({"small"=0, "Normal"=1, "Large"=2})
print(oe.fit_transform(dataset))
```

Question Number : 184 Question Id : 640653587622 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following parameters learned by the KNN(KNeighborRegressor) model while training?

Options :

6406531960411. ✖ coef_

6406531960412. ✖ n_neighbors

6406531960413. ✖ weight

6406531960414. ✔ None of these

Question Number : 185 Question Id : 640653587624 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

For a support vector machine model, let X_i be an input instance with label y_i. If X_i is a support vector what will be the output of this formula :

$$y_i * (X_i^T W + W_0)$$

W_0 and W are the estimated parameters from the model

Options :

6406531960416. ✖ > 1

6406531960417. ✖ < 1

6406531960418. ✔ =1

6406531960419. ✖ Cannot be determined

Question Number : 186 Question Id : 640653587626 Question Type : MCQ Is Question

Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Consider below code which of the following option is true for that

```
from sklearn.neighbors import NearestNeighbors
neigh = NearestNeighbors(n_neighbors=4)
neigh.fit(X_train)
print(neigh.kneighbors(X_test[0:1]))
```

Assume `X_train` and `X_test` are of type numpy.ndarray.

Options :

6406531960421. ✖ It will print nearest neighbours from the test point.

6406531960422. ✖ It will print the distance of test point from all the training points.

6406531960423. ✔ It will print the distance and the index of the n_neighbors (in training set) for the test point.

6406531960424. ✖ It will throw an error.

Question Number : 187 Question Id : 640653587632 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Which of these may NOT help in handling overfitting in decision trees?

Options :

6406531960439. ✖ Increasing the value of min_samples_split

6406531960440. ✖ Increasing the value of the pruning parameter

6406531960441. ✖ Increasing the value of min_samples_leaf

6406531960442. ✔ Increasing the depth of the tree

Question Number : 188 Question Id : 640653587635 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

In a `BaggingClassifier` or `BaggingRegressor`, the parameter `base_estimator` can be:

Options :

6406531960451. ✔ Any predictor

6406531960452. ✖ only a decision tree predictor

6406531960453. ✖ only a linear model predictor

6406531960454. ✖ only a support vector predictor

Question Number : 189 Question Id : 640653587636 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

You are working on a classification problem using `sklearn.ensemble.RandomForestClassifier`. After training the model, you want to evaluate its performance on a test dataset. Which of the following method(s) can be used to obtain the predicted class probabilities for the test samples?

Options :

6406531960455. ✖ predict

6406531960456. ✔ predict_proba

6406531960457. ✖ decision_function

6406531960458. ✖ score

Sub-Section Number :	4
Sub-Section Id :	64065384654
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 190 Question Id : 640653587616 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

For which of the following cases, f1-score is the most suitable evaluation metric?

Options :

6406531960387. ✔ There are 10,000 images, each contains either a cat or a dog. Exactly 500 contain cats and others contain dogs. Your task is to train a binary classifier.

6406531960388. ✔ Train a binary classifier to detect if an MRI image contains carcinogenic cells or not. Number of true positives are 2%.

6406531960389. ✖ Predicting if a chest x-ray belongs to a male patient or a female patient. There are nearly equal number of samples of each category.

6406531960390. ✔ Based on a student's senior secondary marks and other features, predicting if he will fail a particular exam. The exam clearing rate is 98.23%.

Question Number : 191 Question Id : 640653587618 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is correct?

Options :

6406531960395. ✖ SGDClassifier(loss="percept") is stochastic version of a perceptron model

6406531960396. ✔ SGDClassifier(loss="log_loss") is stochastic version of a logistic classifier model

6406531960397. ✖ SGDClassifier(loss="log_loss") is stochastic version of a SVM model

6406531960398. ✔ SGDClassifier(loss="hinge") is stochastic version of a SVM model

Question Number : 192 Question Id : 640653587627 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following option is true?

Options :

6406531960425. ✖ Distance between the datapoints varies as we change the n_neighbors parameter in KNeighborsClassifier.

6406531960426. ✖ KNeighborsClassifier model couldn't able to predict labels for the samples outside of the training dataset because it does not learn from dataset.

6406531960427. ✔ MinMaxScaler can impact the KNeighborsClassifier's accuracy score

6406531960428. ✖ KNeighborsClassifier can help in outlier detection

Question Number : 193 Question Id : 640653587629 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following value of C can overfit the SVM classifier model for the linearly inseparable data?

Options :

6406531960430. ✖ 0.0001

6406531960431. ✖ 1

6406531960432. ✔ 1000

6406531960433. ✖ Cannot be determined

Sub-Section Number :	5
Sub-Section Id :	64065384655
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 194 Question Id : 640653587630 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

What will be the output of the following code:

```
from sklearn.feature_extraction.text import HashingVectorizer
corpus = ['You can have it all. Just not all at once.',
          'Train your mind to see the good in every situation.',
          'What we think, we become.',
          'If I got rid of my demons, I'd lose my angels.',]
vectorizer = HashingVectorizer(n_features= 12,lowercase=True)
X = vectorizer.fit_transform(corpus)
print(X.shape[1])
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

12

Sub-Section Number :	6
Sub-Section Id :	64065384656
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 195 Question Id : 640653587631 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the following code. How many different parameter combinations will be tried in GridSearchCV?

```
from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import GridSearchCV
from sklearn.datasets import load_iris

X, y = load_iris(as_frame = True, return_X_y = True)

param_grid = [{'max_depth':range(1, 10, 2),
               'min_samples_split': range(2, 10, 3)},
              {'min_samples_leaf': range(1, 11, 3)}]
gs = GridSearchCV(DecisionTreeClassifier(),
                  param_grid, cv = 5)
gs.fit(X,y)
```

Options :

6406531960435. ✖ 12

6406531960436. ✖ 80

6406531960437. ✖ 60

6406531960438. ✔ 19

Sub-Section Number :	7
Sub-Section Id :	64065384657
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 196 Question Id : 640653587633 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following is the most expected output for the code given below:

```
from sklearn.datasets import load_wine
from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import train_test_split
X,y = load_wine(as_frame = True, return_X_y = True)

X_train,X_test,y_train,y_test = train_test_split(X,
                                                 y,
                                                 test_size = 0.10,
                                                 random_state = 12)

clf1 = DecisionTreeClassifier(ccp_alpha = 0.1,
                              random_state = 81)

clf2 = DecisionTreeClassifier(ccp_alpha = 0.25,
                              random_state = 81)

clf1.fit(X_train, y_train)
clf2.fit(X_train, y_train)

print(clf1.score(X_train, y_train))
print(clf2.score(X_train, y_train))
print(clf1.get_depth())
print(clf2.get_depth())
```

Options :

6406531960443. ✖ 0.9875

0.9125

2

3

6406531960444. ✖ 0.9125

0.9875

2

3

6406531960445. ✔ 0.9875

0.9125

3

2

6406531960446. ✖ 0.9125

0.9875

3

2

Sub-Section Number : 8

Sub-Section Id : 64065384658

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 197 Question Id : 640653587634 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following block of code:

```
from sklearn.datasets import load_wine
from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import train_test_split
X,y = load_breast_cancer(as_frame = True,
                         return_X_y = True)
X_train,X_test,y_train,y_test = train_test_split(X,y,
                                                 test_size = 0.2,
                                                 random_state = 1)
clf = DecisionTreeClassifier(min_samples_split = 8,
                             min_samples_leaf = 5,
                             random_state = 5)
clf.fit(X_train, y_train)
print(clf.score(X_test, y_test))
```

In which of the following scenarios, the split will be done at a node N?

Options :

6406531960447. ✖ Number of samples at node N = 5. If it is split, it will result in 3 samples in the left child and 2 samples in the right child.

6406531960448. ✔ Number of samples at node N = 10. If it is split, it will result in 5 samples in the left child and 5 samples in the right child.

6406531960449. ✔ Number of samples at node N = 15. If it is split, it will result in 9 samples in the left child and 6 samples in the right child.

6406531960450. ✖ Number of samples at node N = 8. If it is split, it will result in 5 samples in the left child and 3 samples in the right child.

BDM

Section Id :	64065339749
Section Number :	13
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
Section Marks :	17
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384659
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 198 Question Id : 640653587637 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : BUSINESS DATA MANAGEMENT (COMPUTER BASED EXAM)"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?

CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531960459. ✔ YES

6406531960460. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065384660
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 199 Question Id : 640653587638 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

The total cost is Rs. 5000 and the quantity produced is 100 units. What is the average variable cost per unit if the fixed cost is Rs. 2,000? Round off to nearest whole number

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

30

Question Number : 200 Question Id : 640653587641 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

A small company has current assets of Rs. 200,000, inventories of Rs. 50,000, and current liabilities of Rs. 100,000. What is the quick ratio? Round off to 2 decimal places

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1.5

Question Number : 201 Question Id : 640653587642 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

A consumer consumes three units of a good. The marginal utility obtained from the first unit is 10, and the marginal utility decreases by 2 with each unit consumed. What is the total utility? Round off to nearest whole number

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

24

Question Number : 202 Question Id : 640653587644 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

A firm has Rs. 10,00,000/- as accounts receivable, while its annual sales turnover is Rs. 150,00,000/-. Calculate the firm's debtor days (round the answer to 2 decimal places).

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

24.30 to 24.40

Question Number : 203 Question Id : 640653587648 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

A firm with no fixed costs employs 1 person with at a salary of Rs 25,000 per month and buys material worth Rs 3 lakhs a year to produce and sell 100 units of a product during the year. At what price should the product be sold so that the net profit margin as a percentage of sales is 25% ? Round off to the nearest integer value

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

8000

Sub-Section Number :	3
Sub-Section Id :	64065384661
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 204 Question Id : 640653587639 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following is NOT a measure of liquidity?

Options :

6406531960462. ✔ Marginal utility

6406531960463. ✖ Current ratio

6406531960464. ✖ Quick ratio

6406531960465. ✖ Cash ratio

Question Number : 205 Question Id : 640653587640 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

The current ratio is calculated by dividing:

Options :

6406531960466. ✖ Current liabilities by current assets

6406531960467. ✖ Total assets by total liabilities

6406531960468. ✔ Current assets by current liabilities

6406531960469. ✖ Total liabilities by total assets

Question Number : 206 Question Id : 640653587643 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

An e-commerce website was having a dry spell despite running a price promotion. To boost the sales, the website started showing small banners below every product with statements such as “someone purchased this product 2 hours ago / 4 people are looking at this product” and uses this to charge a premium, because it now seems as if the demand is very high. What pricing strategy is the website using?

Options :

6406531960472. ✖ Customer value pricing

6406531960473. ✖ Contribution pricing

6406531960474. ✖ Going rate pricing

6406531960475. ✔ Psychological pricing

Sub-Section Number :	4
Sub-Section Id :	64065384662
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653587645 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (207 to 208)

Question Label : Comprehension

The sales data of six firms in the same industry is shown below:

Firm	Sales in 2022
Firm A	3,000
Firm B	4,000
Firm C	1,000
Firm D	8,000
Firm E	3,000
Firm F	1,000

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 207 Question Id : 640653587646 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Calculate the market share of the top four firms. Round off to a whole number between 0 and 100

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

90

Question Number : 208 Question Id : 640653587647 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Calculate the Herfindahl index. Round off to the nearest integer value between 0 and 10000

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2500

Business Analytics

Section Id : 64065339750

Section Number :	14
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	11
Number of Questions to be attempted :	11
Section Marks :	20
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384663
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 209 Question Id : 640653587649 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : BUSINESS ANALYTICS (COMPUTER BASED EXAM)"

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?

CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531960480. ✔ YES

6406531960481. ✖ NO

Sub-Section Number : 2

Sub-Section Id : 64065384664

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 210 Question Id : 640653587650 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0.5

Question Label : Multiple Choice Question

Latent demand in a demand-response curve is the area obtained when

Options :

6406531960482. ✔ Price is reduced below the identified optimal price

6406531960483. ✖ Price is increased beyond the identified optimal price

6406531960484. ✖ The optimal price is increased beyond the maximum available price

6406531960485. ✖ Quantity is reduced below the identified optimal quantity

Question Number : 211 Question Id : 640653587660 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0.5

Question Label : Multiple Choice Question

What is the objective function of logistic regression?

Options :

6406531960502. ✖ Minimization of squared errors

6406531960503. ✔ Maximization of log-likelihood

6406531960504. ✖ Minimization of residuals

6406531960505. ✖ None of these

Sub-Section Number : 3

Sub-Section Id : 64065384665

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653587651 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (212 to 214)

Question Label : Comprehension

A multiple linear regression model, as specified below, is fit on a dataset with 250 data points. Then answer the given subquestions (*Note: If your answer is in decimal, enter it rounded to two decimal places. For example, if your answer is "10.256", enter it as "10.26"*)

$$\text{MLR Model: } Y = 2.1 + 1.4 * X_1 - 4.2 * X_2 + 0.5 * X_3 + 7 * X_4 + \varepsilon$$

Sub questions

Question Number : 212 Question Id : 640653587652 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

How many degrees of freedom are present for the "Residuals" in the ANOVA Table?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

245

Question Number : 213 Question Id : 640653587653 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

How many total degrees of freedom are present for the fitted model in the ANOVA Table?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

249

Question Number : 214 Question Id : 640653587654 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

If no feature engineering was performed, then how many features were present in the dataset?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number :	4
Sub-Section Id :	64065384666
Question Shuffling Allowed :	Yes

Is Section Default? : null

Question Number : 215 Question Id : 640653587655 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

The relationship between Demand “D” and Selling Price “P” is given by the equation D(p) = 180 – 6*P. If the intention is to maximize the profit, then what is the optimal selling price if the item is going to be made at Rs. 20 per unit?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

25

Question Number : 216 Question Id : 640653587658 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

Say a demand response curve is modelled as a constant elasticity curve. If Q1 is 2400 units, Q2 is 1500 units, P1 is Rs. 100 and P2 is Rs. 200, then what is the elasticity of the curve? (*Note: If your answer is in decimal, enter it rounded to two decimal places. For example, if your answer is “10.256”, enter it as “10.26”*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.65 to 0.70

Sub-Section Number : 5

Sub-Section Id : 64065384667

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 217 Question Id : 640653587656 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

You are solving a regression problem with 8 explanatory variables. The data has 150 observations, and the R-square value was found to be 0.75. You are adding one more explanatory variable to the dataset (a total of 9 explanatory variables). The new R-square value is 0.8, and the new adjusted R-square value is 0.92. What does this imply?

Options :

6406531960490. ✖ The new variable does not improve the model

6406531960491. ✖ The new variable alone has high explanatory power

6406531960492. ✖ The data is too small for fitting a regression model with 9 variables

6406531960493. ✔ None of these

Sub-Section Number : 6

Sub-Section Id : 64065384668

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 218 Question Id : 640653587657 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

What does the term “Multicollinearity” refer to? (Select all that are applicable)

Options :

6406531960494. ✖ The dependent and independent variables are not-related

6406531960495. ✖ The dependent and independent variables are linearly related

6406531960496. ✖ The dependent variable is linearly related to another dependent variable

6406531960497. ✔ None of these

Question Number : 219 Question Id : 640653587659 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

What are the applications of logistic regression?

Options :

6406531960499. ✔ Predicting binary outcomes

6406531960500. ✔ Predicting the multi-class output

6406531960501. ✔ Predicting the odds of the occurrence of a specific event

Sub-Section Number :	7
Sub-Section Id :	64065384669
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653587661 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (220 to 222)

Question Label : Comprehension

Based on the below confusion matrix, answer the given subquestions. (*Note: Give your answer in decimal (not in %) rounded to two decimal places. For example, if your answer is "10.256", enter it as "10.26"*)"

		Actual	
		Positive	Negative
Predicted	Positive	45	18
	Negative	12	25

Sub questions

Question Number : 220 Question Id : 640653587662 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

What is the accuracy of the model?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.7

Question Number : 221 Question Id : 640653587663 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

What is the precision of the model for predicting the positive class?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.71 to 0.72

Question Number : 222 Question Id : 640653587664 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Short Answer Question

What is the recall of the model for predicting the positive class?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.79 to 0.80

Sub-Section Number :	8
Sub-Section Id :	64065384670
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653587665 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (223 to 228)

Question Label : Comprehension

You are given the below regression output. Then answer the given subquestions (*Note: If your answer is in decimal, enter it rounded to two decimal places. For example if your answer is "10.256",*

enter it as "10.26")

SUMMARY OUTPUT								
Regression Statistics								
Multiple R	0.442234909							
R Square	0.195571715							
Adjusted R Square	0.150881255							
Standard Error	27.32379716							
Observations	20							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	X1	X3	3267.182	X5	0.050888766			
Residual	X2	13438.61805	X4					
Total	19	16705.8						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	836.8263158	12.69276328	65.9294	6.41147E-23	810.1598097	863.4928219	810.1598097	863.4928219
X Variable 1	2.216541353	1.059571407	2.091923	0.050888766	-0.009535568	4.442618275	-0.009535568	4.442618275

Sub questions

Question Number : 223 Question Id : 640653587666 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0.5

Question Label : Short Answer Question

What is the value of X1?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 224 Question Id : 640653587667 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0.5

Question Label : Short Answer Question

What is the value of X2?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

18

Question Number : 225 Question Id : 640653587668 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0.5

Question Label : Short Answer Question

What is the value of X3?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

3267.10 to 3267.30

Question Number : 226 Question Id : 640653587669 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0.5

Question Label : Short Answer Question

What is the value of X4?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

746.40 to 746.65

Question Number : 227 Question Id : 640653587670 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0.5

Question Label : Short Answer Question

What is the value of X5?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

4.25 to 4.45

Question Number : 228 Question Id : 640653587671 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0.5

Question Label : Short Answer Question

What is the p-value for the regression model?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.05 to 0.06

System Commands

Section Id :	64065339751
Section Number :	15
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	14
Number of Questions to be attempted :	14
Section Marks :	100
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065384671
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 229 Question Id : 640653587672 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : SYSTEM COMMANDS (COMPUTER BASED EXAM) "

ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?

CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.

(IF IT IS NOT THE CORRECT SUBJECT, PLS CHECK THE SECTION AT THE TOP FOR THE SUBJECTS REGISTERED BY YOU)

Options :

6406531960515. ✔ YES

6406531960516. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065384672
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 230 Question Id : 640653587673 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 7

Question Label : Short Answer Question

```
$ pwd
/home/pinky
$ cd /var
$ pwd
/var
$ for i in {1..10}; do cd -; done
```

What is the output to the command `pwd` at the end of the execution of the given script?

Hint: `cd -` will change the current working directory to the previous current working directory.

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : Yes

Text Areas : PlainText

Possible Answers :

/var

Sub-Section Number :	3
Sub-Section Id :	64065384673
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653587674 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (231 to 235)

Question Label : Comprehension

```
echo 1 > file1
mkdir dir1 dir2

ln file1 file1_h1
ln -s file1 file1_s1
ln -s file1 dir1/file1_s2

cd dir1
cp ../file1 .
echo 2 > file1
ln -s ../file1 file1_s3
ln -s file1 file1_s4
cd ..

cp file1 dir2/file1
cp file1_s1 dir2/file1_s5
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 231 Question Id : 640653587675 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What will be the output of
`cat ./dir1/file1` after the
execution of the given script?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 232 Question Id : 640653587676 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What will be the output of
`echo 3 > file1_h1; cat ./file1`
after the execution of the given
script?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 233 Question Id : 640653587677 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What will be the output of

```
echo 4 > ./dir1/file1_s1; cat ./file1
```

after the execution of the given script?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 234 Question Id : 640653587678 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What will be the output of

```
echo 5 > ./dir1/file1_s3; cat ./dir1/file1
```

after the execution of the given script?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 235 Question Id : 640653587679 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

What will be the output of

```
echo 6 > ./dir1/file1_s3; cat ./file1
```

after the execution of the given script?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Sub-Section Number :	4
Sub-Section Id :	64065384674
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 236 Question Id : 640653587680 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Multiple Choice Question

Which of the following commands will print the environmental variable `HOME`.

Options :

6406531960523. ✖ `awk 'BEGIN{print $HOME}'`

6406531960524. ✖ `awk 'BEGIN{print ENVIRON['HOME']}'`

6406531960525. ✔ `awk 'BEGIN{print ENVIRON["HOME"]}'`

6406531960526. ✖ `awk 'BEGIN{print ENVIRON[${HOME}]}'`

Question Number : 237 Question Id : 640653587683 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Multiple Choice Question

```
[ a = a ] && [ 1 -ne 2 ]
v1=$?
[[ a = a && 2 -ne 2 ]]
v2=$?
echo $((v2 - v1))
```

What will be the output from the given script?

Options :

6406531960532. ✖ 0

6406531960533. ✔ 1

6406531960534. ✖ 2

6406531960535. ✖ 3

Question Number : 238 Question Id : 640653587689 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Multiple Choice Question

What will be the result of the keystrokes `$jddk0dw` on vi editor or `<C-e><C-k><C-k><C-a><M-d><C-d>` on emacs editor from first line first character on the text given below. `<C-x>` and `<M-x>` refers to Control + x and Meta/Alt + x respectively ?

```
abcd efgh ijkl
mnop qrst uvw
xyz
```

Hint:
Emacs: - `<C-k>` delete the entire line (from the cursor to the end) - `<M-d>` delete word - `<C-d>` delete character
Vi: - `dd` delete the entire line - `dw` delete word

Options :

6406531960556. ✖

```
abcd efgh
xyz
```

6406531960557. ✖

```
mnop qrst uvw
xyz
```

6406531960558. ✔

```
efgh ijkl
xyz
```

6406531960559. ✖

```
efgh ijkl
mnop
xyz
```

Sub-Section Number :	5
Sub-Section Id :	64065384675
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 239 Question Id : 640653587681 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 8

Question Label : Short Answer Question

What will be the output of the given command?

```
seq 50 | sed 's/\([[:digit:]]\)\1/\1/g' | sort -n | uniq | wc -l
```

Hint:

1. `seq 100` will generate 1 to 100 in each line
2. `-n` option in `sort` command sorts numerically
3. `uniq` command will remove the adjacent duplicate lines

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

46

Sub-Section Number :	6
Sub-Section Id :	64065384676
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 240 Question Id : 640653587682 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 8 Max. Selectable Options : 0

Question Label : Multiple Select Question

```
awk '
/^[0-9].*[0-9]*$/ {
    arr[FILENAME]++
}
END {
    for (i in arr) {
        print i, arr[i]
    }
}
' *
```

What does the given AWK command print?
Hint: FILENAME is a default variable that has the value of filename

Options :

6406531960528. ✔ The filename and count that includes the lines in the file that starts with numbers

6406531960529. ✖ The filename and count that includes the lines in the file that ends with numbers

6406531960530. ✔ The filename and count that includes the lines in the file that starts and ends with numbers

6406531960531. ✖ The filename and count that includes the lines that have a number in it

Question Number : 241 Question Id : 640653587688 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 8 Max. Selectable Options : 0

Question Label : Multiple Select Question

A html file index.html has the following general format. Identify the correct command which will extract content from `<PRE>` tags (that is, the content between `<PRE>` and `</PRE>`) which **includes lines with tags.**

```
<HTML>
<HEAD>
 <TITLE>Some Title</TITLE>
</HEAD>
<BODY>
<H2>Some Heading</H2>
<SMALL><STRONG>
SomeText<BR>
SomeInfo<BR>
</STRONG></SMALL>
<CENTER>
<FONT SIZE="-1"></CENTER><PRE>
Data interested In
Can be Multiline
The context between PRE tags needs to be Extracted
</PRE></FONT>
</CENTER>
<SMALL>SomeCreator</A>
</SMALL>
</TD>
</TR>
</TABLE>
</BODY>
</HTML>
```

Options :

6406531960552. ✔ `sed -n "/<PRE>/,/<\/PRE>/p" index.html`

6406531960553. ✖ `sed -n "/<PRE>/,/<\/PRE>/{/<PRE>/! {/<\/PRE>/! p}}" index.html`

6406531960554. ✖ `sed -n "/<PRE>/,/<\/PRE>/{/<PRE>/!,/<\/PRE>/! p}" index.html`

6406531960555. ✔ `awk '/<PRE>/,/<\/PRE>/' index.html`

Sub-Section Number :	7
Sub-Section Id :	64065384677
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 242 Question Id : 640653587684 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 8

Question Label : Multiple Choice Question

Assume a large file with more than a million lines of numbers having size of more than 4 gigabytes is processed using AWK. But the system we have only 1 gigabyte of RAM. Here we have two AWK scripts written; choose the most appropriate statement.

Script 1

```
{
    seq[NR]=$1
}
END {
    prev=""
    for (i in seq) {
        if (seq[i] == seq[i-1]) {
            count++
        }
    }
    print count
}
```

Script 2

```
prev == $1 {
    count++
}
{
    prev=$1
}
END {
    print count
}
```

Options :

6406531960536. ✖ The Script 1 is more optimal than Script 2 in terms of memory

6406531960537. ✔ The Script 2 is more optimal than Script 1 in terms of memory

6406531960538. ✖ The Script 1 and Script 2 do not have difference in terms of memory

6406531960539. ✖ The Script 2 is less efficient than Script 1, because it has three blocks

Sub-Section Number : 8

Sub-Section Id : 64065384678

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 243 Question Id : 640653587685 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 9 Max. Selectable Options : 0

Question Label : Multiple Select Question

A MAC address is typically represented in the format "XX:XX:XX:XX:XX:XX", where X can be a hexadecimal digit (0-9, A-F, or a-f).
Identify the correct extended or basic regular expression from the following which will match a MAC address.
Note: All the regular expressions are either BRE or ERE

Options :

6406531960540. ✔ `\([0-9A-Fa-f]\{2\}:\)\{5\}[0-9A-Fa-f]\{2\}`

6406531960541. ✔ `[0-9A-Fa-f]{2}:[0-9A-Fa-f]{2}:[0-9A-Fa-f]{2}:[0-9A-Fa-f]{2}:[0-9A-Fa-f]{2}:[0-9A-Fa-f]{2}`

6406531960542. ✖ `..\(\:..\){5}`

6406531960543. ✖ `([[:digit:]]{2}:){5}[[:digit:]]{2}`

Sub-Section Number : 9

Sub-Section Id : 64065384679

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 244 Question Id : 640653587686 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following sed commands will remove lines starting with # and empty lines from index.txt file.

Options :

6406531960544. ✖ `sed '/^#|^$/d' index.txt`

6406531960545. ✔ `sed '/^#\|^$/d' index.txt`

6406531960546. ✔ `sed '/^#/ d;/^$/d' index.txt`

6406531960547. ✖ None of these

Sub-Section Number :	10
Sub-Section Id :	64065384680
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 245 Question Id : 640653587687 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 7 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following commands can delete leading and trailing white spaces from each line of the file sample.txt.

Options :

6406531960548. ✔ `sed -e 's/^[ \t]*//' -e 's/ *$//' sample.txt`

6406531960549. ✔ `sed -e 's/^[[:space:]]*//' -e 's/[[:space:]]*$//'' sample.txt`

6406531960550. ✔ `awk '{gsub(/^ +| +$/,"")} {print $0}' sample.txt`

6406531960551. ✖ `cat sample.txt|xargs`

Sub-Section Number :	11
Sub-Section Id :	64065384681
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 246 Question Id : 640653587690 Question Type : SA Calculator : None

Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Short Answer Question

How many background processes will still be running after 5 seconds of the execution of the script?

```
sleep 1 &
echo two &
echo three && echo four || echo five
sleep 6 &
sleep 2 &
sleep 12 &
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2