Indian Institute of Technology, Madras - Centre for Continuing Education

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 ET1 EXAM QPD1 S2 03 Sep 2023 Sep03: IIT M DIPLOMA ET1 EXAM QPD1
Subject Name :	
Creation Date :	2023-08-30 17:37:22
Duration :	90
Total Marks :	1145
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 :	64065314248
Group Maximum Duration :	0
Group Minimum Duration :	90
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	1145
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

Maths2

Section Id :	64065341304
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	15
Number of Questions to be attempted :	15
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
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 :	64065388003
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 1 Question Id : 640653610897 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 2 (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 :

6406532040270. ✔ YES

6406532040271. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065388004
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 2 Question Id : 640653610898 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 true for an $n \times n$ matrix A?

Options :

6406532040272. ✖ Let $det(A) \neq 0$. Determinant of A is unaltered by all the elementary row operations of A.

6406532040273. ✔ Rank of A is unaltered by elementary row operations of A.

6406532040274. ✔ Suppose any row R_i of A is replaced by a scalar multiple αR_i, then determinant of A is $\alpha det(A)$.

6406532040275. ✖ If $AB = BA$ for some $n \times n$ matrix B, then $det(A) = det(B)$.

Question Number : 3 Question Id : 640653610899 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 true for a system of linear equations $Ax = b$?

Options :

6406532040276. ✔ The system $Ax = b$ has a solution if b can be expressed as a linear combination of the columns of A.

6406532040277. ✖ For any b in the column space of A, if x_1 and x_2 are solutions of the linear equation $Ax = b$, then $\alpha x_1 + \beta x_2$ is also a solution of $Ax = b$.

6406532040278. ✖ If the columns of A are linearly dependent, then the system has no solution.

6406532040279. ✔ If the system $Ax = 0$ has a unique solution, then the columns of A are linearly independent.

Question Number : 4 Question Id : 640653610901 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 V be the vector space of all 2×2 matrices with usual addition and scalar multiplication. Which of the following set(s) form a subspace of V?

Options :

6406532040284. ✔ $W_1 = \left\{ \begin{pmatrix} a & b \\ c & d \end{pmatrix} \in M_2(\mathbb{R}) : trace(A) = 0 \right\}$

6406532040285. ✖ $W_2 = \left\{ \begin{pmatrix} a & b \\ c & d \end{pmatrix} \in M_2(\mathbb{R}) : ad = bc \right\}$

6406532040286. ✖ $W_3 = \left\{ \begin{pmatrix} a & b \\ c & d \end{pmatrix} \in M_2(\mathbb{R}) \colon A \text{ is invertible} \right\}$

6406532040287. ✔ $W_4 = \left\{ \begin{pmatrix} a & b \\ c & d \end{pmatrix} \in M_2(\mathbb{R}) \colon a = d = 0, b = -c \right\}$

Question Number : 5 Question Id : 640653610902 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 V be a subspace of $\mathbb{R}^4$ defined as $V = \{(a, b, c, d) \colon a+b = c+d\}$ with usual addition and scalar multiplication. Then which of the following set(s) form a basis for V?

Options :

6406532040288. ✖ $\{(1,0,0,0), (0,0,1,0), (0,0,0,1)\}$

6406532040289. ✖ $\{(1,0,-1,0), (0,1,-1,0), (-1,0,0,1)\}$

6406532040290. ✔ $\{(1,-1,0,0), (1,0,1,0), (1,0,0,1)\}$

6406532040291. ✔ $\{(0,1,1,0), (1,0,1,0), (0,0,1,-1)\}$

Sub-Section Number :	3
Sub-Section Id :	64065388005
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 6 Question Id : 640653610900 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

Let $A = \begin{pmatrix} -1 & 1 & -2 \\ 1 & 2 & -2 \\ 6 & c & d \end{pmatrix}$. Which of the following statement(s) is/are true for A?

Options :

6406532040280. ✔ If $c = 3$ and $d = 0$, then the system $Ax = 0$ does not have a unique solution.

6406532040281. ✖ If $c = 0$ and $d = 4$, then the homogeneous system $Ax = 0$ has a unique solution.

6406532040282. ✖ If $c = 3$ and $d = 0$, then the columns of A are linearly independent.

6406532040283. ✔ If $c = 0$ and $d = 4$, then the homogeneous system $Ax = 0$ has infinitely many solutions.

Question Number : 7 Question Id : 640653610907 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 vector spaces in the options below have dimension 2.

Options :

6406532040301. ✔ $span\{(1, -1, 1), (1, 0, 2), (3, -2, 4)\}$

6406532040302. ✖

The solutions of the homogeneous system $Ax = 0$ where $A = \begin{pmatrix} 1 & -1 & 1 \\ 1 & 0 & 1 \end{pmatrix}$

6406532040303. ✔ $\{(x, y, z) \in \mathbb{R}^3 : x - 2y + z = 0\}$

6406532040304. ✖ $\{(x, y, z) \in \mathbb{R}^3 : x + y = 2, y + 3z = -5\}$

6406532040305. ✔ $\{\begin{pmatrix} a & 0 & 0 \\ 0 & b & 0 \\ 0 & 0 & c \end{pmatrix} : a, b, c \in \mathbb{R},\ a + b + c = 0\}$

Sub-Section Number :	4
Sub-Section Id :	64065388006
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610903 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 : (8 to 10)

Question Label : Comprehension

Let $L: \mathbb{R}^4 \to \mathbb{R}^4$ be a linear transformation given by $L(x_1, x_2, x_3, x_4) = (x_2, x_3, x_4, 0)$ and $R: \mathbb{R}^4 \to \mathbb{R}^4$ be a linear transformation given by $R(x_1, x_2, x_3, x_4) = (0, x_1, x_2, x_3)$.

Let $\mathcal{B} = \{(1, 0, 0, 0), (0, 1, 0, 0), (0, 0, 1, 0), (0, 0, 0, 1)\}$ be the standard ordered basis.

Using the above information answer the given subquestions.

Sub questions

Question Number : 8 Question Id : 640653610904 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 true?

Options :

6406532040292. ✖ $\begin{pmatrix} 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix}$ is the matrix corresponding to L with respect to the basis $\mathcal{B}$ for both domain and codomain.

6406532040293. ✖ $\begin{pmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{pmatrix}$ is the matrix corresponding to R with respect to the basis $\mathcal{B}$ for both domain and codomain.

6406532040294. ✔ $\begin{pmatrix} 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \\ 0 & 0 & 0 & 0 \end{pmatrix}$ is the matrix corresponding to L with respect to the basis $\mathcal{B}$ for both domain and codomain.

6406532040295. ✔ $\begin{pmatrix} 0 & 0 & 0 & 0 \\ 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{pmatrix}$ is the matrix corresponding to R with respect to the basis $\mathcal{B}$ for both domain and codomain.

Question Number : 9 Question Id : 640653610905 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 true?

Options :

6406532040296. ✖ If $v \in \mathbb{R}^4$ such that $Lv = 0$, then $v = 0$.

6406532040297. ✔ $rank(L) = rank(R) = 3$

6406532040298. ✖ If $v \in \mathbb{R}^4$ such that $Rv = 0$, then $v = 0$.

6406532040299. ✔ Neither L nor R is injective.

Question Number : 10 Question Id : 640653610906 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 smallest number k such that L^k and R^k become the zero transformation.
($L^k = L \circ L \circ ...L$, k times and $R^k = R \circ R \circ ...R$, k times)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Id : 640653610908 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 : (11 to 13)

Question Label : Comprehension

Let L_U denote an affine subspace with the associated subspace U of $\mathbb{R}^3$.

	Affine Subspace L_U		Associated subspace U		Dimension of L_U
(i)	$\{(x,y,z) \in \mathbb{R}^3 : x-y+z=1, -2x+2y-2z=-2, x-z=1\}$	(a)	span{(1, -1, 0) , (0, 2, 1)}	(1)	2
(ii)	$\{(x,y,z) \in \mathbb{R}^3 : x+y-2z=5\}$	(b)	span{(2, -1, 3)}	(2)	1
(iii)	$\{(x,y-2,z+1) \in \mathbb{R}^3 : x+2y=0, 3y+z=0\}$	(c)	Nullspace of $A = \begin{pmatrix} 1 & -1 & 1 \\ -2 & 2 & -2 \\ 1 & 0 & -1 \end{pmatrix}$	(3)	1

Table: M2ES1

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 11 Question Id : 640653610909 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

Choose the correct option to match the affine subspace of Row 1 with the associated subspaces and dimension.

Options :

6406532040306. ✖ $(i) \rightarrow (c) \rightarrow (1)$

6406532040307. ✖ $(i) \rightarrow (b) \rightarrow (1)$

6406532040308. ✔ $(i) \rightarrow (c) \rightarrow (2)$

6406532040309. ✖ $(i) \rightarrow (a) \rightarrow (1)$

Question Number : 12 Question Id : 640653610910 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

Choose the correct option to match the affine subspace of Row 2 with the associated subspaces and dimension.

Options :

6406532040310. ✖ $(ii) \rightarrow (a) \rightarrow (3)$

6406532040311. ✔ $(ii) \rightarrow (a) \rightarrow (1)$

6406532040312. ✖ $(ii) \rightarrow (c) \rightarrow (2)$

6406532040313. ✖ $(ii) \rightarrow (b) \rightarrow (1)$

Question Number : 13 Question Id : 640653610911 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

Choose the correct option to match the affine subspace of Row 3 with the associated subspaces and dimension.

Options :

6406532040314. ✖ $(iii) \rightarrow (a) \rightarrow (3)$

6406532040315. ✖ $(iii) \rightarrow (c) \rightarrow (1)$

6406532040316. ✖ $(iii) \rightarrow (a) \rightarrow (2)$

6406532040317. ✔ $(iii) \rightarrow (b) \rightarrow (3)$

Sub-Section Number :	5
Sub-Section Id :	64065388007
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 14 Question Id : 640653610912 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 true?

Options :

6406532040318. ✖ $\begin{pmatrix} 1 & 1 \\ 0 & 1 \end{pmatrix}$ and $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$ are similar.

6406532040319. ✔ $\begin{pmatrix} 1 & 6 \\ 3 & 4 \end{pmatrix}$ and $\begin{pmatrix} -2 & 0 \\ 0 & 7 \end{pmatrix}$ are equivalent.

6406532040320. ✖ If A^2 is similar to B^2, then A is similar to B.

6406532040321. ✔ If A and B are similar, then $A^2 = A$ implies $B^2 = B$.

Sub-Section Number :	6
Sub-Section Id :	64065388008
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610913 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 : (15 to 19)

Question Label : Comprehension

Let $v_1 = (1, 2, 1)$, $v_2 = (2, 1, -4)$ and $v_3 = (3, -2, 1)$ be vectors in $\mathbb{R}^3$ equipped with usual inner product. Using this information, answer the given subquestions

Sub questions

Question Number : 15 Question Id : 640653610914 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

Suppose $v = (7, 1, 9)$ and
$v = \alpha v_1 + \beta v_2 + \gamma v_3$, then $\alpha =$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 16 Question Id : 640653610915 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

Suppose $v = (7, 1, 9)$ and
$v = \alpha v_1 + \beta v_2 + \gamma v_3$, then $\beta =$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-1

Question Number : 17 Question Id : 640653610916 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

Suppose $v = (7, 1, 9)$ and
$v = \alpha v_1 + \beta v_2 + \gamma v_3$, then $\gamma =$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 18 Question Id : 640653610917 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 $u_1 = \frac{v_1}{\|v_1\|}, u_2 = \frac{v_2}{\|v_2\|}$ and $u_3 = \frac{v_3}{\|v_3\|}$

be the columns of the matrix A.

Then $|det(A)| =$

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 : 640653610918 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

Let $u_1 = \frac{v_1}{\|v_1\|}, u_2 = \frac{v_2}{\|v_2\|}$ and $u_3 = \frac{v_3}{\|v_3\|}$

be the columns of the matrix A. Then

Sum of the squares of the elements

of every row of A is ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Sub-Section Number :	7
Sub-Section Id :	64065388009
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610919 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 : (20 to 21)

Question Label : Comprehension

Let $T\colon \mathbb{R}^3 \to \mathbb{R}^3$ be the projection of $\mathbb{R}^3$ onto the space $W = \{(x, y, z)\colon x + y + z = 0\}$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 20 Question Id : 640653610920 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 statement(s) is/are true?

Options :

6406532040327. ✔ $T(x,y,z) = \frac{1}{3}(2x - y - z, -x + 2y - z, -x - y + 2z)$

6406532040328. ✖ $T(x,y,z) = \frac{1}{3}(-2x - y - z, -x - 2y - z, -x - y - 2z)$

6406532040329. ✖ $T(x,y,z) = \frac{1}{3}(2x - y - z, -x - 2y - z, -x - y - 2z)$

Question Number : 21 Question Id : 640653610921 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 statement(s) is/are true?

Options :

6406532040330. ✖ The set of vectors $\{(1,-1,0),(1,1,-2)\}$ forms a basis for the null space of T.

6406532040331. ✔ The set of vectors $\{(1,-1,0),(1,1,-2)\}$ forms a basis for the range of T.

6406532040332. ✖ The rank of T is 1.

Sub-Section Number : 8

Sub-Section Id : 64065388010

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 22 Question Id : 640653610922 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 function $f(x, y, z) = z(cosx + siny)$ at the point (0, 0, 3). Find the directional derivative in the direction of (6, 3, -2).

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Sub-Section Number : 9

Sub-Section Id : 64065388011

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 23 Question Id : 640653610923 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 function $T = x^2 + 2y^2 + 2z^2$ gives the temperature at each point in space. At the point $P = (1, 1, 1)$, in which direction should you go to get the most rapid decrease in T ?

Options :

6406532040334. ✔ $(-\frac{1}{3}, -\frac{2}{3}, -\frac{2}{3})$

6406532040335. ✖ $(\frac{1}{3}, \frac{2}{3}, \frac{2}{3})$

6406532040336. ✖ $(1, 2, 2)$

6406532040337. ✖ $(-\frac{1}{3}, \frac{2}{3}, \frac{2}{3})$

Sub-Section Number :	10
Sub-Section Id :	64065388012
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610924 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 : (24 to 27)

Question Label : Comprehension

Let $f(x,y) = x^3 - 3x + y^3 - 3y^2$.

	Critical points (Column A)		D =determinant of Hessain/f_{xx} (Column B)		Extrema (Column C)
i)	$(1,2)$	a)	$D > 0$ and $f_{xx} < 0$	1)	Saddle point
ii)	$(-1,2)$	b)	$D > 0$ and $f_{xx} > 0$	2)	local maximum
iii)	$(-1,0)$	c)	$D < 0$	3)	local minimum

Table: M2ES2

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 24 Question Id : 640653610925 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 number of critical points of the function f is

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 25 Question Id : 640653610926 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

Choose the correct entries from columns B and C in table M2ES2 corresponding to the critical point $(1, 2)$.

Options :

6406532040339. ✖ $b \to 2$

6406532040340. ✖ $c \to 1$

6406532040341. ✔ $b \to 3$

6406532040342. ✖ $a \to 2$

Question Number : 26 Question Id : 640653610927 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

Choose the correct entries from columns B and C in table M2ES2 corresponding to the critical point $(-1, 2)$.

Options :

6406532040343. ✖ $b \to 2$

6406532040344. ✔ $c \to 1$

6406532040345. ✖ $b \to 3$

6406532040346. ✖ $a \to 2$

Question Number : 27 Question Id : 640653610928 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

Choose the correct entries from columns B and C in table M2ES2 corresponding to the critical point $(-1, 0)$.

Options :

6406532040347. ✖ $b \to 2$

6406532040348. ✖ $c \to 1$

6406532040349. ✖ $b \to 3$

6406532040350. ✔ $a \to 2$

Statistics2

Section Id :	64065341305
Section Number :	2
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
Section Negative Marks :	0
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 :	64065388013
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 28 Question Id : 640653610929 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 2 (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 :

6406532040351. ✔ YES

6406532040352. ✖ NO

Question Number : 29 Question Id : 640653610930 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,
$$P(X \ge c) \le \frac{\mu}{c}$$

2. **Chebyshev's inequality:** Let X be a discrete random variable with a finite mean μ and a finite variance σ^2. Then,
$$P(\mid X - \mu \mid \ge k\sigma) \le \frac{1}{k^2}$$

3. **Weak Law of Large numbers:** Let $X_1, X_2, \ldots, X_n \sim$ iid X with $E[X] = \mu, \mathrm{Var}(X) = \sigma^2$.
Define sample mean $\overline{X} = \frac{X_1 + X_2 + \ldots + X_n}{n}$. Then,
$$P(|\overline{X} - \mu| > \delta) \le \frac{\sigma^2}{n\delta^2}$$

4. **Using CLT to approximate probability:** Let $X_1, X_2, \ldots, X_n \sim$ iid X with $E[X] = \mu, \mathrm{Var}(X) = \sigma^2$.
Define $Y = X_1 + X_2 + \ldots + X_n$. Then,
$$\frac{Y - n\mu}{\sqrt{n}\sigma} \approx \mathrm{Normal}(0,1).$$

5. **Bias of an estimator**: $\text{Bias}(\hat{\theta}, \theta) = E[\hat{\theta}] - \theta$.

6. **Method of moments:** Sample moments, $M_k(X_1, X_2, \ldots, X_n) = \frac{1}{n}\sum_{i=1}^{n} X_i^k$

   <u>Procedure:</u> For one parameter θ

   - Sample moment: m_1
   - Distribution moment: $E(X) = f(\theta)$
   - Solve for θ from $f(\theta) = m_1$ in terms of m_1.
   - $\hat{\theta}$: replace m_1 by M_1 in the above solution.

7. **Likelihood of i.i.d. samples**: Likelihood of a sampling $x_1, x_2, \ldots, x_n$, denoted

$$L(x_1, \ldots, x_n) = \prod_{i=1}^{n} f_X(x_i; \theta_1, \theta_2, \ldots)$$

8. **Maximum likelihood (ML) estimation**:

$$\theta_1^*, \theta_2^*, \ldots = \arg\max_{\theta_1^*, \theta_2^*, \ldots} \prod_{i=1}^{n} f_X(x_i; \theta_1, \theta_2, \ldots)$$

9. **Bayesian estimation:** Let $X_1, \ldots, X_n \sim$ i.i.d.X, parameter Θ.
   Prior distribution of $\Theta : \Theta \sim f_\Theta(\theta)$.
   Samples, $S : (X_1 = x_1, \ldots, X_n = x_n)$
   Posterior: $\Theta \mid (X_1 = x_1, \ldots, X_n = x_n)$
   Bayes' rule: Posterior $\propto$ Prior $\times$ Likelihood
   Posterior density $\propto f_\Theta(\theta) \times P(X_1 = x_1, \ldots, X_n = x_n \mid \Theta = \theta)$

10. **Normal samples with unknown mean and known variance**:
    $X_1, \ldots, X_n \sim$ i.i.d. Normal(M, σ^2).
    Prior $M \sim$ Normal(μ_0, σ_0^2).
    Posterior mean: $\hat{\mu} = \overline{X}\left(\frac{n\sigma_0^2}{n\sigma_0^2 + \sigma^2}\right) + \mu_0\left(\frac{\sigma^2}{n\sigma_0^2 + \sigma^2}\right)$

11. **Hypothesis Testing**

- **Test for mean**
  Case (1): When population variance σ^2 is known (z-test)

Test	H_0	H_A	Test statistic	Rejection region
right-tailed	$\mu = \mu_0$	$\mu > \mu_0$	$T = \overline{X}$ $Z = \dfrac{\overline{X} - \mu_0}{\sigma/\sqrt{n}}$	$\overline{X} > c$
left-tailed	$\mu = \mu_0$	$\mu < \mu_0$	$T = \overline{X}$ $Z = \dfrac{\overline{X} - \mu_0}{\sigma/\sqrt{n}}$	$\overline{X} < c$
two-tailed	$\mu = \mu_0$	$\mu \neq \mu_0$	$T = \overline{X}$ $Z = \dfrac{\overline{X} - \mu_0}{\sigma/\sqrt{n}}$	$\lvert\overline{X} - \mu_0\rvert > c$

Case (2): When population variance σ^2 is unknown (t-test)

Test	H_0	H_A	Test statistic	Rejection region
right-tailed	$\mu = \mu_0$	$\mu > \mu_0$	$T = \overline{X}$ $t_{n-1} = \dfrac{\overline{X} - \mu_0}{S/\sqrt{n}}$	$\overline{X} > c$
left-tailed	$\mu = \mu_0$	$\mu < \mu_0$	$T = \overline{X}$ $t_{n-1} = \dfrac{\overline{X} - \mu_0}{S/\sqrt{n}}$	$\overline{X} < c$
two-tailed	$\mu = \mu_0$	$\mu \neq \mu_0$	$T = \overline{X}$ $t_{n-1} = \dfrac{\overline{X} - \mu_0}{S/\sqrt{n}}$	$\lvert\overline{X} - \mu_0\rvert > c$

- χ^2-test for variance:

Test	H_0	H_A	Test statistic	Rejection region
right-tailed	$\sigma = \sigma_0$	$\sigma > \sigma_0$	$T = \frac{(n-1)S^2}{\sigma_0^2} \sim \chi^2_{n-1}$	$S^2 > c^2$
left-tailed	$\sigma = \sigma_0$	$\sigma < \sigma_0$	$T = \frac{(n-1)S^2}{\sigma_0^2} \sim \chi^2_{n-1}$	$S^2 < c^2$
two-tailed	$\sigma = \sigma_0$	$\sigma \neq \sigma_0$	$T = \frac{(n-1)S^2}{\sigma_0^2} \sim \chi^2_{n-1}$	$S^2 > c^2$ where $\frac{\alpha}{2} = P(S^2 > c^2)$ or $S^2 < c^2$ where $\frac{\alpha}{2} = P(S^2 < c^2)$

- Two samples z-test for means:

Test	H_0	H_A	Test statistic	Rejection region
right-tailed	$\mu_1 = \mu_2$	$\mu_1 > \mu_2$	$T = \overline{X} - \overline{Y}$ $\overline{X} - \overline{Y} \sim \text{Normal}\left(0, \frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}\right)$ if H_0 is true	$\overline{X} - \overline{Y} > c$
left-tailed	$\mu_1 = \mu_2$	$\mu_1 < \mu_2$	$T = \overline{Y} - \overline{X}$ $\overline{Y} - \overline{X} \sim \text{Normal}\left(0, \frac{\sigma_2^2}{n_2} + \frac{\sigma_1^2}{n_1}\right)$ if H_0 is true	$\overline{Y} - \overline{X} > c$
two-tailed	$\mu_1 = \mu_2$	$\mu_1 \neq \mu_2$	$T = \overline{X} - \overline{Y}$ $\overline{X} - \overline{Y} \sim \text{Normal}\left(0, \frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}\right)$ if H_0 is true	$\lvert\overline{X} - \overline{Y}\rvert > c$

- Two samples F-test for variances

Test	H_0	H_A	Test statistic	Rejection region
one-tailed	$\sigma_1 = \sigma_2$	$\sigma_1 > \sigma_2$	$T = \frac{S_1^2}{S_2^2} \sim F_{(n_1-1, n_2-1)}$	$\frac{S_1^2}{S_2^2} > 1 + c$
one-tailed	$\sigma_1 = \sigma_2$	$\sigma_1 < \sigma_2$	$T = \frac{S_1^2}{S_2^2} \sim F_{(n_1-1, n_2-1)}$	$\frac{S_1^2}{S_2^2} < 1 - c$
two-tailed	$\sigma_1 = \sigma_2$	$\sigma_1 \neq \sigma_2$	$T = \frac{S_1^2}{S_2^2} \sim F_{(n_1-1, n_2-1)}$	$\frac{S_1^2}{S_2^2} > 1 + c_R$ where $\frac{\alpha}{2} = P(T > 1 + c_R)$ or $\frac{S_1^2}{S_2^2} < 1 - c_L$ where $\frac{\alpha}{2} = P(T < 1 - c_L)$

Use the following values if required:

$F_Z(0.33) = 0.62930$, $F_Z(-1) = 0.15866$, $F_Z(-1.75) = 0.04$, $F_Z(-0.175) = 0.43$,

$F_Z(-1.645) = 0.05$, $F_Z(-2.32) = 0.01$

Options :

6406532040353. ✔ Useful Data has been mentioned above.

6406532040354. ✖ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 64065388014

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 30 Question Id : 640653610931 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

Suppose $X \sim$ Uniform $\{-2, -1, 0, 1, 2\}$ and $Y = X^2$. Find $P(Y = 1|Y > 0)$. Enter the answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.5

Question Number : 31 Question Id : 640653610933 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 weights (in kg) of people in a certain area are normally distributed with mean μ and standard deviation 10. The weights from a random sample of 10 people are as follows:

$$60, 54, 70, 62, 74, 50, 50, 60, 55, 65$$

Suppose $\hat{\mu}$ is the method of moments estimate for μ. Letting $X \sim$ Normal$(64, 16)$, find the value of $P(X > \hat{\mu})$. 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 :

0.80 to 0.88

Sub-Section Number :	3
Sub-Section Id :	64065388015
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 32 Question Id : 640653610932 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 $X_1, X_2, \ldots, X_{50} \sim \text{Uniform}(0, \theta)$. Let $\hat{\theta}$ be the estimator for θ.

If $\text{Risk}(\hat{\theta}, \theta) = \text{Var}(\hat{\theta})$, then which of the following can be $\hat{\theta}$?

Options :

6406532040356. ✖ $\dfrac{X_2 + X_4 + X_6 + \cdots + X_{50}}{50}$

6406532040357. ✖ $\dfrac{X_1 + X_{50}}{2}$

6406532040358. ✖ $\dfrac{X_1 + X_2 + X_3 + \cdots + X_{50}}{50}$

6406532040359. ✔ $X_1 + X_2 + X_{49} - X_{50}$

Question Number : 33 Question Id : 640653610935 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 situation and match them with suitable test statistics and hypothesis test:

Suppose we observe samples from a normal distribution, where the variance is unknown. We want to check whether the variance is greater than σ^2. What test statistic and test can be applied to this situation?

Options :

6406532040365. ✖ Test Statistic: T = Sample mean, Hypothesis test: t-test.

6406532040366. ✖ Test Statistic: T = Sample mean, Hypothesis test: χ^2-test.

6406532040367. ✔ Test Statistic: T = Sample variance, Hypothesis test: χ^2-test.

6406532040368. ✖ Test Statistic: T = Sample variance, Hypothesis test: Z-test.

Sub-Section Number :	4
Sub-Section Id :	64065388016
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 34 Question Id : 640653610934 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) correct?

Options :

6406532040361. ✔ Type II error is the probability of accepting the Null hypothesis when it is not true.

6406532040362. ✖ The probability of accepting the null hypothesis when it is false is equal to the power of the test.

6406532040363. ✔ The probability of rejecting the Null hypothesis when it is true is called the level of significance.

6406532040364. ✖ If the P-value of a test is 0.04, then the corresponding test will reject the null hypothesis at the significance level of 0.03.

Sub-Section Number :	5
Sub-Section Id :	64065388017
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610936 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 : (35 to 36)

Question Label : Comprehension

The number of industrial injuries on a working day in Delhi can be modelled by a Poisson(0.4) random variable. Suppose that the number of industrial injuries on different days are independent. Let Y represent the total number of industrial injuries in a year of 365 days.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 35 Question Id : 640653610937 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 true?

Options :

6406532040369. ✖ $E[Y] = 0.4$

6406532040370. ✔ $E[Y] = 146$

6406532040371. ✔ $\mathrm{Var}(Y) = 146$

6406532040372. ✖ $\mathrm{Var}(Y) = 0.4$

Question Number : 36 Question Id : 640653610938 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 there will be more than 150 industrial injuries in a year in Delhi. 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 :

0.34 to 0.40

Question Id : 640653610939 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 : (37 to 39)

Question Label : Comprehension

The density function of a continuous random variable X is given by

$$f_X(x) = \begin{cases} kx^2, & |x| \leq 1, \\ 0, & \text{otherwise.} \end{cases}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 37 Question Id : 640653610940 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 value of *k*.

Options :

6406532040374. ✔ $\frac{3}{2}$

6406532040375. ✖ $\frac{1}{2}$

6406532040376. ✖ 3

6406532040377. ✖ $\frac{2}{3}$

Question Number : 38 Question Id : 640653610941 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 $F_X(0.5)$. 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 :

0.53 to 0.59

Question Number : 39 Question Id : 640653610942 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 X.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Id : 640653610943 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

The probability mass function of a discrete random variable X is given by

x	0	2	4
$f_X(x)$	$1-\frac{2p}{3}$	$\frac{p}{3}$	$\frac{p}{3}$

Table 1

Let 2, 4, 0, 2, 4, 0, 2, 0, 4, 0 be 10 i.i.d. samples of X.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 40 Question Id : 640653610944 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 method of moments estimate of *p*. Enter the answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.9

Question Number : 41 Question Id : 640653610945 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

Find the maximum likelihood estimate of *p*. Enter the answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.9

Question Id : 640653610946 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

Let X be a discrete random variable taking values $\{0, 1, 2\}$ with respective probabilities $\left\{\frac{p}{2}, \frac{p}{2}, (1-p)\right\}$, where $0 \leq p \leq 1$ is a parameter.

Consider the samples $\{0, 0, 2, 1, 2, 1, 1, 0, 0, 2\}$ from X. Assume prior distribution of θ to be Beta$(4, 5)$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 42 Question Id : 640653610947 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

Find the posterior distribution of θ.

Options :

6406532040382. ✖ Gamma(11, 8)

6406532040383. ✖ Beta(10, 7)

6406532040384. ✔ Beta(11, 8)

6406532040385. ✖ Beta(8, 11)

Question Number : 43 Question Id : 640653610948 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 posterior mean. 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 :

0.55 to 0.61

Question Id : 640653610949 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 : (44 to 45)

Question Label : Comprehension

Suppose a principal states that the students studying in her school have an average IQ score equal to 98.5. A reporter suspects that the average may be higher and took a sample of 100 random students from that school and found out that the average IQ score of those children is 98.78. Assume the IQ scores of the students are normally distributed with a standard deviation of 1.6.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 44 Question Id : 640653610950 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

Define null hypothesis and alternative hypothesis

Options :

6406532040387. ✖ $H_0 : \mu = 98.5, H_A : \mu \neq 98.5$

6406532040388. ✔ $H_0 : \mu = 98.5, H_A : \mu > 98.5$

6406532040389. ✖ $H_0 : \mu = 98.5, H_A : \mu < 98.5$

6406532040390. ✖ $H_0 : \mu \neq 98.5, H_A : \mu = 98.5$

Question Number : 45 Question Id : 640653610951 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

Find the *P*−value. 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 :

0.01 to 0.07

CT

Section Id : 64065341306

Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	19
Number of Questions to be attempted :	19
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
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 :	64065388018
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 46 Question Id : 640653610952 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 :

6406532040392. ✔ YES

6406532040393. ✖ NO

Question Number : 47 Question Id : 640653610953 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

Item List

SV Stores — Srivatsan (1)

Item	Category	Qty	Price	Cost
Carrots	Vegetables/Food	1.5	50	75
Soap	Toiletries	4	32	128
Tomatoes	Vegetables/Food	2	40	80
Bananas	Vegetables/Food	8	8	64
Socks	Footwear/Apparel	3	56	168
Curd	Dairy/Food	0.5	32	16
Milk	Dairy/Food	1.5	24	36
				567

Sun General — Vignesh (14)

Item	Category	Qty	Price	Cost
Phone Charger	Utilities	1	230	230
Razor Blades	Grooming	1	12	12
Razor	Grooming	1	45	45
Shaving Lotion	Grooming	0.8	180	144
Earphones	Electronics	1	210	210
Pencils	Stationery	3	5	15
				656

Big Bazaar — Sudeep (2)

Item	Category	Qty	Price	Cost
Baked Beans	Canned/Food	1	125	125
Chicken Wings	Meat/Food	0.5	600	300
Cocoa powder	Canned/Food	1	160	160
Capsicum	Vegetables/Food	0.8	180	144
Tie	Apparel	2	390	780
Clips	Household	0.5	32	16
				1525

Options :

6406532040394. ✔ Useful Data has been mentioned above.

6406532040395. ✖ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number :	2
Sub-Section Id :	64065388019
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 48 Question Id : 640653610954 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

Let **X** and **Y** be two rows in the "Scores" table. We call **X** and **Y** partially matching ifstudent **X** and **Y** are either from the same city or have the same total marks but not both. Let **partialMatch**(X, Y) be a procedure to find whether **X** and **Y** are matching. Choose the correct implementation of the procedure **partialMatch**.

Options :

```
Procedure partialMatch(X, Y)
    A = False, B = False
    if(X.CityTown == Y.CityTown){
        A = True
    }
    if(X.Total == Y.Total){
        B = True
    }
    if(A and B){
        return (True)
    }
    return(False)
End partialMatch
```

6406532040396. ✖

```
Procedure partialMatch(X, Y)
    A = False, B = False
    if(X.CityTown == Y.CityTown){
        A = True
    }
    if(X.Total == Y.Total){
        B = True
    }
    if(A or B){
        return(True)
    }
    return(False)
End partialMatch
```

6406532040397. ✖

6406532040398. ✔

```
Procedure partialMatch(X, Y)
    A = 0, B = 0
    if(X.CityTown == Y.CityTown){
        A = 1
    }
    if(X.Total == Y.Total){
        B = 1
    }
    if(A + B == 1){
        return(True)
    }
    return(False)
End partialMatch
```

```
Procedure partialMatch(X, Y)
    A = 0, B = 0
    if(X.CityTown == Y.CityTown){
        A = 1
    }
    if(X.Total == Y.Total){
        B = 1
    }
    if((A + B) > 1){
        return(True)
    }
    return(False)
End partialMatch
```

6406532040399. ✖

Sub-Section Number :	3
Sub-Section Id :	64065388020
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610955 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 : (49 to 50)

Question Label : Comprehension

The following pseudocode is executed using the “Scores” dataset. Two students form a study pair if the difference of their Physics marks is at most 20.

```
count1 = studyPair(Table 1)
while (Table 1 has more rows){
    Read the first row X in Table 1
    if(X.CityTown == "Mumbai"){
        Move X to Table MUM
    }
    if(X.CityTown == "Vellore"){
        Move X to Table VEL
    }
    if(X.CityTown == "Kolkata"){
        Move X to Table KOL
    }
}
count2 = studyPair(Table MUM) + studyPair(Table VEL) + studyPair(Table KOL)

Procedure studyPair(Table 1)
    Table T1 = Table 1
    A = 0
    while(Table T1 has more rows){
        Read the first row X in Table T1
        Move X to Table T2
        while(Table T1 has more rows){
            Read the first row Y in Table T1
            Move Y to Table T3
            if(-20 ≤ Y.Physics - X.Physics ≤ 20){
                A = A + 1
            }
        }
        Move all rows from Table T3 to Table T1
    }
    return(A)
End studyPair
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 49 Question Id : 640653610956 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 **count1** represent at the end of execution?

Options :

6406532040400. ✔ Number of study pairs

6406532040401. ✖ Number of pairs of study pairs

6406532040402. ✖ Number of students who formed study pairs

6406532040403. ✖ Number of study pairs from the same city

Question Number : 50 Question Id : 640653610957 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 **count2** represent at the end of execution?

Options :

6406532040404. ✖ Number of study pairs where students in each pair are from the same city

6406532040405. ✖ Number of study pairs where students in each pair are from different cities among Mumbai, Vellore and Kolkata

6406532040406. ✔ Number of study pairs where students in each pair are from the same city among Mumbai, Vellore and Kolkata

6406532040407. ✖ Number of study pairs where students in each pair are from different city

Sub-Section Number :	4
Sub-Section Id :	64065388021
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 51 Question Id : 640653610958 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 word is said to be *perfect* if no letter is repeated. Let **isPerfect** be a procedure that takes a row **X** in the "Words" table as input and decides whether the word is *perfect*. Choose the correct implementation of the procedure **isPerfect**.

Options :

```
Procedure isPerfect(X)
    C = []
    i = 1
    flag = True
    while(i ≤ X.LetterCount){
        A = ith letter in X.Word
        if(member(C, A)){
            flag = False
        }
        else{
            C = C ++ [A]
            flag = True
        }
        i = i + 1
    }
    return(flag)
End isPerfect
```

6406532040408. ✖

```
Procedure isPerfect(X)
    C = []
    i = 1
    flag = True
    while(i ≤ X.LetterCount){
        A = ith letter in X.Word
        if(member(C, A)){
            flag = False
            exitloop
        }
        C = C ++ [A]
        i = i + 1
    }
    return(flag)
End isPerfect
```

6406532040409. ✔

6406532040410.

```
Procedure isPerfect(X)
    C = []
    i = 1
    flag = True
    while(i ≤ X.LetterCount){
        A = ith letter in X.Word
        if(member(C, A)){
            C = C ++ [A]
        }
        else{
            flag = False
            exitloop
        }
        i = i + 1
    }
    return(flag)
End isPerfect
```

```
Procedure isPerfect(X)
    C = []
    i = 1
    flag = True
    while(i ≤ X.LetterCount){
        A = ith letter in X.Word
        if(member(C, A)){
            exitloop
        }
        C = C ++ [A]
        i = i + 1
    }
    return(flag)
End isPerfect
```

6406532040411.

Sub-Section Number :	5
Sub-Section Id :	64065388022
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610959 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 : (52 to 53)

Question Label : Comprehension

The following pseudocode is executed using the “Words” dataset. Study the given pseudocode and answer the subquestions.

```
A = 0, flag = True
inList = [], outList = []
while (Table 1 has more rows){
    Read the first row X in Table 1
    if (flag){
        inList = [X.Word ]
        flag = False
    }
    if (X.Word ends with a full stop){
        outList = outList ++ [[X.Word] ++ inList]
        A = A + 1
        inList = []
        flag = True
    }
    Move X to Table 2
}
```

Sub questions

Question Number : 52 Question Id : 640653610960 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 **outList** represent at the end of execution?

Options :

6406532040412. ✖ List of lists of last word of each sentence

6406532040413. ✖ List of lists of first word of each sentence

6406532040414. ✔ List of lists of last and first word of each sentence in that order

6406532040415. ✖ List of lists of first and last word of each sentence in that order

6406532040416. ✖ List of lists of first and last word of each sentence in any order

Question Number : 53 Question Id : 640653610961 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

At the end of execution the value of **length(outList)** will be same as the total number of words in the dataset.

Options :

6406532040417. ✖ TRUE

6406532040418. ✔ FALSE

Sub-Section Number :	6
Sub-Section Id :	64065388023
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 54 Question Id : 640653610962 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 given pseudocode is executed using the “Words” dataset. **C** stores the number of nouns which have at least one verb adjacent to it. Choose the correct code fragment to complete the pseudocode.

```
V = [], N = [], C = 0
while(Table 1 has more rows){
    Read the first row X in Table 1
    if(X.PartOfSpeech == "Verb"){
        V = V ++ [X.SeqNo]
    }
    if(X.PartOfSpeech == "Noun"){
        N = N ++ [X.SeqNo]
    }
    Move X to Table 2
}
*********************
*   Fill the code   *
*********************
```

Options :

```
foreach Y in N{
    if(member(V, Y-1) or member(V, Y+1)){
        C = C + 1
    }
}
```

6406532040419. ✔

```
foreach Y in N{
    if(member(V, Y-1) and member(V, Y+1)){
        C = C +1
    }
}
```

6406532040420. ✖

```
foreach Y in V{
    if(member(N, Y-1) or member(N, Y+1)){
        C = C +1
    }
}
```

6406532040421. ✖

```
foreach Y in V{
    if(member(N, Y-1) and member(N, Y+1)){
        C = C +1
    }
}
```

6406532040422. ✖

Question Number : 55 Question Id : 640653610963 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 using the "Scores" table. At the end of the execution, **D** captures the following information: **D[A][B]** stores the minimum marks scored in subject **B** by a student from city **A**. Choose the correct code fragment to complete the pseudocode.

```
D = {}
L = ["Physics", "Chemistry", "Mathematics"]
    while(Table 1 has more rows){
    Read the first row X in Table 1
    **********************
    *** Fill the code  ***
    **********************
    Move X to Table 2
}
```

Options :

```
if(not isKey(D, X.CityTown)){
    D[X.CityTown] = { }
    foreach B in L{
        D[X.CityTown][B] = 101
    }
}
else{
    foreach B in L{
        if(D[X.CityTown][B] < X.B){
            D[X.CityTown][B] = X.B
        }
    }
}
```

6406532040423. ✖

6406532040424. ✖

```
if(not isKey(D, X.CityTown)){
    foreach B in L{
        D[X.CityTown][B] = 0
    }
}
foreach B in L{
    if(D[X.CityTown][B] > X.B){
        D[X.CityTown][B] = X.B
    }
}
```

6406532040425. ✔

```
if(not isKey(D, X.CityTown)){
    D[X.CityTown] = { }
    foreach B in L{
        D[X.CityTown][B] = 101
    }
}
foreach B in L{
    if (D[X.CityTown][B] > X.B){
        D[X.CityTown][B] = X.B
    }
}
```

6406532040426. ✖

```
if(not isKey(D, X.CityTown)){
    D[X.CityTown] = { }
}
foreach B in L{
    if(D[X.CityTown][B] > X.B){
        D[X.CityTown][B] = X.B
    }
}
```

Question Number : 56 Question Id : 640653610964 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 using the “Scores” dataset. What will the value of **L** represent at the end of the execution?

```
cityMarks = {}
while(Table 1 has more rows){
    Read the first row X in Table 1
    if(isKey(cityMarks, X.CityTown)){
        cityMarks[X.CityTown] = cityMarks[X.CityTown] ++ [X.Total ]
    }
    else{
        cityMarks[X.CityTown] = [X.Total ]
    }
    Move row X to Table 2
}

A = 301, L = []
foreach c in keys(cityMarks){
    data = doSomething(cityMarks[c])
    B = last(data) - first(data)
    if(B == A){
        L = L ++ [c]
    }
    if(B < A){
        A = B
        L = [c]
    }
}

Procedure doSomething(Y)
    p = 0, q = 301
    foreach k in Y{
        if(k > p){
            p = k
        }
        if(k < q){
            q = k
        }
    }
    return([p, q])
End doSomething
```

Options :

6406532040427. ✖ List of cities in which the difference of highest total and lowest total marks of students is same

6406532040428. ✖ List of cities in which the difference of highest total and lowest total marks of

students is maximum

6406532040429. ✔ List of cities in which the difference of highest total and lowest total marks of students is minimum

6406532040430. ✖ List of cities in which the difference of highest total and lowest total marks of students is 301

Question Number : 57 Question Id : 640653610965 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 given pseudocode is executed using the “Words” dataset. What will **A** represent at the end of execution?

```
D = { }, A = 0
while(Table 1 has more rows){
    Read the first row X in Table 1
    D = updateDictionary(D, X)
    Move X to Table 2
}
foreach C in keys(D){
    if(C is a vowel and D[C] > A){
        A = D[C]
    }
}

Procedure updateDictionary(D, Y)
    i = 1
    while(i ≤ Y.LetterCount){
        B = ith letter in Y.Word
        if(isKey(D, B)){
            D[B] = D[B] + 1
        }
        else{
            D[B] = 1
        }
        i = i + 1
    }
    return(D)
End updateDictionary
```

Options :

6406532040431. ✖ Frequency count of a vowel which occurs in maximum number of words in the dataset

6406532040432. ✖ Frequency count of a vowel which occurs maximum times in a single word

6406532040433. ✖ Frequency count of a vowel which occurs in maximum number of sentences in the dataset

6406532040434. ✔ Frequency count of the most frequent vowel in the dataset

Sub-Section Number :	7
Sub-Section Id :	64065388024
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610966 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 : (58 to 59)

Question Label : Comprehension

Consider a graph generated from **n** rows of “Scores” table that is represented by a matrix **M**. Each node in the graph corresponds to a student from the table. SeqNo is used to label the nodes in the graph. Study the given pseudocode and answer the subquestions.

```
M = createMatrix(n, n)
foreach i in rows(M){
    foreach j in columns(M){
        M[i][j] = [ ]
    }
}
L = ["Chemistry", "Mathematics", "Physics"]
while(Table 1 has more rows){
    Read the first row X in Table 1
    Move X to Table 2
    while(Table 1 has more rows){
        Read the first row Y in Table 1
        Move Y to Table 3
        foreach Subject in L{
            if(X.Subject > Y.Subject){
                M[Y.SeqNo][X.SeqNo] = M[Y.SeqNo][X.SeqNo] ++ [Subject]
            }
            if(X.Subject < Y.Subject){
                M[X.SeqNo][Y.SeqNo] = M[X.SeqNo][Y.SeqNo] ++ [Subject]
            }
        }
    }
    Move all rows from Table 3 to Table 1
}
```

Sub questions

Question Number : 58 Question Id : 640653610967 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 each pair of vertices **i** and **j** with **i != j,** choose the correct statement about **M[i][j]**.

Options :

6406532040435. ✖ **M[i][j]** is a list of subjects in which **i** scores more than **j**

6406532040436. ✖ **M[i][j]** is the number of subjects in which **i** scores more than **j**

6406532040437. ✔ **M[i][j]** is a list of subjects in which **i** scores less than **j**

6406532040438. ✖ **M[i][j]** is the number of subjects in which **i** scores less than **j**

Question Number : 59 Question Id : 640653610968 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 indicates that student i has scored the maximum marks in subject **S**?

Options :

6406532040439. ✖ **S** appears in **M[i][j]** for every **j**

6406532040440. ✖ **S** appears in **M[j][i]** for every **j**

6406532040441. ✔ **S** does not appear in **M[i][j]** for any **j**

6406532040442. ✖ **S** does not appear in **M[j][i]** for any **j**

Sub-Section Number :	8
Sub-Section Id :	64065388025
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610969 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 : (60 to 61)

Question Label : Comprehension

Consider a graph generated from the “Scores” table that is represented by a matrix **M**. Each node in the graph corresponds to a student from the table. SeqNo is used to label the nodes in the graph. Study the given pseudocode and answer the subquestions.

```
A = {}
while (Table 1 has more rows){
    Read the first row X in Table 1
    A[X.SeqNo] = [X.CityTown, X.Gender ]
    Move X to Table 2
}
n = length(keys(A))
M = createMatrix(n, n)
foreach i in keys(A){
    foreach j in keys(A){
        if (i != j and isRelated(A[i], A[j])){
            M[i][j] = 1
        }
    }
}

Procedure isRelated(Y, Z)
    if(first(Y) == first(Z) or last(Y) != last(Z)){
        return(True)
    }
    else{
        return(False)
    }
End isRelated
```

Sub questions

Question Number : 60 Question Id : 640653610970 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

There is an edge between students **i** and **j**, with **i != j**, if:

Options :

6406532040443. ✖ they are from the same city/town

6406532040444. ✖ they have the same gender

6406532040445. ✖ they are from the same city/town or have the same gender

6406532040446. ✔ they are from the same city/town or have different gender

Question Number : 61 Question Id : 640653610971 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 this graph? It is a Multiple Select Question.

Options :

6406532040447. ✖ There are only two cliques in this graph

6406532040448. ✖ All students in a given clique have the same gender

6406532040449. ✖ The graph is directed

6406532040450. ✔ All students in a given clique can be from different cities/towns

Sub-Section Number :	9
Sub-Section Id :	64065388026
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610972 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 : (62 to 63)

Question Label : Comprehension

Consider a graph generated from the “Words” table that is represented by a matrix **M**. Each node in the graph corresponds to a word from the table. SeqNo is used to label the nodes in the graph. Study the given pseudocode and answer the subquestions.

```
A = {}
while(Table 1 has more rows){
    Read the first row X in Table 1
    A[X.SeqNo] = [X.LetterCount, X.PartOfSpeech]
    Move X to Table 2
}
n = length(keys(A))
M = createMatrix(n, n)
foreach i in keys(A){
    foreach j in keys(A){
        if((last(A[i]) != last(A[j])) and isCompatible(A[i], A[j])){
            M[i][j] = 1
        }
    }
}

Procedure isCompatible(P, Q)
    if((first(P) - first(Q)) == -1){
        return(True)
    }
    else{
        return(False)
    }
End isCompatible
```

Sub questions

Question Number : 62 Question Id : 640653610973 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

There will be an edge from word **i** to **j** if:

Options :

6406532040451. ✖ The letter count and part of speech of words **i** and **j** are same

6406532040452. ✖ The letter count of word **i** is more than **j** and both have different part of speech

6406532040453. ✖ The letter count of word **i** is one more than **j** and both have different part of speech

6406532040454. ✔ The letter count of word **j** is one more than **i** and both have different part of

speech

Question Number : 63 Question Id : 640653610974 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

Every pair of nodes with the same part of speech is connected by an edge.

Options :

6406532040455. ✖ TRUE

6406532040456. ✔ FALSE

Sub-Section Number :	10
Sub-Section Id :	64065388027
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610975 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 : (64 to 65)

Question Label : Comprehension

Consider a graph generated from the “Scores” table that is represented by a matrix **M**. Each node in the graph corresponds to a student from the table. SeqNo is used to label the nodes in the graph. Study the given pseudocode and answer the subquestions.

```
D = {}
while(Table 1 has more rows){
    Read the first row X in Table 1
    D[X.SeqNo] = {“P”: X.Physics, “C”: X.Chemistry, “M”: X.Mathematics}
    Move X to Table 2
}
Ph = getAdjMatrix(D, "P")
Ch = getAdjMatrix(D, "C")
Ma = getAdjMatrix(D, "M")

Procedure getAdjMatrix(D, Subject)
    n = length(keys(D))
    M = createMatrix(n,n)
    foreach i in rows(M){
        foreach j in columns(M){
            if(i != j){
                diff = D[i][Subject] - D[j][Subject]
                    if(10 ≤ diff and diff ≤ 20){
                    M[i][j] = 1
                }
            }
        }
    }
    return(M)
End getAdjMatrix
```

Sub questions

Question Number : 64 Question Id : 640653610976 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

Choose the correct statement based on given pseudocode.

Options :

6406532040457. ✔ For all **i** and **j**, if **Ph[i][j]** = 1 then **Ph[j][i]** = 0

6406532040458. ✖ For all **i** and **j**, if **Ph[i][j]** = 0 then **Ph[j][i]** = 1

6406532040459. ✖ For all **i** and **j**, if **Ph[i][j]** = 1 then **Ph[j][i]** = 1

6406532040460. ✖ For all **i** and **j**, if **Ph[i][j]** = 0 then **Ph[j][i]** = 0

Question Number : 65 Question Id : 640653610977 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

Choose the correct statement(s) based on given pseudocode. It is a Multiple Select Question.

Options :

6406532040461. ✔ For all i and j, $0 \le (Ph[i][j] + Ch[i][j] + Ma[i][j]) \le 3$

6406532040462. ✖ For all i and j, $(Ph[i][j] + Ch[i][j] + Ma[i][j]) == (Ph[j][i] + Ch[j][i] + Ma[j][i])$

6406532040463. ✖ For all i and j, $(Ph[i][j] + Ch[i][j] + Ma[i][j]) != (Ph[j][i] + Ch[j][i] + Ma[j][i])$

6406532040464. ✔ For all i and j, $(Ph[i][j] + Ch[i][j] + Ma[i][j] + Ph[j][i] + Ch[j][i] + Ma[j][i]) \le 3$

Sub-Section Number :	11
Sub-Section Id :	64065388028
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610978 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 : (66 to 67)

Question Label : Comprehension

Let **M** be an adjacency matrix of a graph **G** given below, where **M[i][j]** = 1 if there is an edge from **i** to **j**, otherwise 0.

```
Procedure updateMatrix(M)
    tempMat = M
    foreach i in rows(M){
        foreach k in columns(M){
            if(M[i][k] == 1){
                foreach j in columns(M){
                    if(M[k][j] == 1){
                        tempMat[i][j] = 1
                    }
                }
            }
        }
    }
    return(tempMat)
End updateMatrix
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 66 Question Id : 640653610979 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 values of **A** and **B** at the end of execution of pseudocode given below?

```
newMatrix = updateMatrix(M)
A = newMatrix[0][1]
B = newMatrix[3][4]
```

Options :

6406532040465. ✖ **A** = 1, **B** = 1

6406532040466. ✔ **A** = 1, **B** = 0

6406532040467. ✖ **A** = 0, **B** = 1

6406532040468. ✖ **A** = 0, **B** = 0

Question Number : 67 Question Id : 640653610980 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 values of **A** and **B** at the end of execution of pseudocode given below?

```
newMatrix = updateMatrix(M)
newMatrix2 = updateMatrix(newMatrix)
A = newMatrix2[2][0]
B = newMatrix2[4][0]
```

Options :

6406532040469. ✖ **A** = 1, **B** = 1

6406532040470. ✔ **A** = 1, **B** = 0

6406532040471. ✖ **A** = 0, **B** = 1

6406532040472. ✖ **A** = 0, **B** = 0

Sub-Section Number :	12
Sub-Section Id :	64065388029
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 68 Question Id : 640653610981 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

A word is said to be a palindrome if the word obtained by reversing its letters is the same as the original word. For example, madam is a palindrome. The following pseudocode picks up a word **X** from the "Words" table and checks if it is a palindrome or not. The result is stored in a boolean variable called **flag**. Select the correct implementation of the procedure **isPalindrome**. This procedure must return True if the word is a palindrome and False otherwise. It is a Multiple Select Question.

```
wordList = wordToList(X)
flag = isPalindrome(wordList)
*********************
*** Fill the code ***
*********************

Procedure wordToList(X)
    i = 1
    chars = [ ]
    while(i <= X.LetterCount){
        chars = chars ++ [ith letter of X.Word]
        i = i + 1
    }
    return(chars)
End wordToList
```

Options :

```
Procedure isPalindrome(L)
    if(length(L) <= 1){
        return (True)
    }
    if(first(L) != last(L)){
        return (False)
    }
    else{
        return (isPalindrome(rest(init(L))))
    }
End isPalindrome
```

6406532040473. ✔

6406532040474. ✖

```
Procedure isPalindrome(L)
    if(length(L) == 1){
        return(True)
    }
    if(first(L) == last(L)){
        return(isPalindrome(rest(init(L))))
    }
    else{
        return(False)
    }
End isPalindrome
```

6406532040475. ✔

```
Procedure isPalindrome(L)
    if(length(L) <= 1) {
        return(True)
    }
    if(first(L) == last(L)) {
        return(isPalindrome(rest(init(L))))
    }
    else{
        return(False)
    }
End isPalindrome
```

6406532040476. ✖

```
Procedure isPalindrome(L)
    if(length(L) <= 1){
        return(True)
    }
    if(first(L) == last(L)){
        return(True)
    }
    else{
        return(isPalindrome(rest(init(L))))
    }
End isPalindrome
```

Sub-Section Number :	13
Sub-Section Id :	64065388030
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610982 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 : (69 to 70)

Question Label : Comprehension

The procedure **calculate** takes two positive integers as arguments and returns an integer. Study the given pseudocode and answer the subquestions.

```
Procedure calculate(i, j)
    if(j == 0){
        return(i)
    }
    return(calculate(j + i, j - 1))
End calculate
```

Sub questions

Question Number : 69 Question Id : 640653610983 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 does **calculate**(5, 3) return?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

11

Question Number : 70 Question Id : 640653610984 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

Which of the following is the output returned by **calculate**(y, x)?

Options :

6406532040478. ✔ y + x + (x-1) + ... + 1

6406532040479. ✖ x + (x-1) + ... + 1

6406532040480. ✖ x + y + (y-1) + ... + 1

6406532040481. ✖ x.y

Question Id : 640653610985 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 : (71 to 72)

Question Label : Comprehension

Consider the given pseudocode, two positive integers, **a** and **b** are the input parameters of procedure mystery, where **a** ≥ **b**.

```
A = mystery(a, b)

Procedure mystery(X, Y)
    if(Y != 0){
        return(mystery(Y, doSomething(X, Y)))
    }
    else{
        return(X)
    }
End mystery

Procedure doSomething(U, V)
    if(U != V){
        C = 0, i = 0
        while(C ≤ U){
            i = i + 1
            C = V * i
        }
        D = U - V * (i - 1)
        return(D)
    }
    else{
        return(0)
    }
End doSomething
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 71 Question Id : 640653610986 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

What will the return value of procedure **doSomething(U, V)** represent, where **U ≥ V**?

Options :

6406532040482. ✖ Remainder when **V** is divided by **U**

6406532040483. ✔ Remainder when **U** is divided by **V**

6406532040484. ✖ Quotient when **V** is divided by **U**

6406532040485. ✖ Quotient when **U** is divided by **V**

6406532040486. ✖ Can not say anything

Question Number : 72 Question Id : 640653610987 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

What will **A** represent at the end of the execution?

Options :

6406532040487. ✖ LCM of positive integers, **a** and **b**

6406532040488. ✔ HCF (GCD) of positive integers, **a** and **b**

6406532040489. ✖ Product of integers, **a** and **b**

6406532040490. ✖ Sum of integers, **a** and **b**

Sub-Section Number :	14
Sub-Section Id :	64065388031
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653610988 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 : (73 to 74)

Question Label : Comprehension

Consider the following graph with five nodes. **A** is the 6 × 6 adjacency matrix corresponding to this graph.

```
D = {}
L = []
D[4] = -1
D, L = searchPath(A, D, L, 4)

Procedure searchPath(graph, P, S, i)
    S = S ++ [i]
    foreach j in columns(graph){
        if(graph[i][j] == 1 and not(isKey(P, j))){
            P[j] = i
            P, S = searchPath(graph, P, S, j)
        }
    }
    return (P, S)
End searchPath
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 73 Question Id : 640653610989 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 value of **L** after executing the given pseudocode?

Options :

6406532040491. ✖ **L** = [4, 2, 1, 0, 5, 3]

6406532040492. ✔ **L** = [4, 2, 0, 1, 3, 5]

6406532040493. ✖ **L** = [4, 2, 0, 1, 5, 3]

6406532040494. ✖ **L** = [4, 2, 1, 0, 3, 5]

Question Number : 74 Question Id : 640653610990 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 **keys(D)** after executing the given pseudocode?

Options :

6406532040495. ✖ **L** = [4, 2, 1, 0, 5, 3]

6406532040496. ✖ **L** = [4, 2, 0, 1, 3, 5]

6406532040497. ✖ **L** = [4, 2, 0, 1, 5, 3]

6406532040498. ✖ **L** = [4, 2, 1, 0, 3, 5]

6406532040499. ✔ Can not be determined

Java

Section Id :	64065341307
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	24
Number of Questions to be attempted :	24
Section Marks :	100

Display Number Panel :	Yes
Section Negative Marks :	0
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 :	64065388032
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 75 Question Id : 640653610991 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 :

6406532040500. ✔ YES

6406532040501. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065388033
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 76 Question Id : 640653610992 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

Method `Stream.iterate(e, f)` returns an infinite sequential ordered `Stream` produced by iterative application of a function `f` to an initial element `e`, producing a `Stream` consisting of `e`, `f(e)`, `f(f(e))`, etc. Based on the above information, consider the code given below, and answer the question that follows.

```
import java.util.stream.*;
public class Test {
    public static void main(String[] args) {
        Stream.iterate(0, n -> n+3).limit(6).filter(n -> n % 2 == 0)
              .forEach(num -> System.out.print(num+" "));
    }
}
```

What will the output be?

Options :

6406532040502. ✖ 0 2 4 6 8 10

6406532040503. ✔ 0 6 12

6406532040504. ✖ 2 4 6 8 10 12

6406532040505. ✖ 0 2 4 6

Question Number : 77 Question Id : 640653610993 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 java code

```
class Worker implements Cloneable{
    String name;
    public Worker(String n) {
        name = n;
    }
    public Worker clone() throws CloneNotSupportedException{
        return (Worker)super.clone();
    }
}
class Work implements Cloneable{
    String job;
    Worker[] wk;
    public Work(String j, Worker[] w) {
        job = j;
        wk = w;
    }
    public Work clone() throws CloneNotSupportedException{
        Work t = (Work)super.clone();
        t.wk = t.wk.clone();
        return t;
    }
}
 public class Test {
     public static void main(String[] args) throws CloneNotSupportedException{
         Worker[] w1 = {new Worker("ABC"), new Worker("XYZ")};
         Work obj1 = new Work("Painting", w1);
         Work obj2 = obj1.clone();
         Worker[] w2 = obj2.wk;
         w2[0].name = "MNO";
         obj2.job = "Printing";
         System.out.println(obj1.job +" : " + obj1.wk[0].name);
         System.out.println(obj2.job +" : " + obj2.wk[0].name);
     }
 }
```

What will the output be?

Options :

6406532040506. ✖

```
Painting : MNO
Painting : MNO
```

6406532040507. ✖

```
Printing : MNO
Printing : MNO
```

6406532040508. ✖

```
Painting : ABC
Printing : MNO
```

6406532040509. ✔

```
Painting : MNO
Printing : MNO
```

Question Number : 78 Question Id : 640653610994 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

```
class Employee{
    private String name;
    private double salary;
    public Employee() {
        this.salary = 40000.0;
    }
    public Employee(Employee e) {
        this.name = e.name;
        this.salary = e.salary;
    }
    public void setName(String name) {
        this.name = name;
    }
    public String getName() {
        return name;
    }
    public void setSalary(double salary) {
        this.salary = salary;
    }
    public double getSalary() {
        return salary;
    }
}
public class Test{
    public static void main(String[] args) {
        Employee obj1 = new Employee();
        Employee obj2 = obj1;
        Employee obj3 = new Employee(obj1);
        obj1.setSalary(50000.0);
        obj1.setName("Anand");
        obj2.setName("Karthik");
        obj3.setName("Shannu");
        System.out.println(obj1.getName() +": " + obj1.getSalary());
        System.out.println(obj2.getName() +": " + obj2.getSalary());
        System.out.println(obj3.getName() +": " + obj3.getSalary());
    }
}
```

What will the output be?

Options :

6406532040510. ✖ Anand: 50000.0

Anand: 50000.0

Shannu: 40000.0

6406532040511. ✔ Karthik: 50000.0

Karthik: 50000.0

Shannu: 40000.0

6406532040512. ✖ Anand: 50000.0

Karthik: 50000.0

Shannu: 40000.0

6406532040513. ✖ Shannu: 40000.0

Shannu: 40000.0

Shannu: 40000.0

Question Number : 79 Question Id : 640653610996 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.
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.

```
import java.util.*;
class Actor{
    String name;
    String year;
    int no_of_hits;
    public Actor(String name, String year, int no_of_hits) {
        this.name = name;
        this.year = year;
        this.no_of_hits = no_of_hits;
    }
}
 public class TestMap{
     public static void printActors(ArrayList<Actor> aL) {
         var map = new TreeMap<String, Integer>();
         for(Actor a:aL) {
             map.put(a.name, map.getOrDefault(a.name, 0)+a.no_of_hits);
     }
         for (Map.Entry<String, Integer> e:map.entrySet()) {
             System.out.println(e.getKey()+" = "+e.getValue());
         }
     }
     public static void main(String[] args) {
         var aList = new ArrayList<Actor>();
         aList.add(new Actor("Sharukh", "2005", 3));
         aList.add(new Actor("Hrithik", "2006", 1));
         aList.add(new Actor("Hrithik", "2005", 2));
         aList.add(new Actor("Sharukh", "2006", 2));
         printActors(aList);
     }
 }
```

What will the output be?

Options :

6406532040518. ✔ Hrithik = 3

Sharukh = 5

6406532040519. ✖ Hrithik = 2

Sharukh = 2

6406532040520. ✖ Sharukh = 3

Hrithik = 1

6406532040521. ✖ Sharukh = 5

Hrithik = 3

Question Number : 80 Question Id : 640653610997 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 TestSet {
    //CODE BLOCK
    public boolean property(Integer runs) {
        if(runs >= 40)
            return false;
        return true;
    }
    public void validate(Map<String, Integer> m) {
        for(Map.Entry<String, Integer> entry:m.entrySet()) {
            if(property(entry.getValue()))
                set1.add(entry.getKey());
            else
                set2.add(entry.getKey());
        }
    }
    public void display() {
        System.out.println(set1);
        System.out.println(set2);
    }
    public static void main(String[] args) {
        var batsmen = new LinkedHashMap<String, Integer>();
        batsmen.put("Andrew", 28);
        batsmen.put("Evon", 97);
        batsmen.put("Morkel", 34);
        batsmen.put("Chandrapaul", 41);
        batsmen.put("Bell", 83);
        batsmen.put("Mayank", 39);
        TestSet obj = new TestSet();
        obj.validate(batsmen);
        obj.display();
    }
}
```

Choose the correct option(s) to be filled in place of CODE BLOCK so that the program always generates the output:

```
[Andrew, Mayank, Morkel]
[Bell, Chandrapaul, Evon]
```

Options :

6406532040522. ✔

```
TreeSet<String> set1 = new TreeSet<String>();
TreeSet<String> set2 = new TreeSet<String>();
```

6406532040523. ✖

```
LinkedHashSet<String> set1 = new LinkedHashSet<String>();
LinkedHashSet<String> set2 = new LinkedHashSet<String>();
```

6406532040524. ✖

```
HashSet<String> set1 = new HashSet<String>();
HashSet<String> set2 = new HashSet<String>();
```

6406532040525. ✖

```
TreeSet<String> set1 = new TreeSet<String>();
HashSet<String> set2 = new HashSet<String>();
```

Question Number : 81 Question Id : 640653610998 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 java code

```
class HoursException extends Exception{
    public HoursException(String str) {
        super(str);
    }
}
class CarRental{
    final static int rent_per_hour = 300;
    public double getRent(int no_of_hours) throws HoursException{
        double rent = 0.0;
        if(no_of_hours < 0)
            throw new HoursException("Please enter valid hours");
        rent = no_of_hours * rent_per_hour;
        return rent;
    }
}
 public class TestException {
     public static void main(String[] args) {
         CarRental r1 = new CarRental();
         CarRental r2 = new CarRental();
         try {
             System.out.println(r1.getRent(34));
             System.out.println(r2.getRent(-23));
         }
         catch(HoursException e) {
             System.out.println(e.getMessage());
         }
         finally {
             System.out.println("Execution finished");
         }
     }
 }
```

What will the output be?

Options :

6406532040526. ✖ 10200.0

Execution finished

6406532040527. ✖ Please enter valid hours

Execution finished

6406532040528. ✔ 10200.0

Please enter valid hours

Execution finished

6406532040529. ✖ Please enter valid hours

Execution finished

10200.0

Question Number : 82 Question Id : 640653610999 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 java code

```
class Interest{
    //p = Principal Amount, r = Rate per Annum, t = Time (years)
    private double p, t, r;
    public Interest(double p, double t, double r) {
        this.p = p;
        this.t = t;
        this.r = r;
    }
    public double calculate() {
        assert p * t * r > 0;  // assert-1
        assert p > 0; // assert-2
        assert t > 0; // assert-3
        assert r > 0; // assert-4
        return (p * t * r / 100);
    }
}
public class AssertTest {
    public static void main(String[] args) {
        Interest obj = new Interest(5000.00, -1.00, -16.56);
        System.out.println(obj.calculate());
    }
}
```

Identify the first `assert` statement that throws the `AssertionError` when the class is executed as:

```
java -ea AssertTest
```

Options :

6406532040530. ✖ assert-1

6406532040531. ✖ assert-2

6406532040532. ✔ assert-3

6406532040533. ✖ assert-4

Question Number : 83 Question Id : 640653611000 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 code given below.

```
import java.util.*;
class Founder{
    Map<String, String> l = new HashMap<String, String>();
    public Founder() {
        l.put("Lenovo", "Liu Chuanzhi");
        l.put("Samsung", "Lee Byung-chul");
    }
    public String getFounder(String t){
        return l.get(t);
    }
}
public class TestOptional {
    public static void main(String[] args){
        Optional<String> op1 = Optional.ofNullable(new Founder()
                                    .getFounder("Lenovo"));
        Optional<String> op2 = Optional.ofNullable(new Founder()
                                    .getFounder("samsung"));
        op1.ifPresent(n->System.out.println(n.toUpperCase()));
        op2.ifPresent(n->System.out.println(n.toUpperCase()));
    }
}
```

Choose the correct option.

Options :

6406532040534. ✖ This program terminates due to `NullPointerException` after printing the message:
`LIU CHUANZHI`

6406532040535. ✔ This program generates the output:
LIU CHUANZHI

6406532040536. ✖ This program generates the output:
LIU CHUANZHI
NULL

6406532040537. ✖ This program generates the output.
LIU CHUANZHI
LEE BYUNG-CHUL

Question Number : 84 Question Id : 640653611001 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.*;
import java.util.stream.*;
public class CollectRes {
    public static void main(String[] args) {
        var list=new ArrayList<String>();
        list.add(null);
        list.add("English Willow");
        list.add(null);
        list.add("Kashmiri Willow");
        list.add("Poular willow");
        list.add("Poular willow");
        list.add("Kashmiri Willow");
        list.add("English Willow");

        // CODE BLOCK

        System.out.println(obj);
    }
}
```

Choose the correct option to be filled in place of CODE BLOCK so that the program generates the output:

```
[English Willow, Kashmiri Willow, Poular willow]
```

Options :

6406532040538. ✖

```
var obj= list.stream()
            .map(str -> str != null)
            .collect(Collectors.toCollection(LinkedHashSet<String>::new));
```

6406532040539. ✖

```
var obj= list.stream()
            .limit(3)
            .filter(str -> str != null)
            .collect(Collectors.toCollection(LinkedHashSet<String>::new));
```

6406532040540. ✔

```
var obj= list.stream()
            .filter(str -> str != null)
            .collect(Collectors.toCollection(LinkedHashSet<String>::new));
```

6406532040541. ✖

```
var obj= list.stream()
            .limit(3)
            .map(str -> str != null)
            .collect(Collectors.toCollection(LinkedHashSet<String>::new));
```

Question Number : 85 Question Id : 640653611002 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 code given below.
Assume that, before execution of the given code, the files "f1.txt" and "f2.txt" have the following text in them.
JavaScript is a scripting language

```
import java.io.*;
public class TestFile {
    public static void main(String[] args) {
        try {
            var out = new FileOutputStream("f1.txt", true);
            var dout = new DataOutputStream(out);
            dout.writeBytes(", enables you to create dynamically updating content");
            dout.close();

            var out2 = new FileOutputStream("f2.txt", false);
            var dout2 = new DataOutputStream(out2);
            dout2.writeBytes(", enables you to create dynamically updating content")

            dout2.close();
        }
        catch(IOException e) {
            System.out.println(e);
        }
    }
}
```

Choose the correct option regarding the contents of f1.txt and f2.txt after the program finishes execution.

Options :

6406532040542. ✖

f1.txt:
, enables you to create dynamically updating content
f2.txt:
JavaScript is a scripting language, enables you to create dynamically updating content

6406532040543. ✗ f1.txt and f2.txt
JavaScript is a scripting language, enables you to create dynamically updating content

6406532040544. ✓ f1.txt:
JavaScript is a scripting language, enables you to create dynamically updating content
f2.txt:
, enables you to create dynamically updating content

6406532040545. ✗ f1.txt and f2.txt
, enables you to create dynamically updating content

Question Number : 86 Question Id : 640653611003 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 code given below.

```
import java.io.*;
class Coupon implements Serializable{
    private String c_type="****";
    private transient String code="****";
    private String exp="****";
    public Coupon(String type, String c, String e) {
        c_type = type;
        code = c;
        exp = e;
    }
    public String toString() {
        return c_type + ", " + code + ", " + exp;
    }
}
public class STest{
    public static void main(String[] args) throws Exception{
        var fos = new FileOutputStream("coupon.txt");
        var os = new ObjectOutputStream(fos);
        os.writeObject(new Coupon("Accessories", "ACCNEW", "12/08/23"));
        var fis = new FileInputStream("coupon.txt");
        var ois = new ObjectInputStream(fis);
        Coupon r = (Coupon)ois.readObject();
        System.out.println(r);
    }
}
```

What will the output be?

Options :

6406532040546. ✖ ****, ****, ****

6406532040547. ✖ Accessories, ACCNEW, 12/08/23

6406532040548. ✔ Accessories, null, 12/08/23

6406532040549. ✖ null, null, null

6406532040550. ✖ Accessories, ****, 12/08/23

Question Number : 87 Question Id : 640653611006 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 code given below.

```
import java.util.ArrayList;
class Director{
    String name;
    ArrayList<String> awards;
    public Director(String name, ArrayList<String> awards) {
        this.name = name;
        this.awards = awards;
    }
    public Director(Director d){
        name = d.name;
        awards = new ArrayList<String>();
        for(String s : d.awards)
            awards.add(s);
    }
    public String toString() {
        return name+", "+awards;
    }
}
public class TestCon {
    public static void main(String[] args) {
        ArrayList<String> awd = new ArrayList<String>();
        awd.add("Nandi");
        awd.add("Filmfare");
        Director d1 = new Director("Rajamouli", awd);
        Director d2 = new Director(d1);
        d2.name = "Trivikram";
        d1.awards.add("IIFA");
        System.out.println(d1);
        System.out.println(d2);
    }
}
```

What will the output be?

Options :

6406532040559. ✖
```
Rajamouli, [Nandi, Filmfare]
Trivikram, [Nandi, Filmfare]
```

6406532040560. ✖
```
Rajamouli, [Nandi, Filmfare, IIFA]
Trivikram, [Nandi, Filmfare, IIFA]
```

6406532040561. ✔
```
Rajamouli, [Nandi, Filmfare, IIFA]
Trivikram, [Nandi, Filmfare]
```

6406532040562. ✖
```
Rajamouli, [Nandi, Filmfare]
Trivikram, [Nandi, Filmfare, IIFA]
```

Question Number : 88 Question Id : 640653611007 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

```
interface Mobile{
    abstract void features();
}
class Mobile4G implements Mobile{
    public void features() {
        System.out.println("Latency ranges from 60 ms to 98 ms");
    }
}
class Mobile5G extends Mobile4G{
    public void features() {
        System.out.println("Latency under 5 milliseconds");
    }
}
public class TestGeneric {
    // LINE 1 : FUNCTION HEADER {
        obj.features();
    }
    public static void main(String[] args) {
        getDetails(new Mobile4G());
        getDetails(new Mobile5G());
    }
}
```

Choose the correct option(s) to be filled in place of LINE 1 so that the program generates the output:

```
Latency ranges from 60 ms to 98 ms
Latency under 5 milliseconds
```

Options :

6406532040563. ✖ `public static void getDetails(T obj)`

6406532040564. ✖ `public static <T> void getDetails(T obj)`

6406532040565. ✔ `public static <T extends Mobile> void getDetails(T obj)`

6406532040566. ✖ `public static <T implements Mobile> void getDetails(T obj)`

Question Number : 89 Question Id : 640653611008 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 three Java files given below.

TestPack1.java:

```
package com.pack1;
public class TestPack1 {
    protected void go() {
        System.out.println("go from TestPack1");
    }
}
```

TestPack2.java:

```
package com.pack2;
public class TestPack2 extends com.pack1.TestPack1{ // LINE-1
    public void move() {
        super.go();  // LINE-2
        System.out.println("move from TestPack2");
    }
    protected void present() {
        System.out.println("present from TestPack2");
    }
}
```

Test.java:

```
package com.pack2;
public class Test {
    public static void main(String[] args) {
        var obj = new com.pack2.TestPack2();
        obj.move(); // LINE-3
        obj.present(); // LINE-4
    }
}
```

Choose the correct option.

Options :

6406532040567. ✖ LINE-1 generates a compilation error because of incorrect way of importing the package.

6406532040568. ✖ LINE-2 generates a compilation error because of illegal access to `go()`.

6406532040569. ✖ LINE-3 generates a compilation error because of illegal access to `move()`.

6406532040570. ✖ LINE-4 generates a compilation error because of illegal access to `present()`.

6406532040571. ✔ This program generates the output:

```
go from TestPack1
move from TestPack2
present from TestPack2
```

Question Number : 90 Question Id : 640653611010 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 code given below.

```
import java.util.*;
import java.util.concurrent.*;
class Example extends Thread{
    Map siMap;
    Example(Map m){
        this.siMap = m;
    }
    public void run(){
        siMap.put("D",4);
    }
}
public class Test{
    public static void main (String[] args) throws InterruptedException{
        Map<String, Integer> siMap = new LinkedHashMap<String, Integer>();
        String[] str = {"A", "B", "C"};
        Integer[] arr = {1, 2, 3};
        for(int i = 0; i < str.length; i++){
                siMap.put(str[i],arr[i]);
        }
        Example t = new Example(siMap);
        t.start();
        t.join();
        Set s = siMap.entrySet();
        Iterator itr = s.iterator();
        while(itr.hasNext()){
            Map.Entry m = (Map.Entry)itr.next();
            System.out.println(m.getKey() + " => " + m.getValue());
        }
    }
}
```

Which of the following is true about the given code?

Options :

6406532040576. ✖ This program may generate `ConcurrentModificationException`.

6406532040577. ✔ This program generates the output:

```
A => 1
B => 2
C => 3
D => 4
```

6406532040578. ✖ This program results in a deadlock.

6406532040579. ✖ This program generates the output:

```
A => 1
B => 2
C => 3
```

Question Number : 91 Question Id : 640653611013 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 program given below and select the correct option from among the given choices.

```
interface Flyable{
    public void fly();
}
interface Moveable extends Flyable{
    public void move();
    public void run();
}
class Flight implements Moveable{
    public void fly(){
        System.out.println("Flight is flying");
    }
    public void move(){
        System.out.println("Flight is moving");
    }
}
public class Test {
    public static void main(String[] args) {
        Flight obj= new Flight();
        obj.fly();
        obj.move();
    }
}
```

Options :

6406532040592. ✖ This code generates the output: `Flight is flying`

6406532040593. ✔ Compilation fails because `run()` method has not been overridden in class `Flight`.

6406532040594. ✖ This code generates the output: `Flight is moving`

6406532040595. ✖ This code generates the output:

```
Flight is flying
Flight is moving
```

Sub-Section Number :	3
Sub-Section Id :	64065388034
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 92 Question Id : 640653611004 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

Consider the Java program given below.

```
import javax.swing.*;
import java.awt.event.*;
public class ButtonEventTest extends JFrame implements ActionListener{
    private JButton b1, b2;
    private JLabel l1;
    JPanel panel1, panel2;
    public ButtonEventTest() {
        b1=new JButton("Clear");
        b2=new JButton("Reload");

        panel1=new JPanel();
        panel1.add(b1);
        panel1.add(b2);
        add(panel1,"South");
        l1=new JLabel("");

        panel2=new JPanel();
        panel2.add(l1);
        add(panel2,"North");
        setVisible(true);
        setSize(400,400);
        b1.setActionCommand("action1");
        b2.setActionCommand("action2");
        b1.addActionListener(this);
        b2.addActionListener(this);
    }
    public void actionPerformed(ActionEvent e) {
        //CODE SEGMENT
    }
    public static void main(String[] args) {
        new ButtonEventTest();
    }
}
```

Choose the correct code segment(s) to be filled inside method `actionPerformed()` such that on clicking the `Clear` button, the label text changes to `Form cleared` and on clicking the `Reload` button, the label text changes to `Form reloaded`.

Options :

```
if(e.getActionCommand().equals("action1"))
    l1.setText("Form cleared");
else if(e.getActionCommand().equals("action2"))
    l1.setText("Form reloaded");
```

6406532040551. ✔

6406532040552. ✖

```
if(e.getActionCommand().equals("b1"))
    l1.setText("Form cleared");
else if(e.getActionCommand().equals("b2"))
    l1.setText("Form reloaded");
```

6406532040553. ✔

```
if(e.getSource().equals(b1))
    l1.setText("Form cleared");
else if(e.getSource().equals(b2))
    l1.setText("Form reloaded");
```

6406532040554. ✖

```
if(e.getSource().equals("action1"))
    l1.setText("Form cleared");
else if(e.getSource().equals("action2"))
    l1.setText("Form reloaded");
```

Question Number : 93 Question Id : 640653611011 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

Consider the following code

```
class BookingEnquiry{
    int available = 1;
    public synchronized void request(int n, String name){
        if(available >= n){
            available = available - n;
            System.out.println(name + " booked " + n + " ticket");
        }
        else{
            System.out.println(name + " cannot book " + n + " ticket");
        }
    }
}
class TicketBooking implements Runnable{
    BookingEnquiry e;
    String name;
    int n_tickets;
    public TicketBooking(BookingEnquiry e1, String n, int t){
        e = e1;
        name = n;
        n_tickets = t;
    }
    public void run(){
        e.request(n_tickets, name);
    }
}
public class ThreadTest {
    public static void main(String[] args) {
        BookingEnquiry obj = new BookingEnquiry();
        TicketBooking tb1 = new TicketBooking(obj, "Shannu", 1);
        TicketBooking tb2 = new TicketBooking(obj, "Karthik", 1);
        Thread t1 = new Thread(tb1);
        Thread t2 = new Thread(tb2);
        t1.start();
        t2.start();
    }
}
```

Which of the following is/are possible output(s)?

Options :

6406532040580. ✖ Shannu booked 1 ticket

Karthik booked 1 ticket

6406532040581. ✖ Karthik booked 1 ticket

Shannu booked 1 ticket

6406532040582. ✔ Shannu booked 1 ticket

Karthik cannot book 1 ticket

6406532040583. ✔ Karthik booked 1 ticket

Shannu cannot book 1 ticket

6406532040584. ✖ Karthik cannot book 1 ticket

Shannu cannot book 1 ticket

6406532040585. ✖ Shannu cannot book 1 ticket

Karthik cannot book 1 ticket

Question Number : 94 Question Id : 640653611014 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

Consider the code given below.

```
interface UpGradable{
    void upgrade();
}
class PC {
    public UpGradable getHardware() {
        return new Hardware();
    }
    public UpGradable getOS() {
        return new OS();
    }
    private class Hardware implements UpGradable{
        public void upgrade() {
            System.out.println("It is upgradable");
        }
    }
    private class OS implements UpGradable{
        public void upgrade() {
            System.out.println("It is upgradable");
        }
    }
}
 public class PrivateTest {
     public static void main(String[] args) {
         // CODE BLOCK
     }
 }
```

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

```
It is upgradable
It is upgradable
```

Options :

6406532040596. ✔

```
PC obj1 = new PC();
obj1.getHardware().upgrade();
obj1.getOS().upgrade();
```

6406532040597. ✖

```
PC obj1 = new PC();
PC.HardWare = obj1.getHardware();
PC.OS priobj2 = obj1.getOS();
priobj1.upgrade();
priobj2.upgrade();
```

6406532040598. ✖

```
PC obj1 = new PC();
Hardware priobj1 = obj1.getHardware();
OS priobj2 = obj1.getOS();
priobj1.upgrade();
priobj2.upgrade();
```

6406532040599. ✔

```
PC obj1 = new PC();
UpGradable priobj1 = obj1.getHardware();
UpGradable priobj2 = obj1.getOS();
priobj1.upgrade();
priobj2.upgrade();
```

Sub-Section Number :	4
Sub-Section Id :	64065388035
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 95 Question Id : 640653611005 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

Consider the Java code given below.

```
import java.util.*;
public class TestQueue{
    public static void main(String[] args) {
        PriorityQueue<String> queue1 = new PriorityQueue<String>();
        queue1.add("Gurgaon");
        queue1.add("Calicut");
        queue1.add("Udaipur");
        queue1.add("Ooty");
        queue1.add("Hyderabad");

        ArrayDeque<String> queue2 = new ArrayDeque<String>();
        while(queue1.size()>0) {
            queue2.addFirst(queue1.poll()); //LINE-1
        }
        System.out.print(queue2);
    }
}
```

Choose the correct option.

Options :

6406532040555. ✖ This program generates the output:
[Hyderabad, Ooty, Udaipur, Calicut, Gurgaon]

6406532040556. ✖ This program generates the output:
[Calicut, Gurgaon, Hyderabad, Ooty, Udaipur]

6406532040557. ✖ Compilation error at LINE-1

6406532040558. ✔ This program generates the output:
[Udaipur, Ooty, Hyderabad, Gurgaon, Calicut]

Question Number : 96 Question Id : 640653611009 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

Consider the code given below.

```
import java.util.*;
public class TestHigh {
    public static void main(String[] args) {
        List<String> list = new ArrayList<String>();
        list.add("RAT");
        list.add("SKY");
        list.add("FLY");
        list.add("EAGLE");
        list.add("LEMON");
        list.add("VK");
        list.add("MSD");

        list.stream().takeWhile(s->s.length()==3)
            .forEach(s -> System.out.print(s+" "));

        System.out.println();

        list.stream().dropWhile(s->s.length()==3)
            .forEach(s -> System.out.print(s+" "));
    }
}
```

What will the output be?

Options :

6406532040572. ✖
```
RAT SKY FLY MSD
EAGLE LEMON
```

6406532040573. ✖
```
RAT SKY FLY
EAGLE LEMON
```

6406532040574. ✔
```
RAT SKY FLY
EAGLE LEMON VK MSD
```

6406532040575. ✖
```
RAT SKY FLY
VK
```

Sub-Section Number : 5

Sub-Section Id : 64065388036

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 97 Question Id : 640653610995 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 statements given below.
Statement 1: **Player** is an object that has methods `doBowling()`, `doBatting()` and `doFileding()`.
Statement 2: **Captain** is an object that has methods `doBowling()`, `doBatting()`, `doFileding()` and `doCaptaincy()`
Identify the correct option regarding subtyping with respect to **Player** objects and **Captain** objects.

Options :

6406532040514. ✔ Captain can be a subtype of Player.

6406532040515. ✖ Player can be a subtype of Captain.

6406532040516. ✖ Captain cannot be a subtype of Player.

6406532040517. ✔ Player cannot be a subtype of Captain.

Question Number : 98 Question Id : 640653611012 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 java code:

```
1.class Actor{
2.    public void show(){
3.        System.out.println("show Actor name");
4.    }
5.    public void display(){
6.        System.out.println("display Actor details");
7.    }
8.}
9.class Hero extends Actor{
10.    public void show() {
11.        System.out.println("show Hero name");
12.    }
13.}
14.class Director extends Actor, Hero{
15.    public void show() {
16.        System.out.println("show Director name");
17.    }
18.}
19.public class Test {
20.    public static void main(String[] args){
21.        Actor obj= new  Actor();
22.        obj.show();
23.        Actor obj1 =  new Hero();
24.        Hero obj2 = new Actor();
25.    }
26.}
```

Identify the line/s which has/have error.

Options :

6406532040586. ✖ Line 6

6406532040587. ✔ Line 14

6406532040588. ✖ Line 15

6406532040589. ✖ Line 20

6406532040590. ✖ Line 23

6406532040591. ✔ Line 24

MLT

Section Id :	64065341308
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	17
Number of Questions to be attempted :	17
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
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 :	64065388037
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 99 Question Id : 640653611015 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 :

6406532040600. ✔ YES

6406532040601. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065388038
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 100 Question Id : 640653611016 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

When PCA is applied to certain dataset in $\mathbb{R}^5$, eigenvalues of covariance matrix are 10, 15, 9, 0, 0 and corresponding eigen vectors are $[\sqrt{1/2}, \sqrt{1/2}, 0, 0, 0]^T$, $[-\sqrt{1/2}, \sqrt{1/2}, 0, 0, 0]^T$, $[0, 0, 1, 0, 0]^T$, $[0, 0, 0, \sqrt{1/2}, -\sqrt{1/2}]^T$, and $[0, 0, 0, \sqrt{1/2}, \sqrt{1/2}]^T$.

When we reconstruct the point $[1, 2, 3, 0, 0]^T$ using first three principal components, then what is the reconstruction error?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Number : 101 Question Id : 640653611019 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

Suppose you have been given a task of estimating the conversion rate of google click of new online advertisement campaign. You have collected data from a limited sample of 50 users, where 12 of them have converted. You want to use Bayesian estimation with a prior distribution to provide a more robust estimate of the conversion rate.

Assume you have prior information and you decide to use a beta distribution as your prior. You choose a beta distribution with parameters $\alpha = 3$ and $\beta = 4$ to capture your prior beliefs.

Calculate the posterior mean?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.20 to 0.40

Question Number : 102 Question Id : 640653611025 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

You have been asked to build a classifier to categorize news articles into two categories: "Technology" and "Sports." You've collected a dataset of 1000 articles, with 600 articles labeled as "Technology" and 400 labeled as "Sports." You've analyzed the articles and collected statistics on the occurrence of two words "software" and "football" in the articles:

Keyword	label of email	Probability
Software	Technology	P("Software"|Technology)=0.45
Software	Sports	P("Software"|Sports)=0.05
Football	Technology	P("Football"|Technology)=0.3
Football	Sports	P("Football"|Sports)=0.02

You receive a new email containing both the "Software" and "Football" keywords and want to classify it using Naive Bayes.

Use the Naive Bayes formula to calculate the probability that the new email is classified as "Technology."

Hint: Assume that these are only two possible words (that is there are only two features)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.98 to 1

Sub-Section Number :	3
Sub-Section Id :	64065388039
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 103 Question Id : 640653611017 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 matrices cannot be expressed as $K = X^T X$ for some data matrix X ?

Choose the most appropriate answer.

Options :

6406532040603. ✖ $\begin{bmatrix} 2 & 1 \\ 1 & 3 \end{bmatrix}$

6406532040604. ✖ $\begin{bmatrix} 4 & 2 \\ 2 & 3 \end{bmatrix}$

6406532040605. ✔ $\begin{bmatrix} -1 & 2 \\ 2 & 4 \end{bmatrix}$

Question Number : 104 Question Id : 640653611020 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

Consider the following dataset with two features.

X	y
[1,1]	1
[-1,-1]	1
[2,2]	3
[-2,-2]	3

Which of the following property does the solution w satisfy that fits the linear regression model $y = w^T x$?

Options :

6406532040611. ✔ $w \in S$ where $S = \{u = [u_1, u_2]^T \in R^2 : u_1 = u_2\}$

6406532040612. ✖ $w \in S$ where $S = \{u = [u_1, u_2]^T \in R^2 : u_1 = -u_2\}$

6406532040613. ✖ $w \in S$ where $S = \{u = [u_1, u_2]^T \in R^2 : u_1 = -2u_2\}$

6406532040614. ✖ $w \in S$ where $S = \{u = [u_1, u_2]^T \in R^2 : u_1 = 2u_2\}$

Question Number : 105 Question Id : 640653611021 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

Assuming that in the constrained version of ridge regression optimization problem, following are the weight vectors to be considered, along with the mean squared error (MSE) produced by each:

w_1 = [2, 2, 3, 1], MSE = 25

w_2 = [1, 1, 3, 1], MSE = 35

w_3 = [3, 2, 4, 1], MSE = 15

In ridge regression we want to find w that minimizes $\mathrm{MSE} + ||w||^2$. So according to the given data, which of the above weight vectors will be selected as solution for ridge regression?

Options :

6406532040615. ✔ w_1

6406532040616. ✖ w_2

6406532040617. ✖ w_3

6406532040618. ✖ Any of w_1 w_2 or w_3 can be the solution.

Question Number : 106 Question Id : 640653611026 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

Consider the following training dataset for a binary classification problem in $\mathbb{R}^2$. Note that in the image blue color represents points labelled as $+1$ and red colored points are points labelled as -1.

If we try to learn a perceptron model for this dataset, will the algorithm ever converge to a weight vector?

Options :

6406532040622. ✖ Yes, it will converge to a weight vector that can correctly classify all the datapoints irrespective of what we chose as w^0.

6406532040623. ✔ Yes, it will converge for some w^0 but not for all w_0.

6406532040624. ✖ Perceptron Algorithm cannot be applied here as the data is not linearly separable.

Question Number : 107 Question Id : 640653611028 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

Consider a kernel-SVM trained on a dataset of 100 points with polynomial kernel of degree 2. If $\boldsymbol{\alpha}^*$ is the optimal dual solution, what is the predicted label for a test-point $\mathbf{x}_{\text{test}}$?

Options :

6406532040629. ✖ $$\sum_{i=1}^{100} \alpha_i^* \cdot \mathbf{x}_{\text{test}}^T \mathbf{x}_i \cdot y_i$$

6406532040630. ✖ $$\text{sign}\left(\sum_{i=1}^{100} \alpha_i^* \cdot \mathbf{x}_{\text{test}}^T \mathbf{x}_i \cdot y_i\right)$$

6406532040631. ✖ $$\sum_{i=1}^{100} \alpha_i^* \cdot (1 + \mathbf{x}_{\text{test}}^T \mathbf{x}_i)^2 \cdot y_i$$

6406532040632. ✔ $$\text{sign}\left(\sum_{i=1}^{100} \alpha_i^* \cdot (1 + \mathbf{x}_{\text{test}}^T \mathbf{x}_i)^2 \cdot y_i\right)$$

Question Number : 108 Question Id : 640653611029 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

Given a two-dimensional data set where points from class 1 are:
$\{(1,3),(2,2),(2,4)\}$

And points from class 0 are:
$\{(3,3),(4,4),(4,2)\}$

Which of the following statements are true?

Options :

6406532040633. ✔ The given data points from classes A and B can be linearly separated using a Hard-margin SVM.

6406532040634. ✖ Points (2, 2) from class 1 and (3, 3) from class 0 will be on the decision boundary or support vectors.

6406532040635. ✖ A Soft-margin SVM would be a more robust choice than a Hard-margin SVM for this dataset as the dataset is not linearly separable.

6406532040636. ✖ A perceptron model and a hard margin SVM will always give the same decision boundary for this dataset.

Sub-Section Number :	4
Sub-Section Id :	64065388040
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 109 Question Id : 640653611018 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

A clustering of 100 data points in $\mathbb{R}^2$ was done using Lloyd's algorithm with $K = 3$. You are told that the points $[2, 2]^T$, $[0, 0]^T$, $[2, 0]^T$ and $[0, 2]^T$ are in the same cluster. Which of the following points will definitely lie in the same cluster? (If there are any ties with this cluster, they should be assigned exclusively to this cluster.)

Options :

6406532040606. ✔ $[0.5, 0.5]^T$

6406532040607. ✔ $[2, 1]^T$

6406532040608. ✖ $[3, 3]^T$

6406532040609. ✖ $[-1, -1]^T$

Question Number : 110 Question Id : 640653611027 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 statements is/are true regarding logistic regression and perceptron algorithm?

Options :

6406532040625. ✔ When perceptron algorithm is applied to a non-linearly separated dataset, then algorithm may not converge.

6406532040626. ✔ Logistic regression can be applied to data that is not linearly separated.

6406532040627. ✖ As $w^T x$ value increases, $\mathbf{P}(y = 1)$ returned by logistic regression decreases.

6406532040628. ✔ As $w^T x$ value decreases, $\mathbf{P}(y = 0)$ returned by logistic regression increases.

Question Number : 111 Question Id : 640653611030 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

Consider the following dataset on which the soft margin SVM is applied.

Which of the following statements is/are true about this dataset?

Options :

6406532040637. ✔ Points `F,I` can be the only support vectors.

6406532040638. ✖ Points `F,W,B,H` are going to be support vectors.

6406532040639. ✔ Points except `F,I` do not play any role in determining optimal weight vector.

6406532040640. ✖ All points except `F` and `I` are important in determining optimal weight vector.

6406532040641. ✔ The same dataset can be solved using hard margin SVM algorithm and result would be the same.

Question Number : 112 Question Id : 640653611031 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

In a random forest model, let $p < d$ be the number of randomly selected features that are used to identify the best split at any node of a tree. Here d is the total number of features. Which of the following is/are true?

Options :

6406532040642. ✖ Increasing p reduces the correlation between any two trees in the forest.

6406532040643. ✔ Decreasing p reduces the correlation between any two trees in the forest.

6406532040644. ✔ Decreasing p will underfit individual trees in the forest.

6406532040645. ✔ As the value of p increases variance of the random forest model increases.

6406532040646. ✖ As the value of p increases variance of the random forest model decreases.

Sub-Section Number :	5
Sub-Section Id :	64065388041
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653611022 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 : (113 to 114)

Question Label : Comprehension

Suppose you are working as a data scientist for a company that sells different types of phone. You are given a dataset containing information about customers and whether they purchased a phone (binary outcome). The dataset has three features: Age group, Income level, and Location.

Customer	Age group	Income level	Location	Purchased Phone
Ram	Young	High	Urban	Yes
Karthik	Senior	Low	Suburban	Yes
Vishal	Young	Low	Rural	No
Nitin	Senior	High	Urban	Yes
Srikanth	Young	Low	Suburban	No

You want to build a decision tree to predict whether a customer will purchase a smartphone based on these features.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 113 Question Id : 640653611023 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

Calculate the information gain for the "Age Group" feature.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.20 to 0.60

Question Number : 114 Question Id : 640653611024 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

Calculate the information gain for the "Income level" feature.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.20 to 0.60

Sub-Section Number :	6
Sub-Section Id :	64065388042
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 115 Question Id : 640653611032 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

You are working on a binary classification problem where you need to predict whether an email is spam (1) or not (0). You have trained a machine learning model that produces predicted probabilities for each email being spam. You have two different loss functions to consider: the 0-1 loss and the cross entropy loss.

You have a test dataset with the following true labels and predicted probabilities for a set of emails:

Email	True label	Predicted probability
1	0	0.8
2	1	0.2
3	0	0.6
4	1	0.9
5	1	0.3

For the given data set if Predicted probability is greater than 0.5, the predicted label will be 1 and 0 otherwise.

Options :

6406532040647. ✖ The values of 0-1 loss function will be 3

6406532040648. ✔ The values of cross entropy loss will be equals to 3.65

6406532040649. ✔ The values of 0-1 loss equals 4.

6406532040650. ✖ The values of cross entropy loss will be equals to 6.35

Sub-Section Number :	7
Sub-Section Id :	64065388043
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 116 Question Id : 640653611033 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

Consider a simple neural network with one hidden layer. The network has the following architecture:

Input layer with 3 neurons.
Hidden layer with 2 neurons, using the sigmoid activation function.
Output layer with 1 neuron, using the linear activation function.

The weights and biases for the network are as follows:

Hidden Layer:

Neuron 1:
Weights: [0.5, -0.2, 0.8]
Bias: 0.1

Neuron 2:
Weights: [-0.3, 0.6, -0.7]
Bias: -0.4

Output Layer:

Neuron 1:
Weights: [0.2, 0.4]
Bias: -0.3

Assume that the input values are [0.6, 0.3, 0.8].

Calculate output of Neuron 1 in hidden layer

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.60 to 0.80

AppDev1

Section Id :	64065341309
Section Number :	6
Section type :	Online

Mandatory or Optional :	Mandatory
Number of Questions :	33
Number of Questions to be attempted :	33
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
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 :	64065388044
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 117 Question Id : 640653611034 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 1 (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 :

6406532040652. ✔ YES

6406532040653. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065388045
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 118 Question Id : 640653611035 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 snippet of HTML and its output rendered on the browser:

index.html

```
<form action="/">
        <label for="fname">What is your first name?</label><br>
        <input type="text" name="fname" id="fname"><br>
        <input type="submit" value="Submit">
</form>
```

Which HTTP request would be sent to the server if the user enters “Mahesh” into the text box and clicks submit?

Options :

6406532040654. ✔ GET

6406532040655. ✖ POST

6406532040656.

✖ PUT

6406532040657. ✖ DELETE

Question Number : 119 Question Id : 640653611037 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

A 6000 rpm magnetic disk is being used to store data. The disk can only spin in one direction and is operating at 6000 revolutions per minute. If the operating system sends a request to the disk controller to fetch data from the disk, but by the time the request reached the disk controller, the information had already moved 35 degrees passed the reader, what will be the latency (in milliseconds) before it can start retrieving data?

Options :

6406532040662. ✖ 0.97

6406532040663. ✔ 9.03

6406532040664. ✖ 90.3

6406532040665. ✖ 97

Question Number : 120 Question Id : 640653611039 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 flask resource created using `flask_restful`.

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

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

parser = reqparse.RequestParser()
parser.add_argument("val")

class RestApi(Resource):
    def post(self, val):
        arg1 = parser.parse_args()
        arg2 = request.args
        return {
                "value_1": arg1["val"],
                "value_2": arg2["val"],
                "value_3": val
            }

api.add_resource(RestApi, "/api/games/<val>")
app.run(debug = True)
```

If the application is running locally on `http://127.0.0.1:5000`, What will be the output on the terminal for the command:

```
curl http://127.0.0.1:5000/api/games/cricket?val=soccer -d
"{\"val\":\"tennis\"}" -X POST -H "Content-Type: application/json"
```

Options :

```
{
    "value_1": "soccer",
    "value_2": "tennis",
    "value_3": "cricket"
}
```

6406532040670. ✖

6406532040671. ✖

```
{
    "value_1": "cricket",
    "value_2": "soccer",
    "value_3": "tennis"
}
```

6406532040672. ✔

```
{
    "value_1": "tennis",
    "value_2": "soccer",
    "value_3": "cricket"
}
```

6406532040673. ✖

```
{
    "value_1": "tennis",
    "value_2": "cricket",
    "value_3": "soccer"
}
```

Question Number : 121 Question Id : 640653611042 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 function to be tested and test functions given in the Python code snippet below.

test_file.py

```python
import pytest

def square(x):
    sum = 0
    for counter in range(x):
      sum += x
      return sum

@pytest.mark.marker1
def testcase_1():
    assert square(11) == 121

@pytest.mark.marker2
def testcase_2():
    assert square(8) == 8

@pytest.mark.marker3
def testcase_3():
    assert square(5) == 36
```

On running this file on the terminal using pytest, the summary of the output is;

```
============ 1 passed, 2 deselected, 3 warnings in 0.02s =============
```

What command will result into the outcome given above?

Options :

6406532040682. ✖ `pytest test_file.py -k marker1`

6406532040683. ✖ `pytest test_file.py -m marker1`

6406532040684. ✔ `pytest test_file.py -m marker2`

6406532040685. ✖ `pytest test_file.py -m marker3`

Question Number : 122 Question Id : 640653611043 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 hexadecimal equivalent of the IPv4 address `192.168.72.101` would be _____.

Options :

6406532040686. ✖ C048 A865

6406532040687. ✔ C0A8 4865

6406532040688. ✖ C0A8 6548

6406532040689. ✖ C065 A848

Question Number : 123 Question Id : 640653611048 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

An HTML code and CSS code is given below. Which of the following correctly represents its rendered output?

CSS Code:

```
.one{color: blue;}
.two{color: red !important;}
.three{color: green;}
```

HTML Code:

```html
<!DOCTYPE html>
<html>
<head>
    <title>Document</title>
    <link href="style.css" rel="stylesheet">
    <style>
        body{background-color: aqua; text-align: center;}
        h2{color: violet !important ;}
    </style>
</head>
<body style="background-color:lavender;" >
    <h2 style="color: blue;">Welcome to IIT</h2>
    <p class="one">My content 1 </p>
    <p class="two" style="color: brown;" >My content 2</p>
    <p class="three">My content 3</p>
</body>
</html>
```

Options :

6406532040706. ✖

6406532040707. ✖

6406532040708. ✖

6406532040709. ✔

Question Number : 124 Question Id : 640653611049 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 models `Student` and `Project` corresponding to tables `student` and `project` in SQLite database.

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

class Project(db.Model):
    id = db.Column(db.Integer(), primary_key = True)
    title = db.Column(db.String(), unique = True)
    course = db.Column(db.Integer(), db.ForeignKey("course.id"))
```

Based on the model schemas, what relationship do the classes `Student` and `Project` share?

Options :

6406532040710. ✖ Many-to-Many

6406532040711. ✖ One-to-Many

6406532040712. ✖ One-to-One

6406532040713. ✔ The tables are not at all related

Question Number : 125 Question Id : 640653611050 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, get):
        return {"greet":"Hello from GET Api!"}

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

api.add_resource(MyApi,'/api/<get>','/api/put')

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 get`
4. `curl http://127.0.0.1:5000/api/get -X put`

Options :

6406532040714. ✖ Only 2 and 4

6406532040715. ✔ Only 4

6406532040716. ✖ Only 3 and 4

6406532040717. ✖ Only 3

Question Number : 126 Question Id : 640653611052 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 below and match the conditions in Column A with respect to the coverage types in Column B.

```
int foo(int x, int y)
{
    int z = 0;
    if((x > 0) && (y > 0))
    {
        z = x;
    }
    return z;
}
```

Column A	Column B
1. Test invokes foo() at least once	a. Condition coverage
2. foo(1,1)	b. Branch coverage
3. foo(1,1) and foo(1,0)	c. Function coverage
4. foo(0,1) and foo(1,0)	d. Statement coverage

Options :

6406532040722. ✖ 1-d, 2-a, 3-b, 4-c

6406532040723. ✔ 1-c, 2-d, 3-b, 4-a

6406532040724. ✖ 1-c, 2-d, 3-a, 4-b

6406532040725. ✖ 1-b, 2-d, 3-c, 4-a

Question Number : 127 Question Id : 640653611053 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

Match the following types of testing with their functionality.

A. Regression testing	1. Beta Testing
B. User Acceptance testing	2. One step beyond integration Testing
C. System testing	3. Simulates actual user interaction, allows to script browser
D. System testing Automation	4. Type of testing that runs after every change to ensure that the change introduces no unintended breaks.

Which of the following is the correct matching?

Options :

6406532040726. ✖ A → 1, B → 2, C → 3, D → 4

6406532040727. ✖ A → 4, B → 3, C → 2, D → 1

6406532040728. ✖ A → 3, B → 2, C → 1, D → 4

6406532040729. ✔ A → 4, B → 1, C → 2, D → 3

Question Number : 128 Question Id : 640653611056 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 table “emp” created in SQLite database corresponding to model class “Employee” using flask_sqlalchemy.

Id	Name	Designation	Gender	Salary
1	Raji	Headmaster	Female	4500
2	Ram	Teacher	Male	5000
3	Raveena	Teacher	Female	3000
4	Reshma	Technical staff	Female	2000
5	Ravi	Teacher	Male	1000

Which of the following code snippets will change the designation of male teachers to professor and will increase their salaries to 6000 correctly when typed in the Python console?

Options :

6406532040735. ✖

```
>>> emp = Employee.query.filter_by(Designation = 'Teacher').all()
>>> for staff in emp:
... staff.Designation="Professor"
... staff.Salary = 6000
...
>>> db.session.commit()
```

6406532040736. ✖

```
>>>emp = Employee.query.filter_by(Designation="Teacher",Gender="Male").all()
>>> for staff in emp:
...     staff.Designation="Professor"
...     staff.Salary +=6000
...
>>> db.session.commit()
```

6406532040737. ✖

```
>>> emp = Employee.query.filter_by(Designation = 'Teacher').all()
>>> for staff in emp:
... staff.Designation="Professor"
... staff.Salary += 6000
...
>>> db.session.commit()
```

6406532040738. ✔

```
>>>
emp=Employee.query.filter_by(Designation="Teacher",Gender="Male").all()
>>> for staff in emp:
...     staff.Designation="Professor"
...     staff.Salary=6000
...
>>> db.session.commit()
```

Question Number : 129 Question Id : 640653611058 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 app.py, the html files, base.html and home.html residing in “templates” folder.

app.py

```python
from flask import Flask, render_template
app = Flask(__name__)
@app.route('/')
def home():
	return render_template('home.html')
app.run(debug=True)
```

home.html

```
{% extends "base.html" %}
{% block content %}
<h3>Welcome to MAD I</h3>
{% endblock %}
```

base.html

```
<!DOCTYPE html>
<html lang="en">
<head>
	<title>IITM</title>
</head>
<body>
	<h1 style="color: violet;"> IITM BS Degree </h1>
	{% block content %}
	{% endblock %}
</body>
</html>
```

What will be the rendered output for base URL if flask app is running locally on http://localhost:5000

Options :

6406532040743. ✖ **Welcome to MAD I**

6406532040744. ✖ **Welcome to MAD I**

IITM BS Degree

6406532040745. ✔ **IITM BS Degree**

Welcome to MAD I

6406532040746. ✖ Error

Question Number : 130 Question Id : 640653611065 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 SQL create statement.

```
CREATE TABLE car (
      car_id INTEGER NOT NULL,
      model INTEGER NOT NULL,
      name VARCHAR(50),
      mfd_date DATETIME NOT NULL,
      description VARCHAR,
      PRIMARY KEY (car_id),
      UNIQUE (model),
      UNIQUE (name)
)
```

Which of the following `flask_sqlalchemy` models will create exactly the same table as created by the above SQL command?

Options :

6406532040771. ✖

```
class Car(db.Model):
    car_id = db.Column(db.Integer(), unique = True, nullable = False)
    model = db.Column(db.Integer(), autoincrement = True)
    name = db.Column(db.String(50), unique = True, nullable = True)
    mfd_date = db.Column(db.DateTime(), nullable = False)
    description= db.Column(db.String())
```

6406532040772. ✖

```
class Car(db.Model):
    car_id = db.Column(db.Integer(), primary_key = True)
    model = db.Column(db.Integer(), unique = True, nullable = True)
    name = db.Column(db.String(50), unique = False)
    mfd_date = db.Column(db.DateTime(), nullable = False)
    description = db.Column(db.String())
```

6406532040773. ✖

```
class Car(db.Model):
    car_id = db.Column(db.Integer(), primary_key = True)
    model = db.Column(db.Integer(), unique = True, nullable = False)
    name = db.Column(db.String(), unique = True, nullable = True)
    mfd_date = db.Column(db.DateTime())
    description = db.Column(db.String(50))
```

6406532040774. ✔

```
class Car(db.Model):
    car_id = db.Column(db.Integer(), primary_key = True)
    model = db.Column(db.Integer(), unique = True, nullable = False)
    name = db.Column(db.String(50), unique = True, nullable = True)
    mfd_date = db.Column(db.DateTime(), nullable = False)
    description = db.Column(db.String())
```

Sub-Section Number :	3
Sub-Section Id :	64065388046
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 131 Question Id : 640653611036 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 statements and select the correct option.

Statement 1: It is not necessary to implement server-side validation if client-side validation has been implemented.

Statement 2: Client-side validation can be implemented with HTML5.

Options :

6406532040658. ✖ Statement 1 is true while statement 2 is false

6406532040659. ✔ Statement 2 is true while statement 1 is false

6406532040660. ✖ Both statements are true

6406532040661. ✖ Both statements are false

Question Number : 132 Question Id : 640653611041 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 statements and select the correct answer.

Statement 1: In PaaS, developers are provided with an up-to-date development environment with the languages and frameworks of their choice.

Statement 2: Microsoft Azure provides IaaS as well as PaaS services.

Options :

6406532040678. ✖ Statement 1 is true, but statement 2 is false

6406532040679. ✖ Statement 2 is true, but statement 1 is false

6406532040680. ✖ Both statements are false

6406532040681. ✔ Both statements are true

Question Number : 133 Question Id : 640653611047 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 statements and choose the correct option.

Statement 1: If we submit the form using the GET method, then the form data is appended inside the body of the HTTP request.

Statement 2: Never use GET method in form to send sensitive data while it is good for non-secure data, like query strings in Google

Options :

6406532040702. ✖ Both statements 1 and 2 are true, and statement 2 is a correct explanation of statement 1

6406532040703. ✖ Both statements 1 and 2 are true, but statement 2 is not a correct explanation of statement 1

6406532040704. ✖ Statement 1 is true and statement 2 is false

6406532040705. ✔ Statement 2 is true and statement 1 is false

Question Number : 134 Question Id : 640653611051 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 git command will remove a file from the staged area but keeps the file in the directory?

Options :

6406532040718. ✖ `git rm <filename>`

6406532040719. ✖ `git del <filename>`

6406532040720. ✖ `git del --cached <filename>`

6406532040721. ✔ `git rm --cached <filename>`

Sub-Section Number :	4
Sub-Section Id :	64065388047
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 135 Question Id : 640653611038 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 python code snippet.

```
from string import Template

statement = "The four major operations on the database are $c, $r, $u
and $d."

temp = Template(statement)

print(=== OUTPUT ===)
```

Which of the following statements, when substituted in place of `=== OUTPUT ===`, will not throw a KeyError?

Options :

6406532040666. ✔
```
temp.safe_substitute({"c":"CREATE","r":"READ","u":"UPDATE",
"d":"DELETE"})
```

6406532040667. ✔
```
temp.safe_substitute({"c":"CREATE","r":"READ","u":"UPDATE"})
```

6406532040668. ✔
```
temp.safe_substitute({"c":"CREATE","r":"READ","u":"UPDATE",
"d":"DELETE", "e":"TRUNCATE")
```

6406532040669. ✔

```
temp.substitute({"c":"CREATE","r":"READ","u":"UPDATE",
"d":"DELETE", "e":"TRUNCATE")
```

Question Number : 136 Question Id : 640653611063 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 `TodoSimple` resource class created using `flask_restful`.

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

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

class TodoSimple(Resource):
    def get(self, todo_id):
        return {"todo_id": todo_id}

    def put(self):
        todo_id = request.args.get("todo_id")
        return {"todo_id": todo_id}

app.run()
```

Which of the following statements given below will correctly map the resource URLs with the TodoSimple resource class.

Options :

6406532040763. ✖

```
api.add_resource(TodoSimple, "/api")
```

6406532040764. ✔

```
api.add_resource(TodoSimple, "/api/<int:todo_id>", "/api")
```

6406532040765. ✖
```
api.add_resource(TodoSimple, "/api/<int:todo_id>")
```

6406532040766. ✔
```
api.add_resource(TodoSimple, "/<int:todo_id>", "/api")
```

Sub-Section Number :	5
Sub-Section Id :	64065388048
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 137 Question Id : 640653611040 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 statements are true?

Options :

6406532040674. ✖ HTML5 is based on SGML

6406532040675. ✔ XHTML is based on XML which in turn is based on SGML

6406532040676. ✖ HTML5 is not backwards compatible with older versions of HTML

6406532040677. ✔ XML is both human and machine-readable

Question Number : 138 Question Id : 640653611046 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

Choose the correct code snippet to implement logging by importing python logging module

Options :

6406532040698. ✔

```
import logging
logging.basicConfig(filename='debug.log', level=logging.DEBUG,
format=f'%(asctime)s %(levelname)s %(name)s %(threadName)s :
%(message)s')
```

6406532040699. ✔

```
import logging
logging.basicConfig(filename='debug.log', level=logging.NOTSET,
format=f'%(asctime)s %(levelname)s %(name)s %(threadName)s :
%(message)s')
```

6406532040700. ✔

```
import logging
logging(filename='debug.log', level=logging.DEBUG)
```

6406532040701. ✔

```
import logging
logging.basicConfig(filename='debug.log')
```

Question Number : 139 Question Id : 640653611059 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 a typical Amazon Alexa device. Which of the following would constitute the view of the application behind such a device?

Options :

6406532040747. ✔ The AI voice

6406532040748. ✖ The body of the device

6406532040749. ✔ The LED light around the device

6406532040750. ✖ None of these

Question Number : 140 Question Id : 640653611060 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 true of “cold storage” like Amazon Glacier?

Options :

6406532040751. ✔ They have low cost and high durability.

6406532040752. ✖ They have high cost and low durability.

6406532040753. ✖ Latency of retrieval is very low.

6406532040754. ✔ Latency of retrieval is very high.

Sub-Section Number :	6
Sub-Section Id :	64065388049
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 141 Question Id : 640653611044 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 graph that represents the variation in bandwidth of a network for an entire day (24 hours). Three users were connected to the network at three different times of the day. Which user has consumed the highest amount of data?

Options :

6406532040690. ✖ User 1

6406532040691. ✔ User 2

6406532040692. ✖ User 3

6406532040693. ✖ All the three users consumed same amount of data

Question Number : 142 Question Id : 640653611045 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 restful implementation using flask.

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

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

student_info = {"name": "Rahul", "Roll No":"12d2000678",
"Email":"onlinedegree.iitm.ac.in"}

class Student(Resource):
    def put(self):
        data = request.json
        student_info.update(data)
        return student_info

    def delete(self):
        student_info.popitem()
        return "success", 200

api.add_resource(Student, '/')

app.run()
```

If the above application is running on "http://127.0.0.1:5000" then what will be the final output on terminal on executing these two curl commands in the order mentioned?

1: `curl -X DELETE 'http://127.0.0.1:5000'`

2:
```
curl -X PUT -H "Content-Type: application/json" -H "Accept-Type:
application/json" -d '{"Roll No":"12f2000555", "Email":
"ds.study.iitm.ac.in"}' 'http://127.0.0.1:5000/'
```

Options :

6406532040694. ✔ `{"name":"Rahul","Roll No": "12f2000555","Email": "ds.study.iitm.ac.in"}`

6406532040695. ✖ `{"name":"Rahul","Roll No": "12f2000555"}`

6406532040696. ✖ `{"Roll No":"12f2000555", "Email":"ds.study.iitm.ac.in"}`

6406532040697. ✖ None of these

Question Number : 143 Question Id : 640653611055 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 python code snippet. What will be the rendered output?

```
from jinja2 import Template
persons=[
          {"Gender":"Male", "Age":40, "Name":"John"},
          {"Gender":"Female", "Age":16, "Name":"Samantha"},
          {"Gender": "Male", "Age":20, "Name":"Kim"}
        ]

t="""
<ul>
{% for group in persons|groupby('Gender') %}
    <li>
        {{ group.grouper }}
    <ul>
        {% for person in group.list %}
            <li>{{ person.Name }} is {{ person.Age }} years old</li>
        {% endfor %}
    </ul>
    </li>
{% endfor %}
</ul>

"""
temp=Template(t)
print(temp.render(persons=persons))
```

Options :

- Male
  - John is 40 years old
- Female
  - Samantha is 16 years old
- Male
  - Kim is 20 years old

6406532040731. ✖

6406532040732. ✖

- Male
  - John is 40 years old
  - Kim is 20 years old
- Female
  - Samantha is 16 years old

6406532040733. ✔

- Female
  - Samantha is 16 years old
- Male
  - John is 40 years old
  - Kim is 20 years old

6406532040734. ✖

- Female
  - Samantha is 16 years old
- Male
  - John is 40 years old
- Male
  - Kim is 20 years old

Question Number : 144 Question Id : 640653611057 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 a function `func`, and a set of test cases given below.

Filename: `test_file.py`

```
import pytest
def func(x,y):
    out = x+y**2
    return out

class Test_class0():
    def test_case1(self):
        assert func(1,2) == 5

    def case_test2(self):
        assert func(2,3) == 10

    def test_case3(self):
        assert func(6,2) == 8

class Test_class1():
    def test_case1(self):
        assert func(5,2) == 9

    def case_test2(self):
        assert func(4,3) == 14
```

What will be the output on the terminal for the command below?

`pytest test_file.py -k Test_class0`

Options :

6406532040739. ✖ `== 2 failed, 1 passed in 0.17s ===`

6406532040740. ✖ `== 2 failed, 1 deselected in 0.17s ===`

6406532040741. ✔ `== 1 failed, 1 passed, 1 deselected in 0.17s ===`

6406532040742. ✖ `== 1 failed, 2 passed in 0.17s ===`

Question Number : 145 Question Id : 640653611061 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

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

```
def decor(func):
  def wrapper(x):
    y=func(x)
    return x*y
  return wrapper

@decor
def output(x, optional="hello world!"):
  return x, optional

print(output(5))
```

Options :

6406532040755. ✖ ('hello world!', 'hello world!', 'hello world!', 'hello world!', 'hello world!')

6406532040756. ✖ (5, 5, 5, 5, 5)

6406532040757. ✔ (5, 'hello world!', 5, 'hello world!', 5, 'hello world!', 5, 'hello world!', 5, 'hello world!')

6406532040758. ✖ 25

Question Number : 146 Question Id : 640653611062 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 flask application.

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

@app.route('/user/<username>')
def show_user(username):
    return f'Hello {username} !'

@app.route("/hello/user")
def hello():
    return "Hello, user!"

@app.route("/user/")
def index():
    return "Hello user"
if __name__ == "__main__":
    app.run(debug=True)
```

If the application is running locally on http://127.0.0.1:5000 then map the URLs in Column A with their rendered outputs in Column B.

	Column A		Column B
a	http://localhost:5000/hello/user	1	User hello !
b	http://localhost:5000/user/hello	2	Hello user !
c	http://localhost:5000/user/user	3	Hello hello !
d	http://localhost:5000/user//	4	Hello user
		5	Hello, user!
		6	**Not Found**

Options :

6406532040759. ✖ a-2, b-1, c-5, d-6

6406532040760. ✔ a-5, b-3, c-2, d-4

6406532040761. ✖ a-5, b-1, c-2, d-6

6406532040762. ✖ a-2, b-3, c-4, d-6

Question Number : 147 Question Id : 640653611064 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 sorting algorithm which sorts any given unsorted array of numbers in ascending order. What would be its time complexity? (Assume appending and deleting an element from an array does not affect time complexity)

Step 1: Create an empty array.
Step 2: Find the element in the unsorted array with the minimum value.
Step 3: Append this element to the array created in step 1.
Step 4: Delete this element from the unsorted array.
Step 5: Repeat steps 1 to 4 until the unsorted array is empty.

Options :

6406532040767. ✔ $O(N^2)$

6406532040768. ✖ $O(N)$

6406532040769. ✖ $O(logN)$

6406532040770. ✖ $O(NlogN)$

Sub-Section Number :	7
Sub-Section Id :	64065388050
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 148 Question Id : 640653611054 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, render_template, request
app = Flask(__name__)

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

        if val['num'] == '':
            return "<h1>Enter a valid number</h1>"
        elif val['num'].isalpha()==True:
            return "<h1>Invalid number</h1>"
        else:
            out = (val['num']) + (val['num'])
            return f'<h1>{out}</h1>'

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/?num=343

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

343343

Sub-Section Number :	8
Sub-Section Id :	64065388051
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 149 Question Id : 640653611066 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

Follow the code given below

```
from flask import Flask, request
from flask_restful import Resource, Api, fields, marshal, marshal_with

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

class User:
    def __init__(self, id, username, email):
        self.id=id
        self.username=username
        self.email=email

output={"id": fields.Integer,"username": fields.String,"email": fields.String}

#== Resource Class Here ==

api.add_resource(Userapi, '/')
if __name__ == '__main__':
    app.run()
```

What code should be written in place of `#== Resource Class Here ==`, so that we get;

```
{
    "id": 1,
    "username": "iitm",
    "email": "bs@ds.study.iitm.ac.in"
}
```

as output on running the command `curl -X GET 'http://127.0.0.1:5000'` in the terminal?

Options :

6406532040775. ✔

```
class Userapi(Resource):
    @marshal_with(output)
    def get(self):
        user=User(1,"iitm", "bs@ds.study.iitm.ac.in")
        return user
```

6406532040776. ✖

```
class Userapi(Resource):
    def get(self):
        user=User(1,"iitm", "bs@ds.study.iitm.ac.in")
        return user
```

6406532040777. ✖

```
@marshal_with(output)
class Userapi(Resource):
    def get(self):
        user=User(1,"iitm", "bs@ds.study.iitm.ac.in")
        return user
```

6406532040778. ✔

```
class Userapi(Resource):
    def get(self):
        user=User(1,"iitm", "bs@ds.study.iitm.ac.in")
        return marshal(user, output)
```

TDS

Section Id :	64065341310
Section Number :	7
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	62
Number of Questions to be attempted :	62
Section Marks :	70
Display Number Panel :	Yes
Section Negative Marks :	0

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 :	64065388052
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 150 Question Id : 640653611067 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 : TOOLS IN DATA SCIENCE (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 :

6406532040779. ✔ YES

6406532040780. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065388053
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 151 Question Id : 640653611068 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 analysis metric slope can be observed through which of the following ways?

Options :

6406532040781. ✖ Trend Line in Line Chart

6406532040782. ✖ SLOPE function

6406532040783. ✔ Both Trend Line in Line Chart and SLOPE function

6406532040784. ✖ None of these

Question Number : 152 Question Id : 640653611069 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

Quill provides the option to turn on/off, for displaying the individual comments from the narrative generation process?

Options :

6406532040785. ✔ TRUE

6406532040786. ✖ FALSE

Question Number : 153 Question Id : 640653611070 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

We are analyzing how much the use of fertilizers affects the agricultural yield of the farmers. Which Excel function would you use as a starting point in this analysis?

Options :

6406532040787. ✖ STDEV.P()

6406532040788. ✖ STDEV.S()

6406532040789. ✔ SLOPE()

6406532040790. ✖ EXACT()

Question Number : 154 Question Id : 640653611071 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

Subjectivity score in TextBlob ranges from _____.

Options :

6406532040791. ✔ 0 to 1

6406532040792. ✖ -1 to +1

6406532040793. ✖ -inf to +inf

6406532040794. ✖ 0 to inf

6406532040795. ✖ 0 to 10

Question Number : 155 Question Id : 640653611072 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

Flourish cannot be used to create animated bar charts.

Options :

6406532040796. ✖ TRUE

6406532040797. ✔ FALSE

Question Number : 156 Question Id : 640653611075 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

A very large Matrix **A** has a lot of zero entries in it. Which function from the *scipy* library is useful in efficient storage of such a matrix **A**?

Options :

6406532040806. ✔ csr_matrix

6406532040807. ✖ interpolate

6406532040808. ✖ compressed_mat

6406532040809. ✖ zip_mat

Question Number : 157 Question Id : 640653611076 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

Kumu is a tool that allows you to (select the most appropriate answer):

Options :

6406532040810. ✔ Visualize complex network data

6406532040811. ✖ create stunning dashboards for large projects

6406532040812. ✖ merge Comicgen characters into a comic

6406532040813. ✖ Narrate data stories

Question Number : 158 Question Id : 640653611077 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 Python libraries has functions and tools that are useful in the analysis of large graphs?

Options :

6406532040814. ✔ scikit-network

6406532040815. ✖ pandas-network

6406532040816. ✖ numpy-network

6406532040817. ✖ pd-network

Question Number : 159 Question Id : 640653611078 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 Python libraries has functions extensively written to perform numerical operations?

Options :

6406532040818. ✖ csr_matrix

6406532040819. ✔ numpy

6406532040820. ✖ seaborn

6406532040821. ✖ itertools

Question Number : 160 Question Id : 640653611082 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 developed a sudden interest in English Premier League. Post the TDS course, you wanted to perform an analysis on all teams which played EPL from the year 1992. You performed PDF scraping using 'tabula' and appended every year standings of teams one below the other and saved as a single csv file. For looking at aggregating at various levels (viz Year wise, Team wise) the following can be used in Excel:

Options :

6406532040830. ✖ Pilot Table

6406532040831. ✔ Pivot Table

6406532040832. ✖ Pivol Table

6406532040833. ✖ None of these

Question Number : 161 Question Id : 640653611083 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

Assume you have data with a column "Direction" which takes the values "Left", "Right". If you had used one hot encoding, the new columns added would be:

Options :

6406532040834. ✔ Direction_Left, Direction_Right

6406532040835. ✖ Left_Direction, Right_Direction

6406532040836. ✖ Left-Direction, Right-Direction

6406532040837. ✖ Direction-Left, Right-Direction

Question Number : 162 Question Id : 640653611084 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

One of quick ways to generate a descriptive stats file for variables along with correlation is to use

Options :

6406532040838. ✔ pandas_profiling

6406532040839. ✖ profiling_pandas

6406532040840. ✖ describe_dataset

6406532040841. ✖ Dataframe_profile

Question Number : 163 Question Id : 640653611085 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 decide to use keras to classify images into one of the following categories: cat, dog, bull. Which of the following loss functions from *Keras* would you pick for the task?

Options :

6406532040842. ✖ binary_crossentropy

6406532040843. ✔ categorical_crossentropy

6406532040844. ✖ mean_squared_error

6406532040845. ✖ mean_absolute_error

Question Number : 164 Question Id : 640653611086 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

Logical calculations in tableau helps to determine if a certain condition is true or false. Is the following expression valid?

```
IF [Profit] > 0 THEN 'Profitable' ELSEIF [Profit] = 0 THEN
'Breakeven' ELSE 'Loss' END
```

Options :

6406532040846. ✔ TRUE

6406532040847. ✖ FALSE

Question Number : 165 Question Id : 640653611088 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 dataset consists of geographic, demographic information about countries and their respective GDPs. You would like to visualize this data and study the relationship between the location of countries and their GDPs. You decide to use Tableau to visualize the dataset. But you would also like to generate a summary of the data. Choose the most suitable answer among the given options.

Options :

6406532040852. ✔ The summary can be generated using Quill and this is possible because Quill can be used as an extension in Tableau.

6406532040853. ✖ Tableau can be used for visualization. But Quill is incompatible with Tableau.

6406532040854. ✖ Quill does not support generation of summary. Therefore using other visualization tools such as Tableau would work.

6406532040855. ✖ None of the options are appropriate for the generation of summary for the given question.

Question Number : 166 Question Id : 640653611089 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

What are the two outputs provided by the Excel Azure Machine Learning plugin?

Options :

6406532040856. ✖ Percentage, Labels

6406532040857. ✖ Sentiment, Percentage

6406532040858. ✔ Sentiment, Score

6406532040859. ✖ Score, Labels

Question Number : 167 Question Id : 640653611092 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 final output from the BBC Weather Location Service API is in CSV format:

Options :

6406532040868. ✖ TRUE

6406532040869. ✔ FALSE

Question Number : 168 Question Id : 640653611093 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 among the following properties are returned by the sentiment function of the TextBlob library?

Options :

6406532040870. ✖ Score, Polarity

6406532040871. ✖ Polarity, Negativity

6406532040872. ✖ Median, Subjectivity

6406532040873. ✔ Polarity, Subjectivity

Question Number : 169 Question Id : 640653611094 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

Subjectivity score ranges between -1 to +1.

Options :

6406532040874. ✖ TRUE

6406532040875. ✔ FALSE

Question Number : 170 Question Id : 640653611095 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

A subjectivity score of 0.4 means that the text statement:

Options :

6406532040876. ✖ has a positive sentiment

6406532040877. ✖ has a negative sentiment

6406532040878. ✖ is more of an opinion statement

6406532040879. ✔ is more of a factual statement

Question Number : 171 Question Id : 640653611096 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

A *polarity* score of 0.1 means that the text statement:

Options :

6406532040880. ✔ has a positive sentiment

6406532040881. ✖ has a negative sentiment

6406532040882. ✖ is more of an opinion statement

6406532040883. ✖ is more of a factual statement

Question Number : 172 Question Id : 640653611098 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

We are interested in analyzing the effect of money spent on TV advertising on the sales volume of a product. Which Excel function would you use as a starting point in this analysis?

Options :

6406532040886. ✖ STDEV.P()

6406532040887. ✖ STDEV.S()

6406532040888. ✔ SLOPE()

6406532040889. ✖ EXACT()

Question Number : 173 Question Id : 640653611100 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 working on a piece of code that classifies different vehicles into its respective class (car, LCV, truck, earth movers). Which of the following loss functions from *Keras* would you pick for the task?

Options :

6406532040894. ✖ binary_crossentropy

6406532040895. ✔ categorical_crossentropy

6406532040896. ✖ mean_squared_error

6406532040897. ✖ Mean_absolute_error

Question Number : 174 Question Id : 640653611101 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

Tableau automatically divides the data fields into two categories. What are they..?

Options :

6406532040898. ✖ Measures and categories

6406532040899. ✔ Dimensions and Measures

6406532040900. ✖ Columns and rows

6406532040901. ✖ Matrices and columns

Question Number : 175 Question Id : 640653611102 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 Extension in Tableau transforms visualizations into narratives.?

Options :

6406532040902. ✖ Narrator

6406532040903. ✖ Navigator

6406532040904. ✔ Quill

6406532040905. ✖ Quora

Question Number : 176 Question Id : 640653611103 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

If you want to create comical characters while building business stories, which tool would be helpful.?

Options :

6406532040906. ✖ Cartoongen

6406532040907. ✖ Image size

6406532040908. ✔ Comicgen

6406532040909. ✖ Gentoon

Question Number : 177 Question Id : 640653611104 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 used to build and host web applications?

Options :

6406532040910. ✔ Streamlit for building web applications, Heroku for hosting web applications

6406532040911. ✖ Heroku for building web applications, Streamlit for hosting web applications

6406532040912. ✖ Streamlit for building web applications, Streamlit for hosting web applications

6406532040913. ✖ Heroku for building web applications, Heroku for hosting web applications

Question Number : 178 Question Id : 640653611105 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 among the following excel charts is the most suitable for detecting outliers in the data?

Options :

6406532040914. ✖ Bar chart

6406532040915. ✖ Line chart

6406532040916. ✔ Box and Whisker chart

6406532040917. ✖ Histogram

Question Number : 179 Question Id : 640653611106 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 libraries is used to construct API urls?

Options :

6406532040918. ✔ Urllib

6406532040919. ✖ BeautifulSoup

6406532040920. ✖ Requests

6406532040921. ✖ Pandas

Question Number : 180 Question Id : 640653611107 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 tabs is used to identify API calls in the Inspect element in any browser?

Options :

6406532040922. ✔ Network

6406532040923. ✖ Elements

6406532040924. ✖ Console

6406532040925. ✖ Sources

Question Number : 181 Question Id : 640653611108 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

Google Studio is a tool that allows you to

Options :

6406532040926. ✖ merge Comicgen characters into a comic

6406532040927. ✖ visualize complex network data

6406532040928. ✔ create dashboards for small scale projects

6406532040929. ✖ Edit photographs and videos

Question Number : 182 Question Id : 640653611110 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

csr_matrix from the scipy library:

Options :

6406532040934. ✖ always helps reduce matrix space

6406532040935. ✔ helps reduce matrix space when there are a lot of zero entries in the matrix

6406532040936. ✖ helps reduce matrix space when there are a lot of negative entries in the matrix

6406532040937. ✖ makes matrix multiplication more meaningful and powerful

Question Number : 183 Question Id : 640653611111 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

classification_report function from the sklearn.metrics module

Options :

6406532040938. ✖ builds a decision tree classifier and prints the accuracy of the classifier

6406532040939. ✖ reports the root mean square error of the model

6406532040940. ✖ runs different classification models and compares the results

6406532040941. ✔ builds a text report displaying the main classification metrics

Question Number : 184 Question Id : 640653611112 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

pycaret is a

Options :

6406532040942. ✖ Visualization tool

6406532040943. ✖ Dashboard helper

6406532040944. ✔ low-code machine learning library

6406532040945. ✖ Data cleaning solution

Question Number : 185 Question Id : 640653611113 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

We are interested in fitting an ARIMA model to our time series data. Specifically, we are interested in a moving average model of 0, setting a lag value of 4 for autoregression, and a difference order of 1. Which of the following gives you such a model?

Options :

6406532040946. ✖ ARIMA(..., trend = (4,1,0))

6406532040947. ✔ ARIMA(..., order = (4,1,0))

6406532040948. ✖ ARIMA(..., order = (0,4,1))

6406532040949. ✖ ARIMA(..., trend = (0,4,1))

Question Number : 186 Question Id : 640653611114 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

Scikit-learn has a DecisionTreeClassifier module that is useful in building decision tree classifiers. Suppose, our dataset is imbalanced in class. Which feature in the DecisionTreeClassifier() will help us tackle this problem?

Options :

6406532040950. ✖ random_state

6406532040951. ✖ min_sample_split

6406532040952. ✖ class_balance

6406532040953. ✔ class_weight

Question Number : 187 Question Id : 640653611115 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 data consists of prices of three shares in the stock market over a period of six months. To compute the correlation coefficients between these three shares: (Choose the most suitable option)

Options :

6406532040954. ✔ It is sufficient if you specify these three shares as input variables in the excel ‘data analysis toolpak’ feature.

6406532040955. ✖ You must specify both input and target variables in the excel ‘data analysis toolpak’ to obtain the correlation coefficient values.

6406532040956. ✖ It is sufficient if you specify these three shares as target variables in the excel

‘data analysis toolpak’ feature.

Question Number : 188 Question Id : 640653611116 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

Assume the data provided to you has a column that consists of sales dates. You would want to extract the week number from the column for further analysis. Which among the following excel function enables you to perform the above-mentioned task?

Options :

6406532040957. ✖ WEEKGET()

6406532040958. ✖ GETWEEKNUM()

6406532040959. ✖ NUMWEEK()

6406532040960. ✔ None of these

Question Number : 189 Question Id : 640653611117 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 among the following features in excel enables you to scrape data from websites?

Options :

6406532040961. ✖ Data Analysis Toolpak

6406532040962. ✖ Connections

6406532040963. ✔ New Query

6406532040964. ✖ Data Validation

Question Number : 190 Question Id : 640653611118 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 statements about the k-means clustering algorithm is false?

Options :

6406532040965. ✔ It is guaranteed to converge to the global optimum solution for any given dataset and initial centroids.

6406532040966. ✖ It can be sensitive to the choice of initial centroids, and different initializations can lead to different final cluster assignments.

6406532040967. ✖ The k-means algorithm minimizes the within-cluster sum of squares as its objective function.

6406532040968. ✖ It can be used to cluster both continuous and categorical data.

Question Number : 191 Question Id : 640653611119 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 method of the Beautiful Soup object?

Options :

6406532040969. ✖ find()

6406532040970. ✔ get()

6406532040971. ✖ find_all()

6406532040972. ✖ prettify()

Question Number : 192 Question Id : 640653611120 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

What is ComicGen?

Options :

6406532040973. ✖ A web development framework for comic creators.

6406532040974. ✖ A Python library for data analysis and storytelling using comics.

6406532040975. ✔ A tool for generating comic strips.

6406532040976. ✖ A game development engine.

Question Number : 193 Question Id : 640653611121 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

Network tab in Chrome Devtools (Inspect) tracks all api calls that happen in a website.

Options :

6406532040977. ✔ TRUE

6406532040978. ✖ FALSE

Question Number : 194 Question Id : 640653611122 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

Flourish is a web-based:

Options :

6406532040979. ✔ Data visualization platform

6406532040980. ✖ Machine learning platform

6406532040981. ✖ Business intelligence platform

6406532040982. ✖ None of these

Question Number : 195 Question Id : 640653611123 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 tools below are used for data storytelling?

Options :

6406532040983. ✖ Excel

6406532040984. ✖ Quill

6406532040985. ✖ Comicgen

6406532040986. ✖ Flourish

6406532040987. ✔ Excel,Quill,Comicgen

6406532040988. ✖ All of these

Question Number : 196 Question Id : 640653611124 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

_____ data consists of any value within the finite or infinite intervals.

Options :

6406532040989.

✖ Discrete

6406532040990. ✔ Continuous

6406532040991. ✖ None

Question Number : 197 Question Id : 640653611125 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

From the below options identify the statement that is False

Options :

6406532040992. ✖ Measures contain numeric, quantitative values that you can measure.

6406532040993. ✖ Measures can be aggregated.

6406532040994. ✖ When you drag a measure into the view, Tableau applies an aggregation to that measure (by default).

6406532040995. ✔ None of these

Question Number : 198 Question Id : 640653611126 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 statements about Heroku is true?

Options :

6406532040996. ✔ Heroku is a cloud-based platform for deploying, managing, and scaling web applications.

6406532040997. ✖ Heroku is a programming language used for developing front-end web

applications.

6406532040998. ✖ Heroku is a database management system used for storing and retrieving data.

6406532040999. ✖ Heroku is a web browser used for accessing internet-based applications.

Question Number : 199 Question Id : 640653611127 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 data type is not available in the ARX tool while you input data for anonymizing?

Options :

6406532041000. ✖ String

6406532041001. ✖ Date/Time

6406532041002. ✔ Continuous

6406532041003. ✖ Decimal

6406532041004. ✖ Integer

Question Number : 200 Question Id : 640653611128 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

Your model is performing well in your training dataset but is not performing well in test dataset. It means:

Options :

6406532041005. ✔ Model is overfit

6406532041006.

✖ Model is underfit

6406532041007. ✖ Problem with test dataset

6406532041008. ✖ None of these

Question Number : 201 Question Id : 640653611129 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 following function in excel helps in removing extra spaces:

Options :

6406532041009. ✔ TRIM

6406532041010. ✖ REDUCE

6406532041011. ✖ REMOVESPACE

6406532041012. ✖ None of these

Question Number : 202 Question Id : 640653611130 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

For categorical variables, missing data can be replaced by:

Options :

6406532041013. ✔ Mode

6406532041014. ✖ Median

6406532041015. ✖ Mean

6406532041016.

✖ None of these

Sub-Section Number :	3
Sub-Section Id :	64065388054
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 203 Question Id : 640653611073 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 given piece of code extract details of all Bollywood movies that were released in Jan – March 2009 and later prints out only those rows where the respective movie was categorized only as a Drama. Identify which block of code executes without any errors.

Options :

6406532040798. ✔

```
import requests

import pandas as pd

from bs4 import BeautifulSoup

website_url=requests.get('https://web.archive.org/web/20220429040949
/https://en.wikipedia.org/wiki/List of Hindi films of 2009').text

soup = BeautifulSoup(website_url,'html.parser')
required_table = soup.find_all('table')[3]

df = pd.read_html(str(required_table))

df=pd.DataFrame(df[0])
```

6406532040799. ✖

```
import requests

import pandas as pd

website_url=requests.get('https://web.archive.org/web/20220429040949
/https://en.wikipedia.org/wiki/List_of_Hindi_films_of_2009').text

soup = BeautifulSoup(website_url,'html.parser')

required_table = soup.find_all('table', "January-March")

df = pd.read_html(str(required_table))

df=pd.DataFrame(df[0])

df[df['Genre'].isin(['Drama'])]
```

```
import requests

import pandas as pd

from bs4 import BeautifulSoups

soup = BeautifulSoups(website_url,'html.parser')

required_table = soup.find_all('table', id = "January-March")

df = pd.read_html(str(required_table))

df=pd.DataFrame(df[0])

df[df['Genre'].isin(['Drama'])]
```

6406532040800. ✖

```
import requests

import pandas as pd

from bs4 import BeautifulSoups

website_url=requests.get('https://web.archive.org/web/20220429040949
/https://en.wikipedia.org/wiki/List_of_Hindi_films_of_2009').text

required_table = soup.find_all('table')[5]

df = pd.read_html(str(required_table))

df=pd.DataFrame(df[0])

df[df['Genre'].isin(['Drama'])]
```

6406532040801. ✖

Question Number : 204 Question Id : 640653611087 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

Identify which of the following statements is/are TRUE

1. A story contains a single view along with shelves, cards, legends, and the Data and Analytics panes in its side bar.
2. A worksheet contains a sequence of stories that work together to convey information
3. A dashboard is a collection of views from multiple worksheets

Options :

6406532040848. ✖ 1 Only

6406532040849. ✔ 3 Only

6406532040850. ✖ 2 & 3 Only

6406532040851. ✖ 1 & 2 Only

Question Number : 205 Question Id : 640653611090 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

Provided below is an incomplete code snippet that enables you to compute distance between two locations. Choose the most appropriate option that can be used in place of **<missing line>** to compute the distance. Assume the coordinates of location one is stored in the variable "loc1" and the coordinates of location 2 is stored in the variable "loc2".

Code Snippet:

```
distances_km = []

for row in df.itertuples(index=False):
    distances_km.append(
        <missing line>
    )

df['Distance'] = distances_km
df.head(10)
```

Options :

6406532040860. ✖ geopy.distance(loc1, loc2).km

6406532040861. ✖ geopy.distance(loc1, loc2).km.km

6406532040862. ✔ geopy.distance.distance(loc1, loc2).km

6406532040863. ✖ geopy.distance.distance.distance(loc1_coord, loc2_coord).km

Question Number : 206 Question Id : 640653611091 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

Provided below is a snippet of the code block of HTML tags from a website providing weather forecast. Your goal is to scrape the high and low values for the 10-day temperature forecast.

```
<div class="wr-day-temperaturehigh">
        <span class="wr-day-temperature__high-label wr-hide-visually">High</span>
                <span class="wr-day-temperature__high-value">
                <span class="wr-value--temperature ">
                <span class="wr-value--temperature--c">31°</span>
                <span class="wr-hide"> </span>
                <span class="wr-value--temperature--f">87°</span>
                </span>
        </span>
</div>
<div class="wr-day-temperaturelow">
        <span class="wr-day-temperature__low-label wr-hide-visually">Low</span>
                <span class="wr-day-temperature__low-value">
                <span class="wr-value--temperature ">
                <span class="wr-value--temperature--c">21°</span>
                <span class="wr-hide"> </span>
                <span class="wr-value--temperature--f">71°</span>
                </span>

        </span>
</div>
```

Also provided below, is the python code to extract values from the tags. But the tags represented as <A> and <B> are missing. Choose the most appropriate tag that will get you the high and low values for the 14-day temperature forecast.

```
#Daily High Values
daily_high_values = soup.find_all('span', attrs={'class': '<A>'})

#Daily Low Values
daily_low_values  = soup.find_all('span', attrs={'class': '<B>'})
```

Options :

6406532040864. ✖ <A> = wr-value--temperature--f
<B> = wr-value--temperature--c

6406532040865. ✖ <A> = wr-day--temperature--c
<B> = wr-day--temperature--f

6406532040866. ✔ <A> = wr-day-temperaturehigh
<B> = wr-day-temperaturelow

6406532040867. ✖ <A> = low-label wr-hide-visually
<B> = high-label wr-hide-visually

Question Number : 207 Question Id : 640653611097 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

Provided below is a snapshot of the dataset which consists of movie reviews and respective labels.

	A	B
1	sentiment	review
2	positive	One of the other reviewers has mentione
3	positive	A wonderful little production. <br /:
4	positive	I thought this was a wonderful way to spe
5	negative	Basically there's a family where a little bo
6	positive	Petter Mattei's "Love in the Time of Mone
7	positive	Probably my all-time favorite movie, a sto
8	negative	This show was an amazing, fresh & innova
9	negative	Encouraged by the positive comments abo
10	positive	If you like original gut wrenching laughter
11	negative	Phil the Alien is one of those quirky films

To compute the sentiment scores the Azure Machine Learning add-in requires input and output values. In the figure provided below the input and output cells need to be populated with appropriate values to obtain sentiment scores.

Choose the most appropriate option that enables you to predict sentiment scores using the Excel Azure Machine Learning add-in.

Options :

6406532040884. ✖ Input: Sheet1!A1:A11
Output: Sheet!C1

6406532040885. ✔ Input: Sheet1!B1:B11
Output: Sheet!C1

Question Number : 208 Question Id : 640653611099 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

We have predictions (*y_hat*) on a train dataset of 100 records. Let *y* be the true value. We are interested in calculating **median(|y_1 - y_hat_1|, |y_2 - y_hat_2|, ..., |y_100 - y_hat_100|)**, Which of the following functions will help you in achieving this easily?

Options :

6406532040890. ✖ from sklearn.metrics import mean_absolute_error

6406532040891.

✔ from sklearn.metrics import median_absolute_error

6406532040892. ✖ from sklearn.metrics import median_absolute_percentage_error

6406532040893. ✖ from sklearn.metrics import average_absolute_percentage_error

Sub-Section Number :	4
Sub-Section Id :	64065388055
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 209 Question Id : 640653611074 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

Comicgen is a useful tool in narrating data stories using comics. Which of the following are capabilities of comicgen?

Options :

6406532040802. ✔ Comicgen can create comic characters

6406532040803. ✔ Comicgen provides options to custom create different comic characters and their emotions and pose

6406532040804. ✔ Comicgen can be easily integrated into Google sheets or Excel to narrate your data stories

6406532040805. ✖ You can type in your data story into comicgen to get your comic in return

Question Number : 210 Question Id : 640653611109 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

scikit-network package contains functions for (pick all correct sentences):

Options :

6406532040930. ✖ analysis of faults in a computer network

6406532040931. ✔ social network analysis

6406532040932. ✔ analysis of large graphs

6406532040933. ✖ enhancing one's social network

Sub-Section Number :	5
Sub-Section Id :	64065388056
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653611079 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 : (211 to 212)

Question Label : Comprehension

Answer the given subquestions.

Sub questions

Question Number : 211 Question Id : 640653611080 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 decided to perform analysis of the IPL teams year on year. You downloaded the teams standings table which got downloaded as a PDF. You wish to convert to a csv file for further analysis in Excel. The following method in 'tabula' can be used for the same:

Options :

6406532040822. ✔ convert_into

6406532040823. ✖ convert_file

6406532040824. ✖ convert_all

6406532040825. ✖ convert_csv

Question Number : 212 Question Id : 640653611081 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

From the converted csv file in previous question, you realize that the team 'Delhi Daredevil' has changed its name to 'Delhi Capital'. Using excel, you wish to replace the old name with a new name. It can be done in Excel using

Options :

6406532040826. ✔ Find and Replace

6406532040827. ✖ Finding and Replacing

6406532040828. ✖ Replace and Find

6406532040829. ✖ Search and Replace

BDM

Section Id :	64065341311
Section Number :	8
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	15
Number of Questions to be attempted :	15
Section Marks :	40
Display Number Panel :	Yes

Section Negative Marks :	0
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 :	64065388057
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 213 Question Id : 640653611131 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 :

6406532041017. ✔ YES

6406532041018. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065388058
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 214 Question Id : 640653611132 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 project management, the Pareto Principle can be used to:

Options :

6406532041019. ✖ Allocate equal time and resources to all project tasks.

6406532041020. ✔ Focus on the tasks with the most impact on project success.

6406532041021. ✖ Address only the tasks with immediate deadlines.

6406532041022. ✖ Apply to projects but not to daily operations.

Sub-Section Number :	3
Sub-Section Id :	64065388059
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653611133 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 : (215 to 216)

Question Label : Comprehension

You oversee the inventory management of gear assemblies in a manufacturing facility. The particulars of the inventory are as follows:

Starting Inventory: 150 units

Daily Usage: 8 units

Lead Time: 7 days

Safety Stock: 25 units

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 215 Question Id : 640653611134 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

Based on this information, at what inventory level should you trigger a re-order for gear assemblies?

Options :

6406532041023. ✖ Initiate a re-order when the inventory level drops to 56 units

6406532041024. ✔ Initiate a re-order when the inventory level drops to 81 units

6406532041025. ✖ Initiate a re-order when the inventory level drops to 94 units

6406532041026. ✖ Initiate a re-order when the inventory level drops to 79 units

Question Number : 216 Question Id : 640653611135 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

After how many days should you trigger a re-order

Options :

6406532041027. ✖ 7 Days

6406532041028. ✖ 14 Days

6406532041029. ✖ 17 Days

6406532041030. ✔ 9 Days

Sub-Section Number : 4

Sub-Section Id : 64065388060

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 217 Question Id : 640653611136 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 a key benefit of using data analysis in HR operations?

Options :

6406532041031. ✖ It eliminates the need for human judgment in decision-making.

6406532041032. ✖ It provides a standardized approach to all HR processes.

6406532041033. ✔ It enables data-driven decision-making to improve HR strategies and outcomes.

6406532041034. ✖ It only focuses on quantitative data and ignores qualitative factors.

Question Number : 218 Question Id : 640653611137 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 do you lock the column reference in the "col_index_num" parameter of the VLOOKUP function to prevent it from changing when copying the formula?

Options :

6406532041035. ✔ By using absolute cell references (e.g., A2).

6406532041036. ✖ By using relative cell references (e.g., A2).

6406532041037. ✖ By using mixed cell references (e.g., $A2).

6406532041038. ✖ By using named ranges.

Question Number : 219 Question Id : 640653611138 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 sets "nudges" apart from traditional regulations or enforcement?

Options :

6406532041039. ✖ Nudges primarily use only financial rewards.

6406532041040. ✔ Nudges gently influence behavior without force or coercion.

6406532041041. ✖ Nudges are limited to public policy, excluding corporate practices.

6406532041042. ✖ Nudges never involve strict mandates or restrictions.

Sub-Section Number :	5
Sub-Section Id :	64065388061
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 220 Question Id : 640653611139 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

A company is testing two different display features (A and B) on their website's homepage to determine which one leads to a higher conversion rate. During the experiment, they tracked the number of visitors who clicked on the "Sign Up" button and calculated the conversion rate for each version. The results are as follows:

- Version A: 500 visitors, 25 conversions
- Version B: 550 visitors, 40 conversions

Calculate the conversion rates for both Version A and Version B. Based on the results, which

version had a higher conversion rate, and what is the approx percentage difference between the two conversion rates (in %)?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Set

Text Areas : PlainText

Possible Answers :

-2

2

Sub-Section Number :	6
Sub-Section Id :	64065388062
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653611140 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 : (221 to 223)

Question Label : Comprehension

Consider the following data set and answer the given subquestions.

Applicant	Income ($1000s)	Credit Score	Loan Amount ($1000s)
Applicant F	40	700	120
Applicant G	60	800	160
Applicant H	25	580	80
Applicant I	45	720	150
Applicant J	30	650	120

Sub questions

Question Number : 221 Question Id : 640653611141 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 applicant will face the most difficulty in repaying the loan?

Options :

6406532041044. ✖ Applicant F

6406532041045. ✖ Applicant G

6406532041046. ✖ Applicant H

6406532041047. ✖ Applicant I

6406532041048. ✔ Applicant J

Question Number : 222 Question Id : 640653611142 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

If any credit score of 700 and above is considered equally acceptable, then which applicant is the most risky for the lender?

Options :

6406532041049. ✖ Applicant F

6406532041050. ✖ Applicant G

6406532041051. ✖ Applicant H

6406532041052. ✔ Applicant I

6406532041053. ✖ Applicant J

Question Number : 223 Question Id : 640653611143 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

If the primary factor for loan approval is the applicant's income, which applicant is likely to have the easiest time getting their loan approved?

Options :

6406532041054. ✖ Applicant F

6406532041055. ✔ Applicant G

6406532041056. ✖ Applicant H

6406532041057. ✖ Applicant I

6406532041058. ✖ Applicant J

Sub-Section Number :	7
Sub-Section Id :	64065388063
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 224 Question Id : 640653611144 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

A company is analyzing the effectiveness of different recruitment channels for hiring new employees based on the number of applications received, the number of candidates shortlisted, and the ease of applying scores (on a scale of 1 (min) to 5 (max)) for each recruitment channel. Please follow the instructions below to answer the given subquestion.

Make your selection based on your analysis of the effectiveness scores of the recruitment channels.

Recruitment Channel	Applications	Shortlisted	Ease of Applying (Scale: 1-5)
Job Boards	200	40	3
Campus Recruiting	150	25	4
Social Media	180	20	2
Employee Referrals	120	60	5

Instructions:

- Normalize Ease of Applying Scores
- Calculate Effectiveness Score: Calculate the effectiveness score for each recruitment channel by multiplying the ratio of shortlisted candidates to applications by the normalized ease of applying score.
- Rank the Channels: Rank the recruitment channels based on their calculated effectiveness scores. The higher the effectiveness score, the more effective the channel.

Options :

6406532041059. ✖ Job Boards

6406532041060. ✖ Campus Recruiting

6406532041061. ✖ Social Media

6406532041062. ✔ Employee Referrals

Sub-Section Number : 8

Sub-Section Id : 64065388064

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 225 Question Id : 640653611145 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

TechCo conducted an extensive A/B test to evaluate the effectiveness of a new Subscription Upgrade feature on user engagement. The control and test groups were carefully balanced to

ensure equal representation. The table below presents detailed engagement metrics before and after the introduction of the Subscription Upgrade feature. Based on the given data, which of the following statement is true? [Select all that apply]

Group	Average number of sessions per user (Before Feature)	Average session duration (minutes) (Before Feature)	Average number of sessions per user (After Feature)	Average session duration (minutes) (After Feature)
Control	6.2	12.5	5.8	13.2
Test	7.1	13.8	8.5	15.6

Options :

6406532041063. ✔ The new Subscription Upgrade feature led to a significant increase in the average session duration for both control and test groups.

6406532041064. ✖ Both the control and test groups experienced a decrease in the average number of sessions per user after the introduction of the Subscription Upgrade feature.

6406532041065. ✔ The Subscription Upgrade feature had a more pronounced impact on increasing the average number of sessions per user in the test group compared to the control group.

6406532041066. ✖ The average session duration decreased in the control group but increased in the test group after the introduction of the Subscription Upgrade feature.

6406532041067. ✖ The increase in the average number of sessions per user was higher in the control group compared to the test group due to the Subscription Upgrade feature.

Sub-Section Number : 9

Sub-Section Id : 64065388065

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 226 Question Id : 640653611146 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

Calculate the Overall Equipment Effectiveness (OEE) of the Assembly Line Equipment for the month of July.

Parameters:

Parameter	Value
Planned Production Hours (PPH)	320 hours
Lost Time (LOT)	20 hours
Designed Machining Speed (DM)	220 pieces per hour
Actual Machining Speed (AM)	200 pieces per hour
Total Components Machined (TC)	6000 pieces
Defective Components (DC)	240 pieces

Round the OEE to two decimal places

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.81 to 0.83

Sub-Section Number : 10

Sub-Section Id : 64065388066

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 227 Question Id : 640653611147 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

A reduction in the price of a product from $20 to $16 leads to a 15% increase in demand for the product. Calculate the price elasticity of demand for this product.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Set

Text Areas : PlainText

Possible Answers :

0.75

-0.75

Sub-Section Number :	11
Sub-Section Id :	64065388067
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 228 Question Id : 640653611148 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

Using the provided dataset, rank the candidates based on the given factors and choose the correct ranking from the options below. Consider the following dataset:

Candidate	Years of Experience	Technical Skills	Number of Projects	Tenure in Current Role
Esha	4.5	3	2	3
Aisha	5	2	1	2
Sasha	6	2	3	4
Lavisha	5.5	3	2	2

Options :

6406532041070. ✖ Lavisha > Aisha > Esha > Sasha

6406532041071. ✖ Esha > Lavisha > Sasha > Aisha

6406532041072. ✖ Aisha > Lavisha > Sasha > Esha

6406532041073. ✔ Sasha >Esha> Lavisha > Aisha

Sub-Section Number : 12

Sub-Section Id : 64065388068

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 229 Question Id : 640653611149 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

Using the data in table and figure below, match the curve in column-A to its representative cost in column-B (assume all units produced are sold).

Fixed Cost (Rs.)	Variable Cost (Rs./ unit)	Number of Units Produced (units)	Selling price (Rs./ unit)
5000	0	0	100
5000	20	200	100
5000	40	300	100
5000	45	320	100
5000	49	345	100
5000	53	370	100

Column-A	Column-B
I. Curve-A	a) Marginal cost
II. Curve-B	b) Marginal revenue
III. Curve-C	c) Avg. total cost
IV. None of the above	

Options :

6406532041074. ✖ I-(a), II-(c), III-(b)

6406532041075. ✖ II-(a), I-(c), III-(b)

6406532041076. ✖ III-(a), II-(c), I-(b)

6406532041077. ✔ IV-(a), II-(c), III-(b)

Sub-Section Number : 13

Sub-Section Id : 64065388069

Question Shuffling Allowed : Yes

Is Section Default? :	null

Question Number : 230 Question Id : 640653611150 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

An increase in Monisha's income decreases her demand for Glucon-D. Then, for Monisha, Glucon-D is

Options :

6406532041078. ✖ A complement to any good

6406532041079. ✖ A normal good

6406532041080. ✔ An inferior good

6406532041081. ✖ A substitute to any good

System Commands

Section Id :	64065341312
Section Number :	9
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	15
Number of Questions to be attempted :	15
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
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 :	64065388070
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 231 Question Id : 640653611151 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 :

6406532041082. ✔ YES

6406532041083. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065388071
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 232 Question Id : 640653611153 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

From `man bash`,

```
Process Substitution
    Process  substitution allows a process's input or output to be
    referred to using a filename.  It takes the form of <(list) or
    >(list).   The process list is run asynchronously, and its in-
    put or output appears as a filename.  This filename is  passed
    as an argument to the current command as the result of the ex-
    pansion.  If the >(list) form is used,  writing  to  the  file
    will provide input for list.  If the <(list) form is used, the
    file passed as an argument should be read to obtain the output
    of  list.   Process  substitution is supported on systems that
    support named pipes (FIFOs) or the /dev/fd  method  of  naming
    open files.

    When  available,  process substitution is performed simultane-
    ously with parameter and variable expansion, command substitu-
    tion, and arithmetic expansion.
```

Example:

```
$ seq 2 5
2
3
4
5
$ diff <(seq 1 3) <(seq 2 5)
1d0
< 1
3a3,4
> 4
> 5
```

What does the command `echo <(seq 10)` output represent?

Options :

6406532041088. ✖ The standard output from the command `seq 10`

6406532041089. ✔ A file

6406532041090. ✖ A directory

6406532041091. ✖ Nothing will be printed

Question Number : 233 Question Id : 640653611156 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 one of the following commands replaces only the second occurrence of pattern "Alice" with "Rabbit" in each line of the entire file?

Options :

6406532041097. ✔ `sed 's/Alice/Rabbit/2' wonderland.txt`

6406532041098. ✖ `sed 's/Alice/Rabbit/2g' wonderland.txt`

6406532041099. ✖ `sed '2 s/Alice/Rabbit/' wonderland.txt`

6406532041100. ✖ `sed '1,2 s/Alice/Rabbit' wonderland.txt`

Question Number : 234 Question Id : 640653611167 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

Following entry is made to a crontab to run a script that will perform the backup. When is the script `/home/Garima/PC_management.sh` scheduled to get executed?

```
5 2 * * 0 /home/Garima/PC_management.sh
```

Hint: Below is the description of the sequence in the cron job command. It tells at what date/time periodically the job needs to be executed.

```
*   *   *   *   *   <Command(s) with argument>
|   |   |   |   |              |
|   |   |   |   |      Command or Script to Execute
|   |   |   |   |
|   |   |   |   |
|   |   |   |   |
|   |   |   | Day of the Week(0-6)
|   |   |   |
|   |   | Month of the Year(1-12)
|   |   |
|   | Day of the Month(1-31)
|   |
| Hour(0-23)
|
Min(0-59)
```

Options :

6406532041132. ✔ Every Sunday at 02:05 am

6406532041133. ✖ Every Sunday at 05:02 am

6406532041134. ✖ Every Sunday at 05:03 am

6406532041135. ✖ Every Sunday at 02:03 am

Sub-Section Number :	3
Sub-Section Id :	64065388072
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 235 Question Id : 640653611160 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 7

Question Label : Multiple Choice Question

The tab-separated data file pdata.txt provided for cleanup showed every fourth and fifth line is a part of one line (the first merge is the first and the second line) (see the following examples in the hint). Choose the correct commands from the following options, which can merge every fourth and fifth (1-2, 5-6, 9-10, 13-14, etc...) line into one line to clean up the data file.

Hint:

Use the following information.

```
$ cat pdata.txt
Line1
Line2
Line3
Line4
Line5
Line6
Line7
Line8
Line9
Line10
Line11
Line12
Line13
Line14
$ sed 'N;s/\n/ /' pdata.txt
Line1   Line2
Line3   Line4
Line5   Line6
Line7   Line8
Line9   Line10
Line11  Line12
Line13  Line14
$ sed 'N;N;s/\n/ /' pdata.txt
Line1   Line2
Line3
Line4   Line5
Line6
Line7   Line8
Line9
Line10  Line11
Line12
Line13  Line14
Line15
```

Options :

6406532041113. ✖ `sed 'N;N;N;s/\n/ /' pdata.txt`

6406532041114. ✖ `sed -i 'N;N;N;N;s/\n/ /' pdata.txt`

6406532041115. ✔ `sed -i 'N;N;N;s/\n/\t/' pdata.txt`

6406532041116. ✖ `sed -i 'N;N;N;N;s/\n/\t/' pdata.txt`

Sub-Section Number :	4
Sub-Section Id :	64065388073
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 236 Question Id : 640653611155 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

A file contains data collected starting from 4th April 2004. The data is collected on the 4th, 14th and 24th of April, May and June since then. The text file, however, does not contain the date information. Now it is necessary to add a column to this text file with the date format 4 April 2004. Identify which of the following command (using brace expansion) will create a column to an empty file with the desired format from 4 April, 2004 to 24 December, 2010 is sorted as per the years.

Hint:

Use the following information.

```
$ echo {1..4}{b..d}
1b 1c 1d 2b 2c 2d 3b 3c 3d 4b 4c 4d
$ echo {1..4}";"{b..d}
1;b 1;c 1;d 2;b 2;c 2;d 3;b 3;c 3;d 4;b 4;c 4;d
$ echo 10 20
10 20
$ echo 10 20| tr ' ' '\n'
10
20
```

Options :

```
echo {April,May,June}";"{4..30..10}","{2004..2010}|
                tr ' ' '\n'|
                tr ',' ' '|
                sort -s -k2|
                tr ' ' ','|
                tr ';' ' ' >date.txt
```

6406532041093. ✔

```
echo {April,May,June}","{4..30..10}","{2004..2010}|
                tr ' ' '\n'|
                tr ',' ' '|
                sort -s -k3|
                tr ' ' ',' >date.txt
```

6406532041094. ✖

```
echo {April,May,June}" "{4..30..10}","{2004..2010}|
                tr ' ' '\n'|
                tr ',' ' '|
                sort -s -k2|
                tr ' ' ',' >date.txt
```

6406532041095. ✖

6406532041096.

```
echo {April,May,June}{4..30..10}","{2004..2010}|
                tr ' ' '\n'|
                tr ',' ' '|
                sort -s -k2|
                tr ' ' ','|
                tr ';' ' ' >date.txt
```

Question Number : 237 Question Id : 640653611166 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

Choose the correct sed command from the options which will replace all the three-character month names with the corresponding numbers.

Note: Only the month should be changed

```bash
#!/bin/bash

# Associative array
declare -A month_to_number

month_to_number=(
        ["Jan"]=1 ["Feb"]=2 ["Mar"]=3 ["Apr"]=4
        ["May"]=5 ["Jun"]=6 ["Jul"]=7 ["Aug"]=8
        ["Sep"]=9 ["Oct"]=10 ["Nov"]=11 ["Dec"]=12
) # ([key]=value)

read -r line
for m in "${!month_to_number[@]}"; do
        # get from stdin
        [[ "$line" =~ $m ]] || continue
        echo "$line" | sed "s/$m/${month_to_number[$m]}/" # replacement this line
done
```

Options :

6406532041128. ✖ `echo "$line" | sed "s/.*/\L&/" | sed "s/$m/${month_to_number[$m]}/"`

6406532041129. ✖ `echo "$line" | sed 's/$m/\L&/' | sed "s/$m/${month_to_number[$m]}/"`

6406532041130. ✔ `echo "$line" | sed -i "s/$m/${month_to_number[$m]}/g"`

6406532041131. ✖ `echo "$line" | sed -n "s/$m/${month_to_number[$m]}/g"`

Sub-Section Number :	5
Sub-Section Id :	64065388074
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 238 Question Id : 640653611152 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

A command `myproject-auth` takes the password as an argument. Select the most appropriate way(s) which will ensure its secrecy while entering it into the Linux command line.

Note: The command line usage is `myproject-auth -u <username> -p <password>`

Options :

6406532041084. ✖
```
$ myproject-auth -u pankaj -p mysecretpassword
```

6406532041085. ✖
```
$ PASSWORD=mysecretpassword
$ myproject-auth -u pankaj -p $PASSWORD
```

6406532041086. ✔

```
$ read -r PASSWORD
$ myproject-auth -u pankaj -p $PASSWORD
```

6406532041087. ✔

```
$ myproject-auth -u pankaj -p $(cat)
```

Question Number : 239 Question Id : 640653611157 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 command(s) from the options will produce the output as shown below?

```
line1
     line2
line3
     line4
```

Hint:

```
echo: echo [-neE] [arg ...]
    Write arguments to the standard output.

    Display the ARGs, separated by a single space character and followed by a
    newline, on the standard output.
   Options:
     -n        do not append a newline
     -e        enable interpretation of the following backslash escapes
     -E        explicitly suppress interpretation of backslash escapes

   `echo' interprets the following backslash-escaped characters:
     \a        alert (bell)
     \b        backspace
     \c        suppress further output
     \e        escape character
     \E        escape character
     \f        form feed
     \n        new line
     \r        carriage return
     \t        horizontal tab
     \v        vertical tab
     \\        backslash
     \0nnn     the character whose ASCII code is NNN (octal).  NNN can be
               0 to 3 octal digits
     \xHH      the eight-bit character whose value is HH (hexadecimal).  HH
               can be one or two hex digits

   Exit Status:
   Returns success unless a write error occurs.
```

Echo examples:

```
$echo "a\tb" #tab is eight character long
a       b
$echo -e "ii\bjj"
ijj
$echo "a\vb"
a
 b
$echo "a\nb"
a
b
```

Options :

6406532041101. ✖ `echo -e -n "line1\n\t\b\bline2\nline3\n\t\bline4\n"`

6406532041102. ✖ `echo -e -n "line1\n\t\b\bline2\nline3\n\t\b\bline4\n"`

6406532041103. ✔ `echo -e line1\vline2\nline3\vline4`

6406532041104. ✔ `echo -e -n "line1\vline2\nline3\vline4\n"`

Question Number : 240 Question Id : 640653611158 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 regular expressions are the **most appropriate** to capture the GSTIN numbers from a file?

Note:

- A GSTIN (Goods and Services Tax Identification Number) is structured with a consistent pattern (12ABCTY1234D1Z1) comprising 15 characters, encompassing a combination of alphabetic letters (all capital) and numerical digits.
- The first two characters (12) represent the state code of the business entity's registration.
- The following ten characters are typically derived from the taxpayer's PAN (Permanent Account Number)(ABCTY1234).
- The next character is the entity number which is followed by the default character (Z).
- Lastly, the 15th character is a checksum digit.
- A PAN (Permanent Account Number) typically follows the format of ABCTY1234D.
- The first three characters, "ABC", in this case, form an alphabetical series ranging from AAA to ZZZ.
- The fourth character, like 'T', indicates the status of the PAN holder, where 'T' stands for Trust, 'F' for Firm, 'H' for HUF, 'P' for Individual, and 'C' for Company.
- The fifth character, for instance, 'Y', represents the first letter of the PAN holder's last name.

- The subsequent four characters are sequential digits from 0001 to 9999.
- The tenth character, 'D', functions as an alphabetic check digit, ranging from A to Z.

Assume a Basic Regular Expression Engine (BRE)

Options :

6406532041105. ✔ `[0-9]\{2\}[A-Za-z]\{3\}[TFHPIC][A-Za-z][0-9]\{4\}[A-Za-z][0-9][A-Za-Z][0-9]`

6406532041106. ✖ `[0-9]\{2\}[A-Z]\{3\}[TFHPIC][A-Z][0-9]\{4\}[A-Z][0-9][A-Z][0-9]`

6406532041107. ✖ `[[:digit:]]\{2\}[[:alpha:]]\{3\}[TFHPIC][[:alpha:]][[:digit:]]\{4\}[[:alpha:]][[:digit:]][[:alpha:]][[:digit:]]`

6406532041108. ✔ `[[:digit:]]\{2\}[[:upper:]]\{3\}[TFHPIC][[:upper:]][[:digit:]]\{4\}[[:upper:]][[:digit:]][[:upper:]][[:digit:]]`

Question Number : 241 Question Id : 640653611161 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

The following text shows a set of questions and their answers. Identify which question-answer pair among the following needs to be corrected. Use the "None of these" option if all statements are correct.

1. What is the purpose of the "kill" command in Linux?
   - Answer: The "kill" command in Linux sends signals to processes. It can terminate a process, send specific signals for process control, or even request a process to reload its configuration.
2. What is the significance of the process ID (PID) in Linux?
   - Answer: The process ID (PID) is a unique identifier assigned to each running process in Linux. It tracks and manages processes, allowing the operating system to interact with and control individual processes.
3. How can you check the resource utilization of a specific process in Linux?
   - Answer: You can check the resource utilization of a specific process in Linux using the "top" command. The "top" command provides real-time information about system processes, including CPU usage, memory consumption, and other resource statistics.
4. How can you monitor the system performance and resource usage of all processes in Linux?

   - Answer: You can monitor the system performance and resource usage of all processes in Linux using tools like "top", "htop", or "ps aux". These commands provide detailed information about CPU usage, memory consumption, and other system metrics for all running processes.

Options :

6406532041117. ✖ 1

6406532041118. ✖ 2

6406532041119. ✖ 3

6406532041120. ✖ 4

6406532041121. ✔ None of these

Sub-Section Number :	6
Sub-Section Id :	64065388075
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 242 Question Id : 640653611159 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 from the options will count the number of words starting with the letter 'c' from the following text?

Hint:

Relevent `grep` help text

Usage: grep [OPTION]... PATTERN [FILE]...
Search for PATTERN in each FILE.
Example: grep -i 'hello world' menu.h main.c

```
...
    -w, --word-regexp force PATTERN to match only whole words
...
    -o, --only-matching show only the part of a line matching PATTERN
...
    -c, --count print only a count of selected lines per FILE
```

```
$ cat tongue_twisters.txt
If you must cross a coarse, cross cow across a crowded cow crossing, cross the
cross, coarse cow across the crowded cow crossing carefully.
$ wc -l tongue_twisters.txt
1
```

Options :

6406532041109. ✖ `grep -owc '\bc[a-zA-Z]*\b' tongue_twisters.txt`

6406532041110. ✔ `grep -ow '\bc[a-zA-Z]*\b' tongue_twisters.txt|wc -l`

6406532041111. ✔ `awk 'BEGIN { count=0 } { for(i=1; i<=NF; i++) { if ($i ~ /^c/) count++ } } END { print count }' tongue_twisters.txt`

6406532041112. ✖ `sed -n 's/\b[cC][a-zA-Z]*\b/&/gp' tongue_twisters.txt|wc -w`

Question Number : 243 Question Id : 640653611162 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

Following Script is executed on a text file. Choose the correct statement(s) from the options.

```
#!/bin/bash
file=$1
declare -a ELE
i = 1
for ele in $(cat "${file}")
do
    ELE[$i]=$ele
    ((i++))
done
for ((j=i; j>0; j--))
do
        echo ${ELE[$j]}
done
```

Options :

6406532041122. ✖ ELE is an associative array.

6406532041123. ✔ ELE is an indexed array.

6406532041124. ✖ At the end of the execution of the bash script on a text file, the last sentence is printed first, followed by the next-to-last sentence till the first sentence becomes last.

6406532041125. ✔ At the end of the execution of the bash script on a text file, the last word is printed first, followed by the next-to-last word till the first word becomes the last.

Sub-Section Number :	7
Sub-Section Id :	64065388076
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 244 Question Id : 640653611154 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

```bash
#!/bin/bash

directory="$1"
tarball_name="$2"
tar -cvf "$tarball_name.tar" "$directory"
```

```
$ tar --help
Usage: tar [OPTION...] [FILE]...
GNU 'tar' saves many files together into a single tape or disk archive, and can
restore individual files from the archive.
Examples:
  tar -cf archive.tar foo bar  # Create archive.tar from files foo and bar.
  tar -tvf archive.tar         # List all files in archive.tar verbosely.
  tar -xf archive.tar          # Extract all files from archive.tar.

 Main operation mode:
  -A, --catenate, --concatenate   append tar files to an archive
  -c, --create               create a new archive
...
  -x, --extract, --get       extract files from an archive

...
 Device selection and switching:

      --force-local          archive file is local even if it has a colon
  -f, --file=ARCHIVE         use archive file or device ARCHIVE
...
 Informative output:
...
  -v, --verbose              verbosely list files processed
...
```

How many new files will be created from the above command for the valid directory and tarball_name?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Sub-Section Number :	8
Sub-Section Id :	64065388077
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653611163 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 : (245 to 246)

Question Label : Comprehension

```
#!/bin/bash
prn_num(){
        for c in 9 8 7; do
                sleep 0.25
                echo -n $c
        done
}

for i in {1..3}; do #first loop
        prn_num
done

for i in {1,2}; do #second loop
        prn_num &
done
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 245 Question Id : 640653611164 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

What is the output of the **first loop** at the end of the execution of the given script?

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

987987987

Question Number : 246 Question Id : 640653611165 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

What is the output of the **second loop** after the execution of the given script?

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

998877

MLP

Section Id :	64065341313
Section Number :	10
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	35

Number of Questions to be attempted :	35
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
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 :	64065388078
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 247 Question Id : 640653611168 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 :

6406532041136. ✔ YES

6406532041137. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065388079

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 248 Question Id : 640653611169 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.preprocessing import MaxAbsScaler
a = [[-3],[ 0],[-2],[ 2],[-1],[-4]]
mas = MaxAbsScaler()
scaled_a = mas.fit_transform(a)
print(scaled_a.max())
```

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 : 3

Sub-Section Id : 64065388080

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 249 Question Id : 640653611170 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 below a y_train list which consists of pizza's ordered by the customers in a shop.

```
y_train =  [['regular', 'veg'],
            ['medium', 'veg'],
            ['regular', 'non-veg'],
            ['medium', 'non-veg']]
```

MultiLabelBinarizer from sklearn library has been used to convert the y_train into numbers, so which of the following option matches with the output using the following code ?

```
from sklearn.preprocessing import MultiLabelBinarizer
mlb = MultiLabelBinarizer(classes=['regular','medium', 'veg', 'non-veg'])
print(mlb.fit_transform(y_train))
```

Options :

6406532041139. ✖ [1 0 1 0 1 0 0 1 0 1 0 1 0 1 1 0]

6406532041140. ✔ [[1 0 1 0],[0 1 1 0],[1 0 0 1],[0 1 0 1]]

6406532041141. ✖ [[1 0 1 0 1 0 1 0],[0 0 1 0 1 1 1 0]]

6406532041142. ✖ [[1 0],[1 0],[0 1],[1 0],[1 0],[0 1],[0 1],[0 1]]

Question Number : 250 Question Id : 640653611176 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're building a machine learning pipeline to preprocess data and train a model on a classification task. You decide to use a pipeline that includes data preprocessing and a support vector machine (SVM) classifier.

The following code snippet demonstrates the pipeline creation and usage:

```
from sklearn.pipeline import Pipeline
from sklearn.svm import SVC
from sklearn.preprocessing import StandardScaler
import numpy as np

# Simulated data (features: X, target: y)
X = np.array([[2, 3], [5, 7], [8, 10]])
y = np.array([0, 1, 0])

# Create a pipeline with StandardScaler and SVM classifier
pipeline = Pipeline([
    ('scaler', StandardScaler()),
    ('svm', SVC())])
# Fit the pipeline on training data
pipeline.fit(X, y)

# Make predictions using the trained pipeline
predictions = pipeline.predict(X)
```

What is the purpose of using the pipeline in this code snippet?

Options :

6406532041163. ✖ The pipeline combines multiple models for better model performance.

6406532041164. ✖ The pipeline allows for simultaneous training of the scaler and classifier.

6406532041165. ✔ The pipeline simplifies the code by encapsulating preprocessing and modeling steps.

6406532041166. ✖ The pipeline ensures that only linear SVM can be used for this classification task.

Question Number : 251 Question Id : 640653611177 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've developed a binary classification model to predict whether an email is spam or not. You want to evaluate the model's performance using appropriate metrics. The following options represent different evaluation metrics. Choose the one that is most suitable for assessing the model's performance in this scenario:

Options :

6406532041167. ✖ R-squared (R^2)

6406532041168. ✖ Mean Absolute Error (MAE)

6406532041169. ✔ F1-score

6406532041170. ✖ Root Mean Squared Error (RMSE)

Question Number : 252 Question Id : 640653611184 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 building a sentiment analysis model using scikit-learn's `SGDClassifier` to classify movie reviews as positive or negative. The dataset is quite large, and you're dealing with a high-dimensional feature space. You want to fine-tune the hyperparameters of the classifier to achieve better convergence and classification performance.

Here's how you're setting up the `SGDClassifier`:

```
from sklearn.linear_model import SGDClassifier
classifier = SGDClassifier(loss='hinge', alpha=0.0001,
                           max_iter=1000, tol=1e-3, power_t=0.5)
```

In the context of the given code and scenario, what does the `power_t` parameter value of 0.5 influence during the training process?

Options :

6406532041189. ✖ It determines the degree of L2 regularization applied to the model's weights.

6406532041190.

✔ It controls the decay rate of the learning rate during each iteration.

6406532041191. ✖ It sets the threshold for early stopping based on the loss function improvement.

6406532041192. ✖ It adjusts the aggressiveness of stochastic gradient updates for faster convergence.

Question Number : 253 Question Id : 640653611191 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 is the output of the following code?

```
corpus = ['An overfitted model is a mathematical model that contains more
parameters than can be justified by the data.']
from sklearn.feature_extraction.text import CountVectorizer
vectorizer = CountVectorizer()
vectors = vectorizer.fit_transform(corpus)
print(vectors.shape)
```

Options :

6406532041214. ✖ (16,1)

6406532041215. ✖ (8,2)

6406532041216. ✖ (4,4)

6406532041217. ✔ (1,16)

Question Number : 254 Question Id : 640653611200 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 using machine learning algorithms, setting the `random state` parameter to a specific value provides which of the following benefits?

Options :

6406532041248. ✖ It ensures that the model will always produce the same predictions for any input data.

6406532041249. ✖ It guarantees that the model will converge to the global optimum during training.

6406532041250. ✖ It prevents overfitting by adding randomness to the model's predictions.

6406532041251. ✔ It allows for reproducibility, ensuring consistent results across different runs.

Sub-Section Number :	4
Sub-Section Id :	64065388081
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 255 Question Id : 640653611171 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 code involving the use of LabelEncoder from sklearn.preprocessing:

```
from sklearn.preprocessing import LabelEncoder

data = ["apple", "orange", "banana", "apple", "grape", "orange", "grape"]

encoder = LabelEncoder()
encoded_data = encoder.fit_transform(data)

print(encoded_data)
```

Which of the following statements is true based on the code?

Options :

6406532041143. ✔ After calling `encoder.transform(["pineapple"])`, an error will be raised.

6406532041144. ✖ LabelEncoder assigns smaller integer values to labels appearing earlier in the dataset.

6406532041145. ✖ If the encoded_data contains the integer 3, it corresponds to the label "apple".

6406532041146. ✔ LabelEncoder encodes the data based on the alphabetical order of the labels.

Question Number : 256 Question Id : 640653611189 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 are true?

Options :

6406532041206. ✖ KNeighborsClassifier with high values of n_neighbors produces complex decision boundaries.

6406532041207. ✔ KNeighborsClassifier with high values of n_neighbors produces smooth decision boundaries.

6406532041208. ✔ In KNeighborsClassifier the scale of the features(columns) can impact the decision boundaries.

6406532041209. ✖ None of these

Question Number : 257 Question Id : 640653611190 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 option(s) are correct regarding regularization?

Options :

6406532041210. ✖ Regularization is the error given by any model while predicting the values for the test set.

6406532041211. ✖ It helps in decreasing the bias of the training model.

6406532041212. ✔ Compare to without regularized model regularization decreases the variance of the training model

6406532041213. ✔ Predictions made with the Ridge Regression are less sensitive to weights(coefficients) than the Linear Regression.

Sub-Section Number :	5
Sub-Section Id :	64065388082
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 258 Question Id : 640653611172 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 sklearn code snippet that employs a Pipeline for data preprocessing:

```
from sklearn.pipeline import Pipeline
from sklearn.preprocessing import MinMaxScaler, Binarizer

data = [[1, 5], [5, 15], [0, 10], [1, 15]]

pipeline = Pipeline([('scaler', MinMaxScaler()),
                     ('binarize', Binarizer(threshold=0.1))])

transformed_data = pipeline.fit_transform(data)
```

What will be the output of the following code?

```
print(transformed_data[0])
```

Options :

6406532041147. ✖ [0. 0.]

6406532041148. ✔ [1. 0.]

6406532041149. ✖ [1. 1.]

6406532041150. ✖ [0. 1.]

Question Number : 259 Question Id : 640653611173 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 snippet that uses PCA from sklearn.decomposition for dimensionality reduction on a dataset with 10 features:

```
import numpy as np
from sklearn.decomposition import PCA

np.random.seed(42)
X = np.random.rand(100, 10)

pca = PCA(n_components=4)
X_pca = pca.fit_transform(X)

explained_variance = np.sum(pca.explained_variance_ratio_)
```

After executing this code, which of the following statements is true regarding the `explained_variance`?

Options :

6406532041151. ✖ The explained_variance represents the combined explained variance of all 10 principal components.

6406532041152. ✔ To get a dataset with more than 90% of the original variance, you can set `n_components` to 0.9 when initializing PCA.

6406532041153. ✖ The `X_pca` dataset contains the original 10 features but with reduced dimensionality.

6406532041154. ✖ The principal components in X_pca are based only on the most significant original features.

Question Number : 260 Question Id : 640653611174 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

You've built a linear regression model to predict the salary of employees based on their years of experience and education level. The model's coefficients for the features are as follows:

- Coefficient for Years of Experience: 5000
- Coefficient for Education Level: 3000

What does the coefficient for "Years of Experience" (5000) represent in this context?

Options :

6406532041155. ✔ For each additional year of experience, an employee's salary is expected to increase by 5000.

6406532041156. ✖ For each additional year of experience, an employee's salary is expected to decrease by 5000.

6406532041157. ✖ Education level has a stronger impact on salary than years of experience.

6406532041158. ✖ The coefficient doesn't have any meaningful interpretation in this scenario.

Question Number : 261 Question Id : 640653611175 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

You're working on a dataset that includes data points for a single feature and a target variable. You decide to use polynomial regression with a degree of 3 to capture potential cubic relationships. The following code snippet demonstrates the process:

```
from sklearn.preprocessing import PolynomialFeatures
import numpy as np

# Simulated data (feature: X)
X = np.array([1, 2, 3, 4, 5])

# Reshape the features
X = X.reshape(-1, 1)

# Transform features into polynomial features
poly = PolynomialFeatures(degree=3)
X_poly = poly.fit_transform(X)
```

What will be the shape of the X_poly matrix after transforming the feature 'X' into polynomial features of degree 3?

Options :

6406532041159. ✖ (5, 1)

6406532041160. ✖ (5, 3)

6406532041161. ✔ (5, 4)

6406532041162. ✖ (5, 6)

Question Number : 262 Question Id : 640653611178 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

Choose the correct output of the following code?

```
data = [[1, 3],
        [2, 4]]
from sklearn.preprocessing import PolynomialFeatures
pf = PolynomialFeatures(degree=3,interaction_only=False)
print(pf.fit_transform(data))
```

Options :

6406532041171. ✖
```
[[1, 2, 3, 2, 4],
[1, 2, 4, 6, 8]]
```

6406532041172. ✖
```
[[1, 1, 3, 3],
[1, 2, 4, 8]]
```

6406532041173. ✔
```
[[1, 1, 3, 1, 3,  9, 1,  3,  9, 27],
 [1, 2, 4, 4, 8, 16, 8, 16, 32, 64]]
```

6406532041174. ✖
```
[[1, 1, 2, 2, 3, 3,  4,  4],
 [1, 1, 4, 4, 9, 9, 16, 16]]
```

Question Number : 263 Question Id : 640653611182 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

Upon successfully training a `LogisticRegression` model from `sklearn.linear model` on a binary classification problem, you decide to inspect some of its attributes. Which of the following attributes would provide you with the estimated probabilities that each sample belongs to a particular class?

Options :

6406532041181. ✖ `model.classes_`

6406532041182. ✖ `model.decision_function()`

6406532041183. ✔ `model.predict_proba()`

6406532041184. ✖ `model.n_iter_`

Question Number : 264 Question Id : 640653611183 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

Imagine you're training a Perceptron using sklearn with the following code:

```
from sklearn.linear_model import Perceptron

X = [[0, 0.5], [1, 1.5], [1, 2], [2, 3]]
y = [-1, -1, 1, 1]


clf = Perceptron( tol=None, shuffle=True, random_state=42)
clf.fit(X, y)

iterations = clf.n_iter_
```

Given the linearly separable nature of the data, how many iterations would it most likely take for the perceptron to converge? What will be the value of `iterations`?

Options :

6406532041185. ✖ `iterations = 1`

6406532041186. ✖ `iterations = 10`

6406532041187. ✔ `iterations` value can vary since the data is being shuffled in each epoch.

6406532041188. ✖ `iterations = 5`

Question Number : 265 Question Id : 640653611185 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

You're working on a multi-class classification task with high-dimensional data. You decide to use the `RidgeClassifier` algorithm for its regularization properties. How-ever, you're concerned about selecting an appropriate value for the regularization parameter alpha. Which of the following statements about choosing the alpha value for '`RidgeClassifier`' is correct?

Options :

6406532041193. ✖ A higher alpha value results in stronger regularization, leading to larger feature coefficients.

6406532041194. ✖ The alpha value has no impact on the regularization strength in 'RidgeClassifier'.

6406532041195. ✔ Cross-validation can be used to find the optimal alpha value.

6406532041196. ✖ 'RidgeClassifier' automatically determines the alpha value based on the data distribution.

Question Number : 266 Question Id : 640653611198 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

You're applying the K-means clustering algorithm to a dataset with a large number of data points. You decide to use the K-means++ initialization method for better convergence and clustering quality. What is the primary advantage of using K-means ++ initialization over random initialization?

Options :

6406532041240. ✖ K-means++ initialization guarantees finding the global optimum of the clustering solution.

6406532041241. ✖ K-means++ initialization speeds up the convergence of the algorithm.

6406532041242. ✖ K-means++ initialization reduces the number of clusters needed for accurate

results.

6406532041243. ✔ K-means++ initialization helps avoid local optima during clustering.

Question Number : 267 Question Id : 640653611199 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 you are working on a classification task involving handwritten digit recognition using scikit-learn's MLPClassifier. You have a large dataset of digit images and want to train a neural network for this task. However, you're concerned about overfitting and want to make sure the training process stops at the right time to avoid this issue. In the context of training an MLPClassifier for handwritten digit recognition,how does the early stopping parameter help prevent overfitting?

Options :

6406532041244. ✖ It terminates the training process as soon as the specified number of hidden layers are trained.

6406532041245. ✖ It automatically decreases the learning rate during training to slow down the optimization process.

6406532041246. ✔ It pauses the training when the model's performance on a validation set stops improving.

6406532041247. ✖ It enforces a maximum limit on the number of epochs during the training process.

Question Number : 268 Question Id : 640653611201 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

You're training a multi-layer perceptron (MLP) classifier on a dataset for a multi-class classification task. The following code snippet demonstrates the process using the 'MLPClassifier' from scikit-learn:

```
from sklearn.neural_network import MLPClassifier
import numpy as np

# Simulated data (features: X, target: y)
X = np.array([[1, 2], [3, 4], [5, 6]])
y = np.array([0, 1, 2])

# Create an MLPClassifier with a specified maximum number of iterations
model = MLPClassifier(max_iter=100, random_state=42)

# Fit the model on the training data
model.fit(X, y)

# Get the number of iterations used in training
iterations_used = model.n_iter_
```

What does the parameter max_iter=100 in the MLPClassifier signify?

Options :

6406532041252. ✖ It specifies the maximum number of features to be used during training.

6406532041253. ✖ It determines the maximum number of neurons in the hidden layers.

6406532041254. ✔ It sets the maximum number of iterations for the training process.

6406532041255. ✖ It controls the maximum number of epochs for the training process.

Question Number : 269 Question Id : 640653611202 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

You're working on a multi-class classification task using the 'MLPClassifier' from scikit-learn. The dataset contains features with varying scales, and you're considering whether to scale the features

before training the model. How might feature scaling impact the prediction accuracy of the 'MLPClassifier'?

Options :

6406532041256. ✖ Feature scaling has no effect on the accuracy of 'MLPClassifier' predictions.

6406532041257. ✖ Scaling features is only relevant if the dataset contains categorical features.

6406532041258. ✖ Feature scaling can lead to overfitting and decreased prediction accuracy.

6406532041259. ✔ Scaling features can help the model converge faster and improve prediction accuracy.

Sub-Section Number :	6
Sub-Section Id :	64065388083
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 270 Question Id : 640653611179 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

For LinearRegression with equation $Y = W_0X_0 + W_1X_1 + W_2X_2 + \epsilon$ and given that $W_2 = \frac{6}{5} * W_1$ and $\epsilon = 0$. What will be the value of the W_1 for the below code? (Write 3 digits after the decimal)

Where X_1 and X_2 are column1 and column2 respectively and W_1 and W_2 are weights associated to the respected columns while fitting

```
from sklearn.linear_model import LinearRegression
X_train = [[0,0], [2,2.4], [4,4.8], [6,7.2]]
y_train = [0,1,2,3]
reg = LinearRegression(fit_intercept=False) #intercept = 0
reg.fit(X_train,y_train)
print(reg.coef_[0])
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.2039 to 0.2052

Question Number : 271 Question Id : 640653611180 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 confusion matrix given below. What is the recall score for the label (class) 2? (upto 3 digits after the decimal)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.283 to 0.291

Question Number : 272 Question Id : 640653611186 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 output of the following code?

```
from sklearn.neighbors import KNeighborsClassifier
X = [[2,3], [5,6], [10, 11], [15,16], [20,21]]
y = [2, 2, 0, 1, 0]
knn = KNeighborsClassifier (n_neighbors=3, metric='euclidean',weights='uniform')
knn.fit (X, y)
print (knn.predict ([ [8,9]]))
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sub-Section Number :	7
Sub-Section Id :	64065388084
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 273 Question Id : 640653611181 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 code snippet that employs LogisticRegression from sklearn on a feature matrix X and corresponding label vector y:

```
from sklearn.linear_model import LogisticRegression

model = LogisticRegression(C=0.8, multi_class='multinomial', max_iter=1000)
model.fit(X, y)
```

Given the code above, which of the following statements is true?

Options :

6406532041177. ✖ The logistic regression model is set up for binary classification.

6406532041178. ✖ The model does not use any regularization because the parameter C is set.

6406532041179. ✔ The model has been specifically set up to handle a multi-class classification problem using a softmax regression approach.

6406532041180. ✔ The model will iterate over the data a maximum of 1000 times, irrespective of convergence.

Sub-Section Number :	8
Sub-Section Id :	64065388085
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 274 Question Id : 640653611187 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 estimators can implement the `partial_fit` method ?

Options :

6406532041198. ✔ MultinomialNB

6406532041199. ✖ RandomForestRegressor

6406532041200. ✔ MiniBatchKMeans

6406532041201. ✖ LogisticRegressor

Question Number : 275 Question Id : 640653611188 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

Fill in the missing parameter value in the following estimator that can be used to classify the data

```
from sklearn.svm import SVC
clf = SVC(kernel = ______)
clf.fit(X, y)
```

Options :

6406532041202. ✔ 'poly',

6406532041203. ✖ 'lasso'

6406532041204. ✖ 'scale'

6406532041205. ✔ 'sigmoid'

Sub-Section Number :	9
Sub-Section Id :	64065388086
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 276 Question Id : 640653611192 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 snippet where two decision trees are trained on the same dataset:

```
from sklearn.tree import DecisionTreeClassifier
from sklearn.datasets import load_digits

data = load_digits()
X, y = data.data, data.target

tree_1 = DecisionTreeClassifier(splitter='best', max_leaf_nodes=5)
tree_1.fit(X, y)

tree_2 = DecisionTreeClassifier(splitter='random', max_leaf_nodes=None)
tree_2.fit(X, y)
```

Given the configurations of tree_1 and tree_2, which decision tree is more likely to overfit the training data?

Options :

6406532041218. ✖ tree_1

6406532041219. ✔ tree_2

Question Number : 277 Question Id : 640653611193 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 code using BaggingClassifier with KNeighborsClassifier as the base estimator:

```
from sklearn.ensemble import BaggingClassifier
from sklearn.neighbors import KNeighborsClassifier

base_knn = KNeighborsClassifier(n_neighbors=3, weights='distance')

bag_clf = BaggingClassifier(base_knn, n_estimators=30, max_samples=100,
                            bootstrap=False, random_state=42)
```

Which of the following statements is correct?

Options :

6406532041220. ✖ The ensemble uses bootstrapping to generate samples for each base classifier.

6406532041221. ✔ Each base KNN classifier will be trained on a random subset of exactly 100 samples.

6406532041222. ✖ Due to `weights='distance'`, each base KNN classifier will treat all neighbors equally in terms of voting power.

6406532041223. ✖ The ensemble will consist of 3 base KNN classifiers.

Question Number : 278 Question Id : 640653611194 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

Suppose you are training a `RandomForestClassifier` from `sklearn` for a binary classification problem. You're particularly interested in reducing overfitting and enhancing the model's generalization to unseen data. Which combination of parameter settings would be the MOST effective in achieving this goal?

Options :

6406532041224. ✖ Setting `n_estimators` to a high value (e.g., 1000) and `max_depth` to None.

6406532041225. ✖ Using `criterion='gini'`, setting `min_samples_split` to 2, and `min_samples_leaf` to 1.

6406532041226. ✖ Using `criterion='entropy'` with `oob_score=True` and `max_samples=0.5`.

6406532041227. ✔ Setting `max_features` to 'sqrt', `bootstrap` to True, and increasing the value of `min_samples_leaf`.

Question Number : 279 Question Id : 640653611195 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 training a classification model using the `DecisionTreeClassifier` from `sklearn.tree`. Which of the following statements about its parameters and attributes is MOST accurate?

Options :

6406532041228. ✔ The `ccp_alpha` parameter determines the complexity of the tree, with higher values resulting in simpler trees. The `tree_.node_count` attribute gives the total number of nodes in the tree.

6406532041229. ✖ If `splitter='best'`, the classifier guarantees that the resulting tree will have the highest possible accuracy on the training set.

6406532041230. ✖ The `criterion='entropy'` parameter means that the decision tree will split nodes to maximize information gain, while the `tree_.impurity` attribute retrieves the impurity of the root node.

6406532041231. ✖ If the `class_weight` parameter is set to 'balanced', the decision tree will always have balanced classes in its leaf nodes.

Question Number : 280 Question Id : 640653611196 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

You're aiming to optimize an AdaBoostClassifier that uses a DecisionTreeClassifier as its base estimator. You decide to use GridSearchCV from sklearn.model selection to search for the best hyperparameters. In the given parameter grids for GridSearchCV, parameters n_estimator and learning_rate are meant for the 'AdaBoostClassifier', while the others are for the 'DecisionTreeClassifier'. Which of the following sets of parameters is the MOST comprehensive in testing the capabilities of both the 'AdaBoostClassifier' and its base estimator?

Options :

6406532041232. ✖

```
{'AdaBoostClassifier_n_estimators': [50, 100, 150],
    ''AdaBoostClassifier_learning_rate': [0.01, 0.1, 1]}
```

6406532041233. ✖

```
{'max_depth': [1, 2, 3],
    'n_estimators': [50, 100],
    'learning_rate': [0.01, 0.1, 1]}
```

6406532041234. ✖

```
{'DecisionTreeClassifier_criterion': ['gini', 'entropy'],
    'DecisionTreeClassifier_splitter': ['best', 'random'],
    'n_estimators': [50, 100],
    'learning_rate': [0.1, 1]}
```

6406532041235. ✔

```
{'base_estimator__max_depth': [1, 2, 3],
    'base_estimator__criterion': ['gini', 'entropy'],
    'n_estimators': [30, 50],
    'learning_rate': [0.05, 0.1, 0.5]}
```

Question Number : 281 Question Id : 640653611197 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

You're evaluating the results of a clustering algorithm and you calculate the silhouette score for the clustering solution. The obtained silhouette score is -0.15. What can you infer from this silhouette score?

Options :

6406532041236. ✖ The clustering solution has well-defined and distinct clusters.

6406532041237. ✖ The silhouette score indicates a random distribution of data points across clusters.

6406532041238. ✖ The data points are equally spaced across clusters.

6406532041239. ✔ The clustering solution is flawed and the data points might be assigned to incorrect clusters.

PDSA

Section Id :	64065341314
Section Number :	11
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	27
Number of Questions to be attempted :	27
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
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 :	64065388087
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 282 Question Id : 640653611203 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 :

6406532041260. ✔ YES

6406532041261. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065388088
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 283 Question Id : 640653611204 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

Let $g(n) = 12n^3 + 102n$ and $f(n) = 6n^3 \log n + 306n$. Which of the following is **true**?

Options :

6406532041262. ✖ $g(n)$ is $O(f(n))$ and $f(n)$ is $O(g(n))$

6406532041263. ✖ $f(n)$ is $O(g(n))$ but $g(n)$ is not $O(f(n))$

6406532041264. ✔ $g(n)$ is $O(f(n))$ but $f(n)$ is not $O(g(n))$

6406532041265. ✖ $g(n)$ is not $O(f(n))$ and $f(n)$ is not $O(g(n))$

Question Number : 284 Question Id : 640653611207 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

```
class Node:
    def __init__(self,data):
        self.data = data
        self.next = None
```

You are given a linked list where each node of the linked list is an object of class `Node`. The linked list has a `head` pointer that points to the first node of the linked list and a `tail` pointer that points to the last element of the linked list, as shown in the figure.

Suppose you want to implement `Push` and `Pop` operations of Stack in O(1) time using given linked list.

Which of the following option is correct to achieve both operation in O(1) time?

Options :

6406532041274. ✔ Both operation `Push` and `Pop` must be implemented from `head` side.

6406532041275. ✖ Both operation `Push` and `Pop` must be implemented from `tail` side.

6406532041276. ✖ Both operation `Push` and `Pop` can be implemented from any one side.

6406532041277. ✖ Can't achieve O(1) time for both operation from any one side

Question Number : 285 Question Id : 640653611211 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

There are 11 courses offered in a program. Few courses require other courses to be completed as a prerequisite. The below table gives the prerequisite of all courses. All prerequisites of a course must be completed before opting for that course in any semester. There is no constraint on how many courses a student can take in a semester.

Course	Prerequisite
Course 1	Course 8
Course 2	Course 8
Course 3	Course 1, Course 2, Course 11
Course 4	Course 1, Course 3
Course 5	Course 9
Course 6	Course 7
Course 7	Course 4, Course 2
Course 8	None
Course 9	Course 4
Course 10	None
Course 11	Course 10

Select the order of courses that can be opted by a student if he/she wishes to complete all 11

courses in minimum number of semester. Parenthesis represents all courses opted in the same semester.

Options :

6406532041287. ✖ $(8, 10) \rightarrow (9, 1, 2) \rightarrow (11, 3) \rightarrow (4) \rightarrow (7, 5, 6)$

6406532041288. ✖ $(8) \rightarrow (1, 2) \rightarrow (3) \rightarrow (10, 4) \rightarrow (9, 7, 11) \rightarrow (5, 6)$

6406532041289. ✔ $(8, 10) \rightarrow (1, 2, 11) \rightarrow (3) \rightarrow (4) \rightarrow (9, 7) \rightarrow (5, 6)$

6406532041290. ✖ $(8) \rightarrow (10, 1, 2) \rightarrow (11) \rightarrow (3) \rightarrow (4) \rightarrow (9, 7) \rightarrow (5, 6)$

Question Number : 286 Question Id : 640653611213 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 directed weighted graph on which the Dijkstra algorithm is run with vertex A as the source vertex.

Which of the following is 5th visited marked vertex by Dijkstra's algorithm? Consider that A is 1st visited marked vertex by Dijkstra's algorithm.

Options :

6406532041292. ✖ B

6406532041293. ✔ C

6406532041294. ✖ D

6406532041295. ✖ E

6406532041296. ✖ F

Question Number : 287 Question Id : 640653611216 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 pre-order traversal of a binary search tree with integer values produces the following sequence: 15, 10, 5, 7, 12, 14, 25, 18, 20. What is the value of the right child of the root of the tree?

Options :

6406532041303. ✖ 10

6406532041304. ✖ 14

6406532041305. ✖ 18

6406532041306. ✖ 20

6406532041307. ✔ 25

Question Number : 288 Question Id : 640653611220 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

In a list `L`, two elements `L[i]` and `L[j]` form a inversion if `L[i] > L[j]` and `i < j`. The number of inversions in the list `L = [1, 5, 4, 2, 6, 3]` is __.

Options :

6406532041311. ✖ 3

6406532041312. ✖ 4

6406532041313. ✖ 5

6406532041314. ✔ 6

Question Number : 289 Question Id : 640653611221 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 recurrence relation for an algorithm:-

$T(n) = 4T(n/2) + O(n)$

Base Case:- $T(1) = 1$

The complexity of this algorithm is__ .

Options :

6406532041315. ✖ $O(n)$

6406532041316. ✖ $O(\log^2 n)$

6406532041317. ✖ $O(n \log n)$

6406532041318. ✔ $O(n^2)$

Question Number : 290 Question Id : 640653611223 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

Let M_1, M_2, M_3, M_4 be 4 matrices of dimensions $10 \times 100, 100 \times 20, 20 \times 5, 5 \times 80$ respectively.

Which of the following order gives minimum number of scalar multiplications to multiply M_1, M_2, M_3, M_4 using basic matrix multiplication ?

Options :

6406532041320. ✖ $M_1(M_2(M_3M_4))$

6406532041321. ✖ $M_1((M_2M_3)M_4)$

6406532041322. ✔ $(M_1(M_2M_3))M_4$

6406532041323. ✖ $((M_1M_2)M_3)M_4$

6406532041324. ✖ $(M_1M_2)(M_3M_4)$

Question Number : 291 Question Id : 640653611224 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

What can be the maximum depth of the Trie data structure with n strings and m as the maximum string length among all strings? Consider that root is at depth 1 and ignore terminate node `$` for depth.

Options :

6406532041325. ✖ $log\ n$

6406532041326. ✖ $log\ m$

6406532041327. ✖ n

6406532041328. ✔ m

Question Number : 292 Question Id : 640653611225 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

Which of the following option represents the fail function (or prefix function) for pattern '**onion**' in the Knuth-Morris-Pratt (KMP) algorithm?

Options :

6406532041329. ✔ [0, 0, 0, 1, 2]

6406532041330. ✖ [0, 0, 0, 0, 1]

6406532041331. ✖ [0, 0, 0, 1, 1]

6406532041332. ✖ [0, 0, 1, 1, 2]

Sub-Section Number :	3
Sub-Section Id :	64065388089
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 293 Question Id : 640653611205 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 sorting algorithms will have the same time complexity irrespective of the sequence of elements in the input?

Options :

6406532041266. ✔ Selection Sort

6406532041267. ✔ Merge Sort

6406532041268. ✖ Quick Sort

6406532041269. ✖ Insertion Sort

Sub-Section Number :	4
Sub-Section Id :	64065388090
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 294 Question Id : 640653611206 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

```
def insertionsort(L):
    n = len(L)
    if n < 1:
        return(L)
    for i in range(n):
        j = i
        while(j > 0 and L[j] < L[j - 1]):
            (L[j], L[j - 1]) = (L[j - 1], L[j])
            j = j - 1
    return(L)
```

Which of the following statement(s) is/are correct with regard to the given insertion sort?

Options :

6406532041270.

✖ It is stable and it does not sort in-place

6406532041271. ✖ It is unstable and it sorts in-place

6406532041272. ✔ It is stable and it sorts in-place

6406532041273. ✔ After `m` iterations of the for-loop, the first `m` elements in the list are in sorted order

Question Number : 295 Question Id : 640653611208 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

A hash table of size 10 uses open addressing with hash function `h(k) = k mod 10`, and linear probing. After inserting 6 values into an empty hash table, the table is as shown below.

Index	Data
0	
1	
2	72
3	23
4	12
5	54
6	36
7	83
8	
9	

Which one of the following option(s) gives a possible order in which the key values could have been inserted in the table?

Options :

6406532041278. ✔ 23, 36, 72, 12, 54, 83

6406532041279. ✖ 36, 72, 23, 54, 12, 83

6406532041280. ✖ 36, 23, 72, 12, 83, 54

6406532041281. ✔ 36, 23, 72, 12, 54, 83

Question Number : 296 Question Id : 640653611214 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 max-heap [40, 20, 30, 15, 18, 25, 14, 10, 12, 11, 13] built by repeatedly inserting values into an empty heap. Which of the following could not have been the last element inserted

into this heap?

Options :

6406532041297. ✖ 40

6406532041298. ✖ 18

6406532041299. ✔ 14

6406532041300. ✖ 20

6406532041301. ✔ 15

Sub-Section Number :	5
Sub-Section Id :	64065388091
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 297 Question Id : 640653611209 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

Select the most appropriate data structure for the following applications.

Application	Data Structure
1. To implement ticket reservation waiting list.	a. Array
2. Matrix operations	b. Graph
3. Evaluating an expression	c. Stack
4. Google map's algorithm to find a route between locations A and B	d. Queue

Options :

6406532041282. ✖ 1-c, 2-a, 3-d, 4-b

6406532041283. ✖ 1-d, 2-b, 3-c, 4-a

6406532041284. ✖ 1-d, 2-a, 3-b, 4-c

6406532041285. ✔ 1-d, 2-a, 3-c, 4-b

Question Number : 298 Question Id : 640653611229 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 α be an NP-Complete problem, β and γ be two other problems. β is polynomial time reducible to α and α is polynomial time reducible to γ.
On the basis of the above information only, what can be inferred ?

Options :

6406532041336. ✖ β belongs to NP hard class

6406532041337. ✖ β belongs to NP complete class

6406532041338. ✔ γ belongs to NP hard class

6406532041339. ✖ γ belongs to NP complete class

Sub-Section Number :	6
Sub-Section Id :	64065388092
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 299 Question Id : 640653611210 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 **undirected connected graph** *G* with 27 edges. What is the minimum number of vertices in graph *G*?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

8

Question Number : 300 Question Id : 640653611212 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 complete undirected graph with vertex set {0, 1, 2, 3, 4}. Every entry `w[i][j]` where `i` $\neq$ `j` in the matrix `w` below is the weight of the edge from vertex `i` to vertex `j`.

$$W = \begin{bmatrix} 0 & 6 & 8 & 3 & 4 \\ 6 & 0 & 12 & 4 & 2 \\ 8 & 12 & 0 & 1 & 3 \\ 3 & 4 & 1 & 0 & 2 \\ 4 & 2 & 3 & 2 & 0 \end{bmatrix}$$

What is the minimum possible weight of a spanning tree `T` in this graph?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

8

Question Number : 301 Question Id : 640653611215 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 binary tree T, if the number of nodes with two child nodes are 16, then the number of leaf nodes are ___

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

17

Question Number : 302 Question Id : 640653611217 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

If the number of nodes in an AVL tree is 72, what will be the minimum height of the AVL tree?
Assume that the height of a single node AVL tree is 1.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

7

Question Number : 303 Question Id : 640653611218 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

Let you have a single positive integer `x`, which is initially equal to 1. You are given a positive integer `n` where `n > x`.

In each step, you can either increment `x` by 1 or double `x`. Your goal is to produce a target value `n` in minimum number of steps. For example, you can produce the integer n = 10 in four steps as follows:

$$1(+1) \rightarrow 2(*2) \rightarrow 4(+1) \rightarrow 5(*2) \rightarrow 10$$

What is the minimum number of steps required if n = 1025 ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

11

Question Number : 304 Question Id : 640653611219 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

For an activity X, X_s is the starting time and X_e is the ending time. The following are the starting time and ending time of activities A, B, C, D, E, F, G and H given in chronological order.

$$A_s,\ B_s,\ C_s,\ A_e,\ D_s,\ E_s,\ C_e,\ B_e,\ F_s,\ D_e,\ G_s,\ E_e,\ H_s,\ F_e,\ G_e,\ H_e$$

What is the minimum number of rooms required to schedule the activities in a set of rooms such that there are no conflicts?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 305 Question Id : 640653611222 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

Let s1 = `pqrqspq` and s2 = `qsrpqp` be two sequences. The longest common subsequence of s1 and s2 is of length ___

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 306 Question Id : 640653611226 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 Rabin-Karp algorithm using modulo arithmetic to match the pattern in base 10.Taking modulo q = 11, how many false positives matches does the Rabin-Karp matcher encounter while searching pattern `36` in the text `3147591653589363` ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 307 Question Id : 640653611227 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 network:

Consider the network given above with source s and sink t, with the numbers on the edges denoting maximum capacity across a particular edge. The value of the maximum flow in the given network is__.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

23

Sub-Section Number :	7
Sub-Section Id :	64065388093
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 308 Question Id : 640653611228 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 G be a simple graph. The size of the minimum vertex cover of G is 12 and the size of the maximum independent set of G is 16. What are the number of vertices in graph G?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

28

DBMS

Section Id :	64065341315
Section Number :	12
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
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 : 64065388094

Question Shuffling Allowed : No

Is Section Default? : null

Question Number : 309 Question Id : 640653611230 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 :

6406532041340. ✔ YES

6406532041341. ✖ NO

Sub-Section Number : 2

Sub-Section Id : 64065388095

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 310 Question Id : 640653611231 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 table Scores given below.

Player	Country	Runs
Kohli	India	86
Dhoni	India	43
Pele	Brazil	89
Gautam	India	100
Lato	Poland	78
Rahn	Germany	55
Muller	Germany	98
Rohit	India	30
Klose	Germany	95
Hardik	India	67

Figure 1: Scores

The following query is executed on the Scores table.

```
SELECT ta.Player FROM Scores AS ta
WHERE ta.Runs > ALL ( SELECT tb.Runs
                      FROM Scores AS tb
                      WHERE tb.Country = 'Brazil' AND tb.Runs > 90 )
  AND ta.Runs > ANY (SELECT tc.Runs
                      FROM Scores AS tc
                      WHERE tc.Country = 'India')
```

How many tuples are returned by the above SQL query?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

9

Question Number : 311 Question Id : 640653611239 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 log records at an instance of time and the statements given below.

Table 2: Log records

$< T_0$ start $>$
$< T_0, A, 1000, 3000 >$
$< T_0, B, 500, 300 >$
$< T_1$ start $>$
$< T_1, C, 790, 700 >$
$< T_0, B, 300, 200 >$
$< Commit\ T_1 >$
$< T_2$ start $>$
$< Checkpoint\ L >$
$< T_2, D, 5000, 4500 >$
System crash

Identify the number of correct statements:

- Undo T_0
- Redo T_1
- The value of A is updated to 3000
- The value of B is restored to 500
- The value of C is restored to 790
- The value of D is restored to 5000

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Sub-Section Number :	3
Sub-Section Id :	64065388096
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 312 Question Id : 640653611232 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

If a relation R is in Fourth Normal form then, which of the following holds?

Options :

6406532041343. ✔ No partial dependency

6406532041344. ✔ No trivial dependency

6406532041345. ✖ More than one multivalued dependency

6406532041346. ✖ None of these

Question Number : 313 Question Id : 640653611248 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

Choose the correct options.

Options :

6406532041397. ✔ The maximum number of nodes at level h of a binary tree is 2^h.

6406532041398. ✖ A tree with n nodes has $n+1$ edges.

6406532041399. ✔ A tree with n nodes has $n-1$ edges.

6406532041400. ✖ The maximum number of nodes at level h of a binary tree is $2^h - 1$.

Sub-Section Number :	4
Sub-Section Id :	64065388097
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 314 Question Id : 640653611233 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 Schedule given below:

T_1	T_2	T_3
		R(D)
	R(A)	
R(C)		
	W(A)	
	R(B)	
	R(C)	
		R(E)
R(A)		
	R(D)	
W(A)		
		W(B)
R(E)		

Which of the following statements is/are correct about the given Schedule?

Options :

6406532041347. ✔ A precedence graph of the schedule is acyclic

6406532041348. ✖ The given schedule is not view serializable

6406532041349. ✖ The given schedule is view serializable but not conflict serializable

6406532041350. ✔ The given schedule is view serializable and conflict serializable

Question Number : 315 Question Id : 640653611236 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 instance of a relation R given in Table 1.
Which among the following functional dependencies set can be inferred from the given information?

A	B	C	D
a1	b1	c2	d4
a2	b1	c6	d3
a1	b2	c2	d3
a3	b4	c7	d3
a3	b1	c7	d1
a4	b2	c6	d4
a1	b7	c2	d2
a3	b4	c7	d3

Table 1: Relation R

Options :

6406532041359. ✖ $\{ A \rightarrow C, C \rightarrow AB, AB \rightarrow D, CD \rightarrow AB \}$

6406532041360. ✔ $\{ A \rightarrow C, CD \rightarrow B, AB \rightarrow D, CD \rightarrow A \}$

6406532041361. ✔ $\{ AB \rightarrow C, CD \rightarrow B, BC \rightarrow D, CD \rightarrow A \}$

6406532041362. ✖ $\{ AB \rightarrow C, CD \rightarrow B, C \rightarrow D, BD \rightarrow AC \}$

Question Number : 316 Question Id : 640653611237 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 schema R(M,N,P,Q,S,T) and the set of functional dependency set, F = $\{N \rightarrow Q, S \rightarrow T, Q \rightarrow S, Q \rightarrow N, T \rightarrow NQ\}$.
This schema is decomposed into two relations R1 (M,N,Q,S) and R2(N,P,Q,T).

Consider the following statements given below regarding the decomposition of R1 and R2. Which of the following statements is/are true?

Options :

6406532041363. ✔ The decomposition of **R** into **R1** and **R2** is dependency preserving.

6406532041364. ✖ The decomposition of **R** into **R1** and **R2** is lossless.

6406532041365. ✔ The schema **R1** is in 3NF.

6406532041366. ✔ The schema **R2** is in 2NF.

Sub-Section Number :	5
Sub-Section Id :	64065388098
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 317 Question Id : 640653611234 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 a relation $\mathbf{R}(A, B, C, D, E)$ to be in BCNF, which of the following functional dependencies sets holds true?

Options :

6406532041351. ✖ $\{AC \rightarrow B, BC \rightarrow D, D \rightarrow E\}$

6406532041352. ✔ $\{A \rightarrow B, B \rightarrow CD, D \rightarrow E, E \rightarrow A\}$

6406532041353. ✔ $\{ABC \rightarrow DE\}$

6406532041354. ✖ $\{A \rightarrow D, B \rightarrow CD, E \rightarrow A\}$

Sub-Section Number :	6
Sub-Section Id :	64065388099
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 318 Question Id : 640653611235 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 two functional dependencies **F** and **G**.

$$F : \{ A \rightarrow B, AB \rightarrow C, D \rightarrow AC, D \rightarrow E \}$$
$$G : \{ A \rightarrow BC, D \rightarrow AE \}$$

Which of the following is true about **F** and **G**?

Options :

6406532041355. ✖ F covers G but G does not cover F

6406532041356. ✖ G covers F but F does not cover G

6406532041357. ✔ F and G are functionally equivalent

6406532041358. ✖ Neither F covers G nor G cover F

Question Number : 319 Question Id : 640653611238 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

Choose the correct output obtained on running the given SQL statements on Table **Employee**.

EID	EName
E01	Arthur
E02	Raina
E03	Meena
E04	Arthur
E06	Joey

Table **Employee**

```
SQL> SAVEPOINT SP1;
SQL> UPDATE Employee SET EName='Jainie'
     WHERE EID='E06';
SQL> COMMIT;
SQL> SAVEPOINT SP2;
SQL> DELETE FROM Employee WHERE EID='E02';
SQL> SAVEPOINT SP3;
SQL> UPDATE Employee SET EName='Raina'
     WHERE EID='E04';
SQL> ROLLBACK TO SP1;
```

Options :

6406532041367. ✔

EID	EName
E01	Arthur
E02	Raina
E03	Meena
E04	Arthur
E06	Jainie

6406532041368. ✖

EID	EName
E01	Arthur
E03	Meena
E04	Arthur
E06	Jainie

6406532041369. ✖

EID	EName
E01	Arthur
E03	Meena
E04	Raina
E06	Jainie

6406532041370. ✖

EID	EName
E01	Arthur
E02	Raina
E03	Meena
E04	Arthur
E06	Joey

Question Number : 320 Question Id : 640653611244 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 a relation **Order**(*order_no*, *product_id*, *quantity*, *date*). The attribute *product_id* consists of 6 distinct values. A bitmap index is created on the attribute *product_id*, there are 1200 records in that relation. Find the size of the bitmap index file in the **Order** relation.

Options :

6406532041384. ✖ 7200 Bytes

6406532041385. ✔ 900 Bytes

6406532041386. ✖ 900 bits

6406532041387. ✖ 1200 Bytes

Question Number : 321 Question Id : 640653611247 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 two relations as shown below:

Roll_no	name	sname
1	Ram	DBMS
2	Rakesh	PDSA
1	Ram	PDSA
4	Pranav	DBMS
2	Rakesh	DBMS

Table 3: **student_course**

sname
DBMS
PDSA

Table 4: **course**

What will the output of the operation **students_course ÷ course** be?

Options :

6406532041393. ✖

Roll_no	name
1	Ram
2	Rakesh
4	Pranav

6406532041394. ✔

Roll_no	name
1	Ram
2	Rakesh

6406532041395. ✖

Roll_no	name
4	Pranav

6406532041396. ✖

Roll_no	name
2	Rakesh

Sub-Section Number : 7

Sub-Section Id :	64065388100
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653611240 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 : (322 to 323)

Question Label : Comprehension

Consider the following RAID architecture to answer the given subquestions.

Figure 2: RAID 5 System

Sub questions

Question Number : 322 Question Id : 640653611241 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

A RAID-5 storage system with a similar arrangement of parity blocks as described in Figure 2 is used for storing the following data :

Disk 1	Disk 2	Disk 3	Disk 4	
0100	0101	0101	XXXX	Block 1 row
1000	0101	1101	XXXX	Block 2 row
0100	1110	1111	XXXX	Block 3 row
0010	0010	0101	XXXX	Block 4 row

Figure 3: RAID 5 DATA

According to Figure 3 disk-4 has crashed. What data is present in block-3 of disk-4?

Note: Assume block size is 4 bits

Options :

6406532041372. ✖ 1101

6406532041373. ✖ 1110

6406532041374. ✖ 1010

6406532041375. ✔ 0101

Question Number : 323 Question Id : 640653611242 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 data given in previous question. Assume that the binary values represent 8-bit ASCII code. What is the data word present inside this RAID-5 storage system?

The ASCII code for A to Z is given below:

Character	A	B	C	D	E	F	G	H	I
ASCII Code	65	66	67	68	69	70	71	72	73

Character	J	K	L	M	N	O	P	Q	R
ASCII Code	74	75	76	77	78	79	80	81	82

Character	S	T	U	V	W	X	Y	Z
ASCII Code	83	84	85	86	87	88	89	90

Options :

6406532041376. ✖ EMPIRE

6406532041377. ✔ EXPORT

6406532041378. ✖ EXCUSE

6406532041379. ✖ EXPECT

Sub-Section Number : 8

Sub-Section Id : 64065388101

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 324 Question Id : 640653611243 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 given schedules S_1 and S_2 given below and the following assumptions :

$W_i(a)$ means that transaction T_i is performing a write operation on data item (a).

$R_i(a)$ means that transaction T_i is performing a read operation on data item (a).

Com_i means that transaction T_i has committed.

S_1 : $R_1(A), R_3(C), W_2(B), R_2(A), W_1(B), W_3(C), Com_1, Com_2, Com_3$

S_2 : $R_1(A), R_2(B), W_1(C), Com_1, R_3(B), R_3(C), W_2(B), W_3(A), Com_2, Com_3$

Which of the above schedule can be strict two-phase lockable?

Options :

6406532041380. ✖ Only S_1

6406532041381. ✔ Only S_2

6406532041382. ✖ Both S_1 and S_2

6406532041383. ✖ None of S_1 and S_2

Question Number : 325 Question Id : 640653611245 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

Insert the following key values: 5, 9, 6, 11, 12, 2, 7, 8, 10, 4, 3,1 in the given order into an empty B-tree of order 3. Which key value(s) is(are) on the root node of the B-tree?

Options :

6406532041388. ✖ 4,6

6406532041389. ✔ 4,8

6406532041390. ✖ 8

6406532041391. ✖ 11

Sub-Section Number :	9
Sub-Section Id :	64065388102
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 326 Question Id : 640653611246 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 a relation schema **student**(*roll_no*, *name*, *mobile_no*)
Consider a B^+-tree index build on the *roll_no* attribute, assuming **student** relation has 60000 records, and the order of the B^+-tree is 30. Find out the maximum number of nodes to be accessed to search a key from the given B^+-tree.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Sub-Section Number :	10
Sub-Section Id :	64065388103
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653611249 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 : (327 to 328)

Question Label : Comprehension

Consider the tables: **vendor** and **component** as shown in Figure 4. Table **component** has attribute *vendor_num* which is a foreign key and refers to table **vendor**(*vendor_num*).

Using the given information answer the given subquestions:

vendor

vendor_num	vendor_name	vendor_location
10	YADAV	CHENNAI
11	AKHTAR	KOLKATA
12	PRASAD	TRICHY
13	SHARMA	BENGALURU

component

item_num	name	cost	vendor_num
1011	RAM	2500.00	11
1012	CPU	8000.50	12
1013	MONITOR	5000.00	10
1014	KEYBOARD	500.50	13
1013	MONITOR	2250.00	13
1014	KEYBOARD	450.50	11
1011	RAM	3300.00	10

Figure 4: Tables **vendor** and **component**

Sub questions

Question Number : 327 Question Id : 640653611250 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

Identify the possible **Primary Key** for table **component**.

Options :

6406532041401. ✖ item_num

6406532041402. ✖ (item_num, name)

6406532041403. ✔ (item_num, vendor_num)

6406532041404. ✖ vendor_num

Question Number : 328 Question Id : 640653611251 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

We asked ChatGPT to write a SQL query for a particular problem statement and the following are the two suggestions given by ChatGPT:

Suggestion 1:

```
SELECT v.vendor_name
FROM vendor v
JOIN component c ON v.vendor_num = c.vendor_num
JOIN component m ON m.name = 'MONITOR' AND m.vendor_num = 13
WHERE c.cost < m.cost/2;
```

Suggestion 2:

```
SELECT v.vendor_name
FROM vendor v
JOIN component c ON v.vendor_num = c.vendor_num
JOIN (____________________________
) m ON c.cost < m.half_monitor_cost;
```

Given that both suggestions will give the same output. Fill in the blanks with the required sub-query. Choose the correct option.

Options :

6406532041405. ✖
```
SELECT item_num, cost/2 AS half_monitor_cost
FROM component NATURAL JOIN vendor
WHERE name = 'MONITOR' AND vendor_id = 13
GROUP BY item_num
```

6406532041406. ✖
```
(SELECT cost/2
FROM component
WHERE name = 'MONITOR' AND vendor_id = 13) as half_monitor_cost
```

6406532041407. ✖
```
(SELECT item_num, cost/2
FROM component NATURAL JOIN vendor
WHERE name = 'MONITOR' AND vendor_id = 13
) AS half_monitor_cost
```

6406532041408. ✔

```
SELECT cost/2 AS half_monitor_cost
FROM component
WHERE name = 'MONITOR' AND vendor_id = 13
```

Sub-Section Number : 11

Sub-Section Id : 64065388104

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653611252 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 : (329 to 330)

Question Label : Comprehension

Consider the tables 5 and 6 and answer the given subquestions.

Table 5: Relation **team**

team_id	name	ranking	country
Cric-1	BCCI	1	India
Cric-2	ACB	3	Australia
Cric-3	PCB	10	Pakistan
Cric-4	NCB	9	Nepal
Cric-5	ECB	4	England

Table 6: Relation **players**

team_id	player_id	name	ranking
Cric-1	BCCI-11	Virat	1
Cric-1	BCCI-23	Rohit	3
Cric-3	PCB-22	Azam	2
Cric-2	ACB-12	David	6
Cric-2	ACB-29	Smith	3
Cric-5	ECB-88	Cris	4
Cric-5	ECB-82	Ben	1

Sub questions

Question Number : 329 Question Id : 640653611253 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

Consider the SQL query given below:

```
SELECT *
FROM players RIGHT OUTER JOIN team
ON players.team_id = team.team_id;
```

How many rows will be returned by the query?

Options :

6406532041409. ✖ 7

6406532041410. ✖ 5

6406532041411. ✖ 9

6406532041412. ✔ 8

Question Number : 330 Question Id : 640653611254 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

Using the SQL query shown below, a view named **best3** is created.

```
CREATE VIEW best3 AS
SELECT player_id, name
FROM players
WHERE ranking < 4;
```

Which among the following SQL query will display the table shown below?

player_id	name
BCCI-11	Virat
BCCI-23	Rohit

Options :

6406532041413. ✖ `SELECT * FROM best3;`

6406532041414. ✔ `SELECT player_id, name FROM players NATURAL JOIN best3 where name like '%t';`

6406532041415. ✖ `VIEW * FROM best3 WHERE name like '%t' ;`

6406532041416. ✔ `SELECT * FROM best3 where name like '%t';`

Sub-Section Number :	12
Sub-Section Id :	64065388105
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 331 Question Id : 640653611255 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 following relations:
employee$(emp_id, emp_name, dob, dept_id, desg_id)$
department$(dept_id, name, building)$

Choose the correct Relational Algebra expression(s) equivalent to the below expression.

$$\Pi_{emp_id}(\sigma_{dob>'1996-06-09' \wedge name='HR'}(employee \bowtie department))$$

Options :

6406532041417. ✖ $\Pi_{emp_id}((\sigma_{name='HR'}(employee)) \bowtie (\sigma_{dob>'1996-06-09'}(department)))$

6406532041418. ✖ $\Pi_{emp_id}((\sigma_{dob>'1996-06-09' \wedge name='HR'}(department)) \bowtie employee)$

6406532041419. ✖ $\Pi_{emp_id}((\sigma_{dob>'1996-06-09' \wedge name='HR'}(employee)) \bowtie department)$

6406532041420. ✔ $\Pi_{emp_id}((\sigma_{dob>'1996-06-09'}(employee)) \bowtie (\sigma_{name='HR'}(department)))$

Business Analytics

Section Id :	64065341316
Section Number :	13
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	17
Number of Questions to be attempted :	17
Section Marks :	45
Display Number Panel :	Yes
Section Negative Marks :	0
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 :	64065388106
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 332 Question Id : 640653611256 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 :

6406532041421. ✔ YES

6406532041422. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065388107
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 333 Question Id : 640653611257 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

In an ideal scenario, if a distribution has “Negative Skewness” then,

Options :

6406532041423. ✔ Mode > Median > Mean

6406532041424. ✖ Mode < Median < Mean

6406532041425. ✖ Mode = Median = Mean

6406532041426. ✖ None of these

Sub-Section Number :	3
Sub-Section Id :	64065388108
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653611258 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 : (334 to 339)

Question Label : Comprehension

A company produces a car in two locations “A” and “B” using the same manufacturing process. A total of 20 cars in each location were taken and the number of defects in each car was computed. It has been established that the maximum number of defects per car is 5. Given this data in Table-1, answer the given sub-questions.

Number of Defects	Number of cars produced at Location-A with the specified number of defects	Number of cars produced at Location-B with the specified number of defects
1	5	1
2	5	5
3	3	2
4	3	2
5	2	5

Table- 1

Sub questions

Question Number : 334 Question Id : 640653611259 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

If the focus is on seeing the distribution of defects (presented in Table-1) across the two locations, then which among the following graphs will be best suited? (*Note: While choosing an answer to this question, please do not worry about colour reproduction or other aesthetics. Make a choice only based on the concepts of visualization theory*)

Options :

6406532041427. ✖

6406532041428. ✔

6406532041429. ✖

6406532041430. ✖ Any of these

Question Number : 335 Question Id : 640653611260 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 the aim is to determine if the defect occurrence is independent of location, then how many cars would you expect to have "4" defects in Location A? *(Round your answer to two decimal places. Eg: If your answer is 10.256, then round it to 10.26)*

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

2 to 3

Question Number : 336 Question Id : 640653611261 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 the aim is to determine if the defect occurrence is independent of location, then how many cars would you expect to have "1" defect in Location B? (*Round your answer to two decimal places. Eg: If your answer is 10.256, then round it to 10.26*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 337 Question Id : 640653611262 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 the aim is to find if the number of defects is independent of location, then what is the value for the test statistic? (*Round your answer to two decimal places. Eg: If your answer is 10.256, then round it to 10.26*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5.40 to 5.80

Question Number : 338 Question Id : 640653611263 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 general belief is that the total number of defects across all different locations follows a Poisson distribution (whose PMF is given by the formula $\frac{e^{-\lambda} * \lambda^x}{x!}$).

To validate this belief, what is the value of the computed test statistic?

(Round your answer to two decimal places. Eg: If your answer is 10.256, then round it to 10.26)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

8698 to 8702

Question Number : 339 Question Id : 640653611264 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

For the hypothesis test in the previous question, what (count) is the degrees of freedom?

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 :	64065388109
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653611265 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 : (340 to 346)

Question Label : Comprehension

Chef Jeff is curious to see about his LPG gas connection. He is of the opinion that gas consumption depends on the type of food (“baked items” or “fried items”) he prepares. Hence, over the past month, he has monitored his gas consumption for various items he has prepared (*please do not worry about how the data is generated, it is not in the scope of the question*). Using this data, Chef Jeff has built several regression models (Model-1, Model-2 and Model-3) which are specified below. He is happy with a 95% Confidence level. Given this information, answer the given subquestions. (*Note: For all the sub-questions, round your answer to two decimal places. Eg: If your answer is 10.256, then round it to 10.26*)

Model-1	Consumption Vs Baked Items							
Regression Statistics								
Multiple R	0.523721208							
R Square	0.274283903							
Adjusted R Square	0.218459588							
Standard Error	7.110692161							
Observations	15							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression					0.045099621			
Residual								
Total								
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	35.67073171	8.235714706	4.331225	0.0008148	17.87855179	53.46291162	17.87855179	53.46291162
Baked Items	1.191692073	0.537620217	2.216606	0.0450996	0.030234208	2.353149938	0.030234208	2.353149938

Model-1

Model-2	Consumption vs Fried Items							
Regression Statistics								
Multiple R	0.584702448							
R Square	0.341876953							
Adjusted R Square	0.291252103							
Standard Error	6.771455822							
Observations	15							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression					0.022061108			
Residual								
Total								
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	38.5163297	6.012852392	6.405667	2.323E-05	25.52635186	51.50630755	25.52635186	51.50630755
Fried Items	1.900466563	0.731319569	2.598681	0.0220611	0.320546688	3.480386438	0.320546688	3.480386438

Model-2

Model-3	Fried Items vs Baked Items							
Regression Statistics								
Multiple R	0.384872618							
R Square	0.148126932							
Adjusted R Square	0.082598235							
Standard Error	2.37023072							
Observations	15							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	X1	12.69941565		X4	0.15661223			
Residual	X2	73.03391768						
Total	X3	85.73333333						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	11.8902439	2.745238235	4.331225	0.0008148	5.959517264	17.82097054	5.959517264	17.82097054
Baked Items	-0.269435976	0.179206739	-1.50349	0.1566122	-0.656588597	0.117716646	-0.656588597	0.117716646

Model-3

Sub questions

Question Number : 340 Question Id : 640653611266 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 direct effect of cooking “baked items” on gas consumption?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

1.18 to 1.20

Question Number : 341 Question Id : 640653611267 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

Is there multi-collinearity present in the data set?

Options :

6406532041437. ✖ Yes

6406532041438. ✔ No

Question Number : 342 Question Id : 640653611268 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 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 : 343 Question Id : 640653611269 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 value of X2?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

13

Question Number : 344 Question Id : 640653611270 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 value of X3?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

14

Question Number : 345 Question Id : 640653611271 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 value of X4?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

2.10 to 2.30

Question Number : 346 Question Id : 640653611272 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 0.5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which regression model(s) is (are) significant (*select all that is applicable*)

Options :

6406532041443. ✔ Model-1

6406532041444. ✔ Model-2

6406532041445. ✖ Model-3

Sub-Section Number :	5
Sub-Section Id :	64065388110
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653611273 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 : (347 to 348)

Question Label : Comprehension

The demand for cool drinks at different prices in the supermarket at IITM is specified in Figure-1. Given this data, if the demand is expected to follow a constant elasticity curve, then answer the given subquestions (*Note: For all the sub-questions, round your answer to two decimal places.Eg: If your answer is 10.256, then round it to 10.26*)

Figure -1

Sub questions

Question Number : 347 Question Id : 640653611274 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 elasticity of the demand-response curve?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.71 to 0.75

Question Number : 348 Question Id : 640653611275 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 maximum possible demand for cool drinks at IITM?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

105 to 109

Question Id : 640653611276 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 : (349 to 350)

Question Label : Comprehension

You are given the following primal formulation. The optimal solution to the formulated problem yields the value $X_1^* = 3$, $X_2^* = 0$, $X_3^* = 1$, $X_4^* = 5$. Then answer the given sub-questions.

Minimize $z = 2X_1 + 4X_2 + 4X_3 - 3X_4$

Subject To

Constraint-1: $X_1 + X_2 + X_3 = 4$

Constraint-2: $X_1 + 4X_2 + X_4 = 8$

Constraint-3: $X_1 + X_2 >= 3$

Constraint-4: $X_3 + X_4 <= 7$

Non-Negativity: $X_1, X_2, X_3, X_4 >= 0$

Sub questions

Question Number : 349 Question Id : 640653611277 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 decision variables are present in the dual formulation?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Question Number : 350 Question Id : 640653611278 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

How many decision variables in the optimal solution of the dual will have a value of “0”?

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 :	64065388111
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 351 Question Id : 640653611279 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

Organizations that do not find themselves on the Economic Frontier are called:

Options :

6406532041450. ✖ Insufficient Technology Frontiers

6406532041451. ✔ Inefficient Economic Units

6406532041452. ✔ Inefficient Business Units

6406532041453. ✖ None of these

Question Number : 352 Question Id : 640653611287 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

If the attribute values in the conjoint analysis is a continuous variable and the data is collected in a pairwise order, then what approach can be used: (select all that is applicable)

Options :

6406532041475. ✔ Optimization approach

6406532041476. ✖ Regression approach

6406532041477. ✖ Statistical approach

6406532041478. ✖ None of these

Question Number : 353 Question Id : 640653611288 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

In the below diagram, the customer wants to decide between the products O1 & O2, and x denotes the coordinates of the ideal product. Which of the following are true?

Options :

6406532041479. ✔ Customers will prefer O1 when d2>d1

6406532041480. ✖ Customers will prefer O2 when d1<d2

6406532041481. ✖ None of these

Sub-Section Number :	7
Sub-Section Id :	64065388112
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 354 Question Id : 640653611280 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

Identify the most efficient Manufacturing unit from the graph given below. Assume the output of

interest is profit and the input as manufacturing cost:

Options :

6406532041454. ✔ 1 Only

6406532041455. ✖ 2 Only

6406532041456. ✖ 3 Only

6406532041457. ✖ Require more information to identify the most efficient

Question Number : 355 Question Id : 640653611281 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

Identify the efficient business unit(s) from the graph given below:

Options :

6406532041458. ✖ (5) & (2)

6406532041459. ✖ (5), (2) & (4)

6406532041460. ✔ (4), (1) & (3)

6406532041461. ✖ (2) & (1)

Question Number : 356 Question Id : 640653611282 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

How many dimensions of inputs/outputs be visualized in the graphical method:

Options :

6406532041462. ✖ 2 dimensions

6406532041463. ✖ 3 dimensions

6406532041464. ✖ More than 3 dimensions

6406532041465. ✔ Both 2 dimensions and 3 dimensions

6406532041466. ✖ 2 dimensions , 3 dimensins & More than 3 dimensions

Question Number : 357 Question Id : 640653611283 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

Assume **K** DMUs have **M** number of outputs, and **N** number of inputs. Let $\mathbf{I}_{jk}$ be the recorded value for input i for DMU **k** (i= 1,2,.., N & k = 1,2,.., K) and $\mathbf{O}_{jk}$ be the recorded value for Output **j** for DMU **k** (j= 1,2,.., N & k = 1,2,..,K). Let $\mathbf{X}_{ik}$ be the weight assigned to input I by DMU **k** (i= 1,2,.., N & k = 1,2,.., K) and $\mathbf{Y}_{jk}$ be the weight assigned to output j by DMU **k** (j= 1,2,.., N & k = 1,2,..,K). Which of the following is false? (select all that is applicable)

Options :

6406532041467. ✖ Each DMU defines its own efficiency using the weights they want to assign for their inputs & outputs.

6406532041468. ✖ Objective function: Maximize $E_k = y_{1k}O_{1k} + y_{2k}O_{2k} + y_{3k}O_{3k} + \cdots . y_{Mk}O_{Mk}$

6406532041469. ✖ Each DMU chooses its weights to maximize its efficiency

6406532041470. ✖ Using the weights none of the DMUs should get a weight of more than 1.

6406532041471. ✔ Objective function given in: Maximize $E_k = y_{1k}O_{1k} + y_{2k}O_{2k} + y_{3k}O_{3k} + \cdots . y_{Mk}O_{Mk}$ is nonlinear.

Sub-Section Number :	8
Sub-Section Id :	64065388113
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 358 Question Id : 640653611284 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 us assume 5 DMUs in a DEA problem. Also, assume this as a two inputs and one output problem. Output of all DMUs are 5,00,000 and the reference units for **DMU 1** are 2 and 5. The inputs of DMU 2 are (1,00,000 and 8). Similarly, the inputs of DMU 5 are (75,000 and 10). We are solving the problem for DMU 1, and dual variables for DMU 2 is 0.65 and DMU 5 is 0.35. Calculate the required level of input 1 for HCU 1.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

91248 to 91252

Question Number : 359 Question Id : 640653611285 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 us assume 5 DMUs in a DEA problem. Also, assume this as two inputs and one output problem. Output of all DMUs are 5,00,000 and the reference units for **DMU 1** are the DMUs 2 and 5. The inputs of DMU 2 are (1,00,000 and 8). Similarly, the inputs of DMU 5 are (75,000 and 10). We are solving the problem for DMU 1, and dual variables for DMU 2 is 0.65 and DMU 5 is 0.35. Calculate the required level of input 2 for HCU 1.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

8.6 to 8.8

Sub-Section Number :	9
Sub-Section Id :	64065388114
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 360 Question Id : 640653611286 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

In a conjoint problem with 4 products and 2 attributes, how many pair-wise preferences are possible?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Sub-Section Number :	10
Sub-Section Id :	64065388115
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653611289 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 : (361 to 367)

Question Label : Comprehension

Using the below confusion matrix answer the given subquestions.

	Actual Negative	Actual Positive
Prediction Negative	330	60
Prediction Positive	50	560

Sub questions

Question Number : 361 Question Id : 640653611290 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 “True Positives” is the model predicting?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

560

Question Number : 362 Question Id : 640653611291 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 “True Negatives” is the model predicting?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

330

Question Number : 363 Question Id : 640653611292 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 “False Positives” is the model predicting?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

50

Question Number : 364 Question Id : 640653611293 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 “False Negatives” is the model predicting?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

60

Question Number : 365 Question Id : 640653611294 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 accuracy of the model? (*Note: Give your answer in* **DECIMAL Values** *rounded to two digits. For example, if your answer is "0.256", then enter it as "0.26"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.88 to 0.90

Question Number : 366 Question Id : 640653611295 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 in predicting the "Negative class"? (*Note: Give your answer in* **DECIMAL Values** *rounded to two digits. For example, if your answer is "0.256", then enter it as "0.26"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.84 to 0.86

Question Number : 367 Question Id : 640653611296 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 in predicting the “Positive class”? (*Note: Give your answer in* **DECIMAL Values** *rounded to two digits. For example, if your answer is “0.256”, then enter it as “0.26”*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.89 to 0.91

AppDev2

Section Id :	64065341317
Section Number :	14
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	33
Number of Questions to be attempted :	33
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
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 :	64065388116
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 368 Question Id : 640653611297 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 2 (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 :

6406532041489. ✔ YES

6406532041490. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065388117
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 369 Question Id : 640653611298 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 HTML document.

index.html:

```
<table id ="table_id">
        <tr>
            <th>Name</th>
            <th>Standard</th>
        </tr>

        <tr>
            <td id = "cell_id_1">Pihu</td>
            <td id = "cell_id_2">BA</td>
        </tr>
        <tr>
            <td id = "cell_id_3">Sonali</td>
            <td id = "cell_id_4">BCA</td>
        </tr>
</table>

<script>
document.getElementById("table_id").addEventListener("click", () =>
console.log("Table Clicked !!"), true);

document.getElementById("cell_id_1").addEventListener("click", () =>
console.log("Cell Clicked !!"), true);
</script>
```

Suppose you open the “index.html” file in a browser, and click on the table cell with the text “Pihu”. Which of the following shows the correct sequence of output?

Options :

6406532041491. ✖ Cell Clicked !!
Table Clicked !!

6406532041492. ✔ Table Clicked !!
Cell Clicked !!

6406532041493. ✖ Cell Clicked !!

6406532041494. ✖ Table Clicked !!

Question Number : 370 Question Id : 640653611299 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 HTML document.

index.html:

```
<table id ="table_id">
        <tr>
            <th>Name</th>
            <th>Standard</th>
        </tr>

        <tr>
            <td id = "cell_id_1">Pihu</td>
            <td id = "cell_id_2">BA</td>
        </tr>
        <tr>
            <td id = "cell_id_3">Sonali</td>
            <td id = "cell_id_4">BCA</td>
        </tr>
</table>

<script>
document.getElementById("table_id").addEventListener("click", () =>
console.log("Table Clicked !!"));

document.getElementById("cell_id_1").addEventListener("click", () =>
console.log("Cell Clicked !!"));
</script>
```

Suppose you open the “index.html” file in a browser, and click on the table cell with the text “Pihu”. Which of the following shows the correct sequence of output?

Options :

6406532041495. ✔ Cell Clicked !!

Table Clicked !!

6406532041496. ✖ Table Clicked !!

Cell Clicked !!

6406532041497. ✖ Cell Clicked !!

6406532041498. ✖ Table Clicked !!

Question Number : 371 Question Id : 640653611300 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 JavaScript program, and predict the output if executed.

```
var first = 1;
obj1 = {
    'first' : 2,
    'second' : function some () {
        console.log(first);
    }
}
obj2 = {
    'first' : 3,
    'second' : function some () {
        console.log("Function Invoked !!");
        this.second();
    }
}
obj2.second.call(obj1);
```

Options :

6406532041499. ✔ Function Invoked !!

1

6406532041500. ✖ Function Invoked !!

2

6406532041501. ✖ Function Invoked !!

3

6406532041502. ✖ The program will cause an infinite loop and keep printing the message "Function Invoked !!"

Question Number : 372 Question Id : 640653611302 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

Match the Vue directives / constructs with their function.

Vue Directive / Construct	Function
1. v-bind	A. Used to hide uncompiled mustache bindings until the instance is ready
2. v-model	B. used to achieve 2-way data binding
3. v-cloak	C. used to bind an HTML attribute to data in the Vue instance
4. v-on	D. used to bind events with HTML elements

Options :

6406532041507. ✖ 1-A, 2-B, 3-C, 4-D

6406532041508. ✖ 1-C, 2-B, 3-D, 4-A

6406532041509. ✖ 1-C, 2-D, 3-A, 4-B

6406532041510. ✔ 1-C, 2-B, 3-A, 4-D

Question Number : 373 Question Id : 640653611305 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 Vue application with markup file “index.html” and javascript file “app.js”.

index.html:

```
<div id = "app">
    <router-view></router-view>
</div>
<script src = "app.js"> </script>
```

app.js:

```
const First = Vue.component("first", {
        template: `<div>Hello First Component !!</div>`
    })

const Second = Vue.component("second", {
        template: `<div>Hello Second Component !!</div>`
    })

const router = new VueRouter({
        base: '/myapp/',
        routes: [
            {
                path: "/endpoint1",
                component: First,
            },
            {
                path: "/endpoint2",
                component: Second,
            },
        ]
    });

const app = new Vue({
        el: '#app',
        router,
        data: {},
        methods: {}
    });
```

Suppose the application is deployed under a subdirectory named “/myapp/” of a domain named “https://appdev2-may2023.com”, and you want to navigate to a page that renders “Hello First Component !!”. What should be the correct URL to get the desired output?

Options :

6406532041519. ✖ https://appdev2-may2023.com/myapp/#/

6406532041520. ✔ https://appdev2-may2023.com/myapp/#/endpoint1

6406532041521. ✖ https://appdev2-may2023.com/myapp/#/endpoint2

6406532041522. ✖ https://appdev2-may2023.com/#/endpoint2

Question Number : 374 Question Id : 640653611306 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 Vue application with markup file “index.html” and javascript file “app.js”.

index.html:

```
<div id = "app">
    <router-link to="/endpoint2">Home</router-link>
    <router-view></router-view>
</div>
<script src = "app.js"> </script>
```

app.js:

```
const First = Vue.component("first", {
        template: `<div>Hello First Component !!</div>`
    })

const Second = Vue.component("second", {
        template: `<div>Hello Second Component !!</div>`,
        mounted() {
            this.$router.push("/endpoint1");
        }
    })

const router = new VueRouter({
        routes: [
            {
                path: "/endpoint1",
                component: First,
            },
            {
                path: "/endpoint2",
                component: Second,
            },
        ]
    });

const app = new Vue({
        el: '#app',
        router,
        data: {},
        methods: {}
    });
```

Suppose you open the “index.html” file in a browser, and click on the link with the text “Home”. What will be rendered by the browser except the router links in the navigation menu?

Options :

6406532041523. ✔ Hello First Component !!

6406532041524. ✖ Hello Second Component !!

6406532041525. ✖ 404

6406532041526. ✖ Blank Page

Question Number : 375 Question Id : 640653611313 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.

```
new Promise((reject, resolve) => {
   if ("iitmiitm".split("iitm").length == 2)
      resolve("Promise is rejected")
   else
      reject("Promise is resolved")
}).then(data => console.log("Promise Rejected :", data),
        data => console.log("Promise Resolved :", data)
).then(data => {
   console.log("Value received from previous block :", data)
   return 34
}).catch(error => console.log("Error caused :", error)).finally(data => {
   console.log("In Finally Block :", data)
   return 39
}).then(data => console.log("Value received from previous block :", data))
```

Options :

6406532041551. ✖ Promise Resolved : Promise is resolved

Value received from previous block : undefined

In Finally block : undefined

Value received from previous block : 39

6406532041552. ✖ Promise Resolved : Promise is rejected

Value received from previous block : undefined

In Finally block : 34

Value received from previous block : 39

6406532041553. ✖ Promise Resolved : Promise is rejected

Value received from previous block : undefined

In Finally block : undefined

Value received from previous block : 34

6406532041554. ✔ Promise Rejected : Promise is resolved

Value received from previous block : undefined

In Finally block : undefined

Value received from previous block : 34

Question Number : 376 Question Id : 640653611319 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 statements is true regarding long polling?

Options :

6406532041575. ✔ The server does not close the connection until it has a message to send.

6406532041576. ✖ The server sends the response immediately, even if the requested data is not available.

6406532041577. ✖ The server will always close the connection if the response data is not available.

6406532041578. ✖ None of these.

Question Number : 377 Question Id : 640653611322 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 flask application.

app.py:

```python
from flask import Flask
from flask_caching import Cache
import time

config = {
    "DEBUG": True,
    "CACHE_TYPE": "RedisCache",
    "CACHE_REDIS_URL": "redis://localhost:6379/1",
    "CACHE_DEFAULT_TIMEOUT": 300
}
app = Flask(__name__)
app.config.from_mapping(config)
cache = Cache(app)


@app.get('/name/<name>')
@cache.cached(timeout=100)
def get_name(name):
    time.sleep(50)
    return name

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

Suppose the application is running on "http://localhost:5000". If the client makes two requests (one after another) to URL "http://localhost:5000/name/mohan" first at 11:30PM and second at 12:30PM. What will be the approximate absolute difference between their latencies?

Options :

6406532041587. ✖ 50 Seconds

6406532041588. ✖ 60 Seconds

6406532041589. ✔ 0 Seconds

6406532041590. ✖ None of these

Question Number : 378 Question Id : 640653611324 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 javascript code.

```javascript
function promoter(cgpa) {
  return new Promise((res, rej) => {
    if (cgpa < 9.0) {
      res()
    } else {
      rej()
    }
  })
}

promoter(8)
  .then(
    () => {
      console.log('Promoted')
    },
    () => {
      console.log('Not Promoted')
    }
  )
  .finally(() => {
    console.log('Job Done')
  })
```

Options :

6406532041595. ✖ Not Promoted

6406532041596. ✖ Promoted

6406532041597. ✖ Not Promoted

Job Done

6406532041598. ✔ Promoted

Job Done

Question Number : 379 Question Id : 640653611326 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 Vue application with markup file “index.html” and javascript file “app.js”.

index.html:

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

app.js:

```
new Vue({
  el: '#app',
  template: `<div>{{message}}</div>`,
  data: {
    message: null,
  },
  created() {
    this.message = 'Hello from created'
  },
  beforeCreate() {
    this.message = 'Hello from before create'
  },
})
```

Suppose the application is running on “http://localhost:8080”. What will be rendered by the browse in the div of the template?

Options :

6406532041603. ✔ Hello from created

6406532041604. ✖ Hello from before create

6406532041605. ✖ null

6406532041606. ✖ None of these

Question Number : 380 Question Id : 640653611329 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 Vue application with markup file “index.html” and javascript file “app.js”.

index.html:

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

app.js:

```
const Home = {
  template: `<div> This is home <router-view /></div>`,
}

const NotFound = {
  template: `<div>Not Found</div>`,
}

const Students = {
  template: `<ul><li v-for='student in
allStudents'>{{student.name}}</li></ul>`,
  data() {
    return {
      students: [
        { id: 1, name: 'std1', course: 'mad1' },
        { id: 2, name: 'std2', course: 'mad2' },
        { id: 3, name: 'std3', course: 'mad1' },
      ],
    }
  },
  computed: {
    allStudents() {
      return this.students.filter((std) => {
        return std.id % 2 == 1
      })
    },
  },
}

const Student = {
  template: `<div>Name: {{student.name}}, Course: {{student.course}}</div>`,
  props: ['id'],
  computed: {
    student() {
      return Students.data().students.find((std) => {
        return std.id == (this.id % 5) + 1
      })
    },
  },
}
```

```
const router = new VueRouter({
  routes: [
    {
      path: '/',
      component: Home,
      children: [
        { path: '', component: Students },
        { path: 'student/:id', component: Student, props: true },
        { path: '*', component: NotFound },
      ],
    },
  ],
})

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 inside the "router-view" component of "Home" Component for the URL "http://localhost:8080/students"?

Options :

6406532041615. ✖ Name: std1, Course: mad1

6406532041616. ✖ Name: std2, Course: mad2

6406532041617. ✖ Name: std3, Course: mad1

6406532041618. ✔ Not Found

Sub-Section Number :	3
Sub-Section Id :	64065388118
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 381 Question Id : 640653611301 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/are not the example(s) of ephemeral state?

Options :

6406532041503. ✖ Currently selected tab/page in a multi page/tab document

6406532041504. ✔ User Preferences

6406532041505. ✖ Loading Icons

6406532041506. ✔ Shopping Cart

Question Number : 382 Question Id : 640653611312 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 true in general?

Options :

6406532041547. ✔ As an application developer, it is not possible to hide javascript from the user.

6406532041548. ✖ “Denail of Service” is an attack that injects malicious client side scripts.

6406532041549. ✔ CORS is a mechanism used to control and manage cross-origin requests in a web application.

6406532041550. ✖ The terms “privacy” and “security” are the same when it comes to web applications.

Question Number : 383 Question Id : 640653611314 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 regarding the execution context in JavaScript?

Options :

6406532041555. ✔ All the code that is not inside any function is run inside Global execution context.

6406532041556. ✖ A global execution context is created when a function is called.

6406532041557. ✔ A function execution context is created when the function is called.

6406532041558. ✖ All of these

Question Number : 384 Question Id : 640653611315 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 correct regarding the prototype in javascript?

Options :

6406532041559. ✔ Prototype is used by objects to inherit features.

6406532041560. ✔ Prototype of an object can be null.

6406532041561. ✖ Inheritance is not possible in JavaScript.

6406532041562. ✖ Every object may not have a prototype.

Question Number : 385 Question Id : 640653611317 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 correct?

Options :

6406532041567. ✔ Caching can reduce the number of calls to the database

6406532041568. ✔ CDN is a group of servers that cache content

6406532041569. ✖ Caching can only be done at the browser level

6406532041570. ✖ All of these

Question Number : 386 Question Id : 640653611321 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 the celery in python?

Options :

6406532041583. ✔ Celery stores the result of a task in a result backend.

6406532041584. ✔ Celery typically runs the tasks asynchronously.

6406532041585. ✔ Celery beat is used to schedule tasks.

6406532041586. ✖ None of these.

Sub-Section Number :	4
Sub-Section Id :	64065388119
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 387 Question Id : 640653611303 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 false regarding async and await?

Options :

6406532041511. ✔ The “await” can be used inside any function.

6406532041512. ✖ The “await” keyword is typically used to wait for a promise and get its fulfilment value.

6406532041513. ✖ The “await” keyword pauses the execution of code of the async function till the promise is in pending state, and executes the code outside the function, in the meantime.

6406532041514. ✖ The “await” can only be used inside an async function, except browser console.

Question Number : 388 Question Id : 640653611311 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 false regarding HTTP and fetch API?

Options :

6406532041543. ✖ A fetch call is capable of sending image data.

6406532041544. ✖ The “Accept” HTTP header is used by HTTP clients to tell the server which type of content they expect/prefer as response.

6406532041545. ✔ The HTTP headers “Accept” and “Content-Type” are essentially the same.

6406532041546. ✖ A fetch call allows a developer to add custom headers in the request.

Sub-Section Number :	5
Sub-Section Id :	64065388120
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 389 Question Id : 640653611304 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 markup “index.html” and javascript file “app.js”.

index.html:

```
<div id = "app">
    <input v-model = "name" @input = "do_something">
    <p> {{age}} </p>
</div>
<script scr = "app.js"></script>
```

app.js:

```
new Vue({
    el: "#app",
    data: {
        name: "",
        age: 0,
    },

    mounted() {
        try {
            localStorage.setItem("age", localStorage.getItem("age") +
localStorage.getItem("age"))
            this.name += localStorage.getItem("age")
            this.name, this.age = localStorage.getItem("name").split(" ");
        }
        catch {
            this.name = "Default";
            this.age = "Default";
        }
    },

    methods: {
        do_something() {
            localStorage.setItem("name", this.name);
            localStorage.setItem("age", this.age);
        }
    }
})
```

Suppose you open “index.html” file in a browser, and type the text “App Dev II” in the text box shown (after removing the previous text, if any), and hard refresh the page once, without clicking anywhere. What will be the value shown in the text box, and the “age” placeholder, respectively?

Options :

6406532041515. ✖ Text Box: DefaultDefault
age Placeholder: Default

6406532041516. ✖ Text Box: DefaultDefaultDefaultDefault
age Placeholder: Default

6406532041517. ✖ Text Box: DefaultDefaultDefaultDefault
age Placeholder: ["App", "Dev", "II"]

6406532041518. ✔ Text Box: DefaultDefault
age Placeholder: ["App", "Dev", "II"]

Question Number : 390 Question Id : 640653611308 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 flask app, and an HTML file named “index.html”.

app.py:

```
from flask import Flask
import time

app = Flask(__name__)

@app.route("/endpoint1")
def method1():
    time.sleep(20)
    return "Endpoint 1 Accessed", 200, {'Access-Control-Allow-Origin' :
'*'}

@app.route("/endpoint2")
def method2():
    time.sleep(30)
    return "Endpoint 2 Accessed", 200, {'Access-Control-Allow-Origin' :
'*'}

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

index.html:

```
<div>
    Hello World !!

    <script>
        const data1 = fetch("http://127.0.0.1:5000/endpoint1").then(res =>
res.json()).then(data => console.log(data))

        const data2 = fetch("http://127.0.0.1:5000/endpoint2").then(res =>

res.json()).then(data => console.log(data))
    </script>
</div>
```

Suppose you open the “index.html” in a browser. What will be the approximate time taken by the second fetch call (i.e., "http://127.0.0.1:5000/endpoint2") to complete and log the data on the console?

Options :

6406532041531. ✖ 20 seconds

6406532041532. ✔ 30 seconds

6406532041533. ✖ 10 seconds

6406532041534. ✖ 50 seconds

Question Number : 391 Question Id : 640653611323 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 flask application.

app.py:

```python
from flask import Flask
from flask_caching import Cache
import time

config = {
    "DEBUG": True,
    "CACHE_TYPE": "RedisCache",
    "CACHE_REDIS_URL": "redis://localhost:6379/1",
    "CACHE_DEFAULT_TIMEOUT": 300
}
app = Flask(__name__)
app.config.from_mapping(config)
cache = Cache(app)


@app.get('/name/<name>')
@cache.cached(timeout=100)
def get_name(name):
    time.sleep(50)
    return name

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

Suppose the application is running on "http://localhost:5000". If the client makes two requests to URL "http://localhost:5000/name/mohan" and "http://localhost:5000/name/sohan" within 50 seconds. What will be the approximate absolute difference between their latencies?

Options :

6406532041591. ✖ 30 Seconds

6406532041592. ✖ 40 Seconds

6406532041593. ✔ 0 Seconds

6406532041594. ✖ None of these

Question Number : 392 Question Id : 640653611325 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 Vue application with markup file “index.html” and javascript file “app.js”.

index.html:

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

app.js:

```
new Vue({
  el: '#app',
  template: `<div>
  Enter a point: <input v-model='point' />
  <div id='content'>{{isOnCircle?"On the circle":"Not on the circle"}}</div>
  </div>`,
  data: {
    point: null,
  },
  computed: {
    isOnCircle() {
      if (!this.point) {
        return false
      }
      const [x, y] = this.point.split(',')
      return x ** 2 + y ** 2 < 25
    },
  },
})
```

If the application is running on “http://localhost:8080”. What will be rendered by the browser in div with id “content” when user enters “3,5” in the input box?

Options :

6406532041599. ✖ On the circle

6406532041600. ✔ Not on the circle

6406532041601. ✖ true

6406532041602. ✖ False

Question Number : 393 Question Id : 640653611327 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 Vue application with markup file “index.html” and javascript file “app.js”.

index.html:

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

app.js:

```
const Home = {
  template: `<div> This is home <router-view /></div>`,
}

const NotFound = {
  template: `<div>Not Found</div>`,
}

const Students = {
  template: `<ul><li v-for='student in
allStudents'>{{student.name}}</li></ul>`,
  data() {
    return {
      students: [
        { id: 1, name: 'std1', course: 'mad1' },
        { id: 2, name: 'std2', course: 'mad2' },
        { id: 3, name: 'std3', course: 'mad1' },
      ],
    }
  },
  computed: {
    allStudents() {
      return this.students.filter((std) => {
        return std.id % 2 == 1
      })
    },
  },
}

const Student = {
  template: `<div>Name: {{student.name}}, Course: {{student.course}}</div>`,
  props: ['id'],
  computed: {
    student() {
      return Students.data().students.find((std) => {
        return std.id == (this.id % 5) + 1
      })
    },
  },
}
```

```
const router = new VueRouter({
  routes: [
    {
      path: '/',
      component: Home,
      children: [
        { path: '', component: Students },
        { path: 'student/:id', component: Student, props: true },
        { path: '*', component: NotFound },
      ],
    },
  ],
})

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 inside the "router-view" component of "Home" Component for the URL "http://localhost:8080/"?

Options :

6406532041607. ✖ Name: std1, Course: mad1

6406532041608. ✖ Name: std2, Course: mad2

6406532041609. ✔ std1
std3

6406532041610. ✖ std1
std2
std3

Question Number : 394 Question Id : 640653611328 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 Vue application with markup file “index.html” and javascript file “app.js”.

index.html:

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

app.js:

```
const Home = {
  template: `<div> This is home <router-view /></div>`,
}

const NotFound = {
  template: `<div>Not Found</div>`,
}

const Students = {
  template: `<ul><li v-for='student in
allStudents'>{{student.name}}</li></ul>`,
  data() {
    return {
      students: [
        { id: 1, name: 'std1', course: 'mad1' },
        { id: 2, name: 'std2', course: 'mad2' },
        { id: 3, name: 'std3', course: 'mad1' },
      ],
    }
  },
  computed: {
    allStudents() {
      return this.students.filter((std) => {
        return std.id % 2 == 1
      })
    },
  },
}

const Student = {
  template: `<div>Name: {{student.name}}, Course: {{student.course}}</div>`,
  props: ['id'],
  computed: {
    student() {
      return Students.data().students.find((std) => {
        return std.id == (this.id % 5) + 1
      })
    },
  },
}
```

```
const router = new VueRouter({
  routes: [
    {
      path: '/',
      component: Home,
      children: [
        { path: '', component: Students },
        { path: 'student/:id', component: Student, props: true },
        { path: '*', component: NotFound },
      ],
    },
  ],
})

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 inside the "router-view" component of "Home" Component for the URL "http://localhost:8080/student/20"?

Options :

6406532041611. ✔ Name: std1, Course: mad1

6406532041612. ✖ Name: std2, Course: mad2

6406532041613. ✖ Name: std3, Course: mad1

6406532041614. ✖ std1
std2
std3

Sub-Section Number :	6
Sub-Section Id :	64065388121
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 395 Question Id : 640653611307 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 below Vue component and a Vuex store implementation.

```
const store = new Vuex.Store({
  state: {
    count: 0,
    total_cost: 0,
    products: [],
  },

  mutations: {

      update_total_cost : Placeholder2
  }
})

Vue.component("product", {
    template : `<div>
                    Assume some code
                </div>`,

    methods : {
        update_store_cost : function (count, price) {
            Placeholder1


        },
    }
})
```

You are supposed to invoke the mutation function “update_total_cost” from the method named “update_store_cost” of the Vue component “product”. The “update_total_cost” mutation function should update the store data variable “total_cost” with an appropriate value. The cost is the product of “count” and “price” parameters of the function “update_store_cost”. Assume that both these parameters are of Numeric type, and need not be typecasted.

Which of the following is/are the possible replacements for “placeholder1” and “placeholder2”?

Options :

```
Placeholder1 : this.$store.commit("update_total_cost", count * price);
Placeholder 2: function (state, total_cost) {
                    state.total_cost = total.cost;
               }
```

6406532041527. ✔

```
Placeholder1 : this.$store.commit("update_total_cost", count, price);
Placeholder 2: function (state, count, price) {
                    state.total_cost = count * price;
               }
```

6406532041528. ✖

```
Placeholder1 : this.$store.commit("update_total_cost", {"count" : count, "price" : price});
Placeholder 2: function (state, payload) {
                    state.total_cost = payload.count * payload.price;
               }
```

6406532041529. ✔

```
Placeholder1 : this.$store.commit("update_total_cost", count, price);
Placeholder 2: function (count, price) {
                    total_cost = count * price;
               }
```

6406532041530. ✖

Question Number : 396 Question Id : 640653611309 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 given 2 implementations.

Approach 1:

driver code:

```
import tasks
def generate_reports():
    users = User.query.all()
    for user in users:
        tasks.job_report.delay(user)
```

celery job:

```
@celery.task
def job_report(user):
    '''
    This function fetches the statistics of a given user and generates an
HTML report
    '''
```

Approach 2:

driver code:

```
import tasks
def generate_reports():
        tasks.job_report.delay()
```

celery job:

```
@celery.task
def job_report():
    users = User.query.all()
    for user in users:
    '''
    This loop fetches the statistics of a given user and generates an HTML
report
    '''
```

Suppose there are currently 1000 users in the database, and the application is supposed to generate 1000 HTML reports. Which of the following statement(s) is/are true (assuming there are more than 1 worker available in the celery system)?

Options :

6406532041535. ✔ Approach 1 will finish the task in less time than approach 2.

6406532041536. ✖ Approach 2 will finish the task in less time than approach 1.

6406532041537. ✖ Both the approaches are comparable.

6406532041538. ✔ Both the approaches will be comparable if there is only 1 worker available.

Sub-Section Number :	7
Sub-Section Id :	64065388122
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 397 Question Id : 640653611310 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 flask_caching and caching in general?

Options :

6406532041539. ✔ The cache decorator does not include the function parameters in the cache key.

6406532041540. ✖ The memoize decorator does not include the function parameters in the cache key.

6406532041541. ✖ The requests without request bodies are generally not cacheable.

6406532041542. ✔ Hard refreshing a web page clears the browser cache for that specific web page.

Question Number : 398 Question Id : 640653611316 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/are true?

Options :

6406532041563. ✔ The browser sends a preflight request before making cross-origin request to check if the origin allows loading the resource.

6406532041564. ✖ A server with address http://example.com will always allow script loaded from origin http://example2.com to load resources by default.

6406532041565. ✔ A server with address http://example.com will always allow script loaded from origin http://example.com/first to load resources by default.

6406532041566. ✖ All of these

Question Number : 399 Question Id : 640653611318 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 an application stores the scores of all the players in the "scores" table. The "scores" table has 3 columns namely, player_name, player_country and score. Suppose the URL "/players/countries/<country_name>" returns the list of players for the country with name "country_name'. Which of the following strategies can be used to improve the performance of application?

Options :

6406532041571. ✔ Caching all the players of a country on a backend server.

6406532041572. ✔ Caching all the players of a country in the user's browser.

6406532041573. ✖ Caching will not improve the performance.

6406532041574. ✖ None of these.

Question Number : 400 Question Id : 640653611320 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 is/are true in context of lighthouse?

Options :

6406532041579. ✖ "First contentful paint" for a webpage is the size of the smallest visible element on a webpage.

6406532041580. ✔ "First contentful paint" for a webpage is the time the browser takes to paint the first visible content on the webpage.

6406532041581. ✔ "Largest contentful paint" for a webpage is the time the browser takes to paint the largest visible content on the webpage.

6406532041582. ✖ "Largest contentfull paint" for a webpage is the size of the largest visible content on the webpage.

MLF

Section Id :	64065341318
Section Number :	15
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	18
Number of Questions to be attempted :	18
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and	Yes

Clear Response :

Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065388123
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 401 Question Id : 640653611330 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 :

6406532041619. ✔ YES

6406532041620. ✖ NO

Question Number : 402 Question Id : 640653611331 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,
$$P(X \ge c) \le \frac{\mu}{c}$$

2. **Chebyshev's inequality:** Let X be a discrete random variable with a finite mean μ and a finite variance σ^2. Then,
$$P(\mid X - \mu \mid \ge k\sigma) \le \frac{1}{k^2}$$

3. **Weak Law of Large numbers:** Let $X_1, X_2, \ldots, X_n \sim$ iid X with $E[X] = \mu, \mathrm{Var}(X) = \sigma^2$.
Define sample mean $\overline{X} = \frac{X_1 + X_2 + \ldots + X_n}{n}$. Then,
$$P(|\overline{X} - \mu| > \delta) \le \frac{\sigma^2}{n\delta^2}$$

4. **Using CLT to approximate probability:** Let $X_1, X_2, \ldots, X_n \sim$ iid X with $E[X] = \mu, \mathrm{Var}(X) = \sigma^2$.
Define $Y = X_1 + X_2 + \ldots + X_n$. Then,
$$\frac{Y - n\mu}{\sqrt{n}\sigma} \approx \mathrm{Normal}(0, 1).$$

5. **Likelihood of i.i.d. samples**: Likelihood of a sampling $x_1, x_2, \ldots, x_n$, denoted

$$L(x_1, \ldots, x_n) = \prod_{i=1}^{n} f_X(x_i; \theta_1, \theta_2, \ldots)$$

6. **Maximum likelihood (ML) estimation**:

$$\theta_1^*, \theta_2^*, \ldots = \arg\max_{\theta_1^*, \theta_2^*, \ldots} \prod_{i=1}^{n} f_X(x_i; \theta_1, \theta_2, \ldots)$$

Options :

6406532041621. ✔ Useful Data has been mentioned above.

6406532041622. ✖ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number :	2
Sub-Section Id :	64065388124
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 403 Question Id : 640653611332 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

For the data set $(x_i, y_i) = [(1,1), (2,3), (3,9), (4,15), (5,27)], i = 1$ to 5, consider the regression model $f(x) = x^2$. What is the mean squared loss of $f(x)$. (Enter answer correct to one decimal place).

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

1.1 to 1.3

Question Number : 404 Question Id : 640653611335 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 $A = \begin{bmatrix} 3 & -2 \\ 5 & -4 \end{bmatrix}$. Find the trace of A^{10}.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1025

Question Number : 405 Question Id : 640653611348 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 time (in hours) it takes for a computer system to reboot after a crash follows an exponential distribution, with a parameter λ. Last five observations are noted as 1, 2, 3, 1, 3. Find the maximum likelihood estimate for λ. Enter the answer correct to one decimal place.

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 :	3
Sub-Section Id :	64065388125
Question Shuffling Allowed :	Yes

Is Section Default? : null

Question Number : 406 Question Id : 640653611339 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 value of $f(x) = 4x^2 + 2$ with an initial guess of 2, after two iterations of gradient descent algorithm? Take step size as 0.1. Enter the answer correct to three decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

2.022 to 2.028

Sub-Section Number : 4

Sub-Section Id : 64065388126

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 407 Question Id : 640653611349 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 a firm produces X_i number of equipments on day i, where i : 1, 2, . . . , n. Each of the X_i's are independent and identically distributed with mean 4 and variance 9. Using CLT, find the approximate probability that the total number of equipments produced in 100 days is greater than 450. Enter the answer correct to three decimal places.

Hint: Use the following values of F_Z if required:

- $F_Z(-1.66) = 0.04846$
- $F_Z(-3.2) = 0.00064$
- $F_Z(1.66) = 0.95154$
- $F_Z(3.2) = 0.99936$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.044 to 0.052

Sub-Section Number :	5
Sub-Section Id :	64065388127
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 408 Question Id : 640653611333 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 linearization of $f(x, y) = e^{2y-x}$ at the point $(1, 2)$.

Options :

6406532041624. ✖ $-e^3x + e^3y - e^3$

6406532041625. ✖ $-2e^3 + e^3x + 2e^3y$

6406532041626. ✔ $-e^3x + 2e^3y + e^3$

6406532041627.

✖ $-e^3x + 2e^3y$

Sub-Section Number :	6
Sub-Section Id :	64065388128
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 409 Question Id : 640653611336 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 A and B be two $n \times n$ complex Hermitian matrices. Then, which among the following are true?

Options :

6406532041633. ✔ $A + B$ is Hermitian.

6406532041634. ✖ AB is Hermitian.

6406532041635. ✖ $iA + (2+i)B$ is Hermitian.

6406532041636. ✖ $A + iB$ is Hermitian.

Question Number : 410 Question Id : 640653611341 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 $f : \mathbb{R}^d \longrightarrow \mathbb{R}$ and $g : \mathbb{R}^d \longrightarrow \mathbb{R}$ be two convex functions. Which of the following functions is/are convex?

Options :

6406532041651. ✔ $\max\{f, g\}$

6406532041652. ✖ $\min\{f, g\}$

6406532041653. ✖ $f \circ g$

6406532041654. ✖ $\alpha f + (1 - \alpha)g$, where $\alpha \in \mathbb{R}$

Question Number : 411 Question Id : 640653611342 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

A consumer wants to maximize his utility subject to some constraints. He consumes two goods g_1 and g_2 and the utility function is the sum of g_1 and g_2. His budget is Rs.100. The per unit price of goods g_1 and g_2 are Rs.3 and Rs.4 respectively. Chose the correct optimization problem.

Options :

6406532041655. ✔ maximize $g_1 + g_2$ subject to $3g_1 + 4g_2 \leq 100$

6406532041656. ✖ maximize $g_1 g_2$ subject to $3g_1 + 4g_2 \leq 100$

6406532041657. ✖ maximize $g_1 g_2$ subject to $3g_1 + 4g_2 \geq 100$

6406532041658. ✖ maximize $g_1 + g_2$ subject to $3g_1 + 4g_2 \geq 100$

Sub-Section Number : 7

Sub-Section Id : 64065388129

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 412 Question Id : 640653611343 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 optimization problem involving the variable $\mathbf{x} \in \mathbb{R}^2$:

$$\min_{x} \quad x_1^2 - 3x_2$$
$$\text{sub. to} \quad x_1 + x_2 \leq 5$$

What is the output of the following expression for $\mathbf{x}' = [3 \quad 4]^T$?

$$\max_{\lambda \geq 0} \quad L(\mathbf{x}', \lambda)$$

Here, $L(\mathbf{x}', \lambda)$ is the Lagrangian function for this optimization problem evaluated at $\mathbf{x}'$.

Options :

6406532041659. ✖ $(x_1')^2 - 3(x_2')$

6406532041660. ✔ ∞

6406532041661. ✖ $-\infty$

6406532041662. ✖ 0

Sub-Section Number : 8

Sub-Section Id : 64065388130

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 413 Question Id : 640653611334 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 an $m \times n$ matrix A satisfies $A^T A = I$, then which among the following is true?

Options :

6406532041628. ✔ Columns of A are orthonormal.

6406532041629. ✖ $\text{Rank}(A) = m$

6406532041630. ✔ $P = AA^T$ is a projection matrix.

6406532041631. ✖ $P = AA^T$ is not a projection matrix.

Question Number : 414 Question Id : 640653611338 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 true for PCA?

Options :

6406532041641. ✔ The first principal component represents the direction along which the variance of the dataset is maximized.

6406532041642. ✖ The first principal component represents the direction along which the variance of the dataset is minimized.

6406532041643. ✖ The first principal component is the eigenvector corresponding to the smallest

eigenvalue of the covariance matrix.

6406532041644. ✔ The first principal component is the eigenvector corresponding to the largest eigenvalue of the covariance matrix.

Question Number : 415 Question Id : 640653611340 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 regarding gradient descent is/are correct?

Options :

6406532041646. ✔ If the step size is chosen as 1, we may “not always” arrive as close to the optimal solution even after many number of iterations.

6406532041647. ✔ Solution obtained for optimization problem is the local minimum of its objective function.

6406532041648. ✖ Solution obtained for optimization problem is the global minimum of its objective function.

6406532041649. ✔ Gradient descent converges to the global optimum in the case of convex functions.

6406532041650. ✖ Gradient descent does not converge to the global optimum in the case of convex functions.

Question Number : 416 Question Id : 640653611344 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 a fair coin is tossed twice. Let A denote the event that the first toss is a tail. Let B denote the event that the second toss is a tail. Let C denote the event that out of the first two tosses,

either both are heads or both are tails. Which among the following options are true? Select all that apply.

Options :

6406532041663. ✖ *A*, *B* and *C* are independent.

6406532041664. ✔ *A*, *B* and *C* are dependent.

6406532041665. ✔ *A*, *B* and *C* are pairwise independent.

6406532041666. ✔ *P(A) = P(B) = P(C)* = 1/2

Sub-Section Number :	9
Sub-Section Id :	64065388131
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 417 Question Id : 640653611337 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

Let A be an $n \times d$ matrix with right-singular vectors $v_1, \ldots, v_r$, left-singular vectors $u_1, \ldots, u_r$, and corresponding singular values $\sigma_1, \sigma_2, \ldots, \sigma_r$. If $A = \sum_{i=1}^{r} \sigma_i u_i v_i^T$, select the correct options from the following:

Options :

6406532041637. ✔ Each of $\sigma_i u_i v_i^T$ is a rank one matrix.

6406532041638. ✖ Each of $\sigma_i u_i v_i^T$ is a matrix of rank r.

6406532041639. ✔ For $B = A^T A$, $B = \sum_{i=1}^{r} \sigma_i^2 v_i v_i^T$.

6406532041640. ✖

For $B = AA^T, B = \sum_{i=1}^{r} \sigma_i^2 v_i v_i^T$.

Sub-Section Number :	10
Sub-Section Id :	64065388132
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653611345 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 : (418 to 419)

Question Label : Comprehension

Let X and Y have the following joint probability density function:

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

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 418 Question Id : 640653611346 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

Are *X* and *Y* independent?

Options :

6406532041667. ✖ Yes

6406532041668. ✔ No

Question Number : 419 Question Id : 640653611347 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 $\Pr(X > Y)$. 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