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 QUIZ 1 FOUNDATION DAD DIPLOMA QPE2 16 Oct 2022
Subject Name :	2022 Oct: IIT M QUIZ 1 FOUNDATION DAD DIPLOMA QPE2
Creation Date :	2022-10-10 18:25:14
Duration :	180
Total Marks :	751
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 :	6406539332
Group Maximum Duration :	0
Group Minimum Duration :	90
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	751
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

Maths2

Section Id :	64065323969

Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	8
Number of Questions to be attempted :	8
Section Marks :	25
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065355744
Question Shuffling Allowed :	No

Question Number : 1 Question Id : 640653388150 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:SEMESTER 2/DIRECT ENTRY DIPLOMA : MATHEMATICS FOR DATA SCIENCE 2"

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 :

6406531290294. ✔ YES

6406531290295. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065355745
Question Shuffling Allowed :	Yes

Question Number : 2 Question Id : 640653388154 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Select Question

Choose the set of correct options.

Options :

6406531290298. ✖ If there is a square matrix A such that $A^2 - A = 0$, then $det(A)$ must be either 0 or -1.

6406531290299. ✔ If u is a solution of the system of linear equations $Ax = c$ and c is a solution of the system of linear equations $Ax = b$, then u is a solution of the system of linear equations $A^2x = b$.

6406531290300. ✔ If B is a scalar matrix of order 3, then $AB - BA = 0$ for all square matrices A of order 3.

6406531290301. ✖ If there is an invertible real 3×3 matrix A such that $A\ adj(A) = 4I$, then $det(adj(A))$ must be 4.

Sub-Section Number :	3
Sub-Section Id :	64065355746
Question Shuffling Allowed :	Yes

Question Number : 3 Question Id : 640653388155 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 addition and scalar multiplication on $V = \mathbb{R}^2$ is defined as follows:

Addition: $(x_1, y_1) + (x_2, y_2) = (0, 0);$
$(x_1, y_1), (x_2, y_2) \in V$

Scalar multiplication: $c(x, y) = (0, 0);\ (x, y) \in V,\ c \in \mathbb{R}$

Consider the following statements.

1. There exists an element 0 (called the zero vector of V) in V such that $0 + v = v,\ \forall\, v \in V.$
2. For each vector of $v \in V$ and for each pair $a, b \in \mathbb{R}, (a + b)v = av + bv.$
3. For each vector of $a \in \mathbb{R}$ and for each pair $v_1, v_2 \in V, a(v_1 + v_2) = av_1 + av_2.$
4. For each vector of $v \in V$ and for each pair $a, b \in \mathbb{R}, (ab)v = a(bv).$

Which of the above statements is not true with respect to the addition and scalar multiplication on $V = \mathbb{R}^2$ defined above? (Enter the serial number of the statement which is not true. If statement 2 is incorrect, then enter 2 as your answer.)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 4 Question Id : 640653388165 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

Consider the following two statements:

P: $V = \mathbb{R}^2$, with the operations:

Addition:

$$(x_1, y_1) + (x_2, y_2) = (x_1 x_2, y_1 y_2);\ (x_1, y_1), (x_2, y_2) \in V$$

and

Scalar multiplication:

$$c(x, y) = (cx, cy);\ (x, y) \in V,\ c \in \mathbb{R}$$

is a vector space.

Q: Let V be a vector space. If $u, v, w \in V$ are such that $au + bv + cw = 0$ for some scalars $a, b, c \in \mathbb{R}$ and $ac \neq 0$, then $\text{span}\{u, v\} = \text{span}\{v, w\}$.

Consider the following statements:

- Statement 1: P is true, but Q is false.
- Statement 2: Q is true, but P is false.
- Statement 3: Both P and Q are true.
- Statement 4: Both P and Q are false.

Which one of the above statements is correct? (e.g. if Statement 1 is correct, then enter 1 as your answer).

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sub-Section Number :	4
Sub-Section Id :	64065355747
Question Shuffling Allowed :	No

Question Id : 640653388151 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (5 to 6)

Question Label : Comprehension

Consider the matrix $A = \begin{bmatrix} \frac{a}{2} & -\frac{a}{2} \\ \frac{a}{2} & \frac{a}{2} \end{bmatrix}$, for some real number a.

Answer the given Subquestions:

Sub questions

Question Number : 5 Question Id : 640653388152 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

If $A^4 = \frac{\beta}{4}a^4 I$, then what is the value of β?

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-1

Question Number : 6 Question Id : 640653388153 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

Find the value of $a + \lambda$ for which $det\,(A - \lambda I) = 0$, where λ is a real number (treat a as a variable).

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Id : 640653388156 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (7 to 10)

Question Label : Comprehension

Consider the following subsets of $\mathbb{R}^3$.

Subset 1) $W = \{(x, y, z) \mid x, y, z \in \mathbb{R}, \text{ and } x^2 + y^2 = 0\}$

Subset 2) $W = \{(x, y, z) \mid x, y, z \in \mathbb{R}, \text{ and } x = -z\}$

Subset 3) $W = \{(x, y, z) \mid x, y, z \in \mathbb{R}, \ x = 2y + z \text{ and } x + z = 2y\}$

Subset 4) $W = \{(x, y, z) \mid x, y, z \in \mathbb{R}, \ (x - 1) - y + (z + 1) = 0 \text{ and } x + y = z\}$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 7 Question Id : 640653388157 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

Subset 1 is a subspace of dimension _____. (Enter the numerical value only. Suppose the dimension is 3, then enter 3 as your answer.)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 8 Question Id : 640653388158 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

Subset 2 is a subspace of dimension _____. (Enter the numerical value only. Suppose the dimension is 3, then enter 3 as your answer.)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 9 Question Id : 640653388159 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

Subset 3 is a subspace of dimension _____. (Enter the numerical value only. Suppose the dimension is 3, then enter 3 as your answer.)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 10 Question Id : 640653388160 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

Subset 4 is a subspace of dimension _____. (Enter the numerical value only. Suppose the dimension is 3, then enter 3 as your answer.)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Sub-Section Number :	5
Sub-Section Id :	64065355748
Question Shuffling Allowed :	No

Question Id : 640653388161 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (11 to 13)

Question Label : Comprehension

Suppose W_1 and W_2 are subspaces of $\mathbb{R}^3$ defined as follows:

$$W_1 = \{(x, y, x - 2y) \mid x, y \in \mathbb{R}\}$$

and

$$W_2 = \{(x, 0, y) \mid x, y \in \mathbb{R}\}$$

with usual addition and scalar multiplication, i.e.,

$$\textit{Addition: } (x_1, y_1, z_1) + (x_2, y_2, z_2) = (x_1 + x_2, y_1 + y_2, z_1 + z_2); \quad (x_1, y_1, z_1), (x_2, y_2, z_2) \in V$$

$$\textit{Scalar multiplication: } c(x, y, z) = (cx, cy, cz); \ (x, y, z) \in V, \ c \in \mathbb{R}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 11 Question Id : 640653388162 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Select Question

Which of the following option(s) represent $W_1 \cap W_2$? (More than one options may be correct)

Options :

6406531290307. ✖ $Span\{(1, 0, 1), (1, 0, -1)\}$

6406531290308. ✔ $Span\{(1, 0, 1), (-2, 0, -2)\}$

6406531290309. ✔ $Span\{(-1, 0, -1)\}$

6406531290310. ✖ $Span\{(1, 1, -1), (1, 0, 1)\}$

Question Number : 12 Question Id : 640653388163 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 dimension of $W_1 \cap W_2$?

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 13 Question Id : 640653388164 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 options is true?

Options :

6406531290312. ✖ $W_1 \cup W_2$ is a vector space of dimension 3 (with usual addition and scalar multiplication).

6406531290313. ✖ $W_1 \cup W_2$ is a vector space of dimension 2 (with usual addition and scalar multiplication).

6406531290314. ✖

$W_1 \cup W_2$ is a vector space of dimension 1 (with usual addition and scalar multiplication).

$W_1 \cup W_2$ is not a vector space (with usual addition and scalar multiplication).

6406531290315. ✔

Sub-Section Number : 6

Sub-Section Id : 64065355749

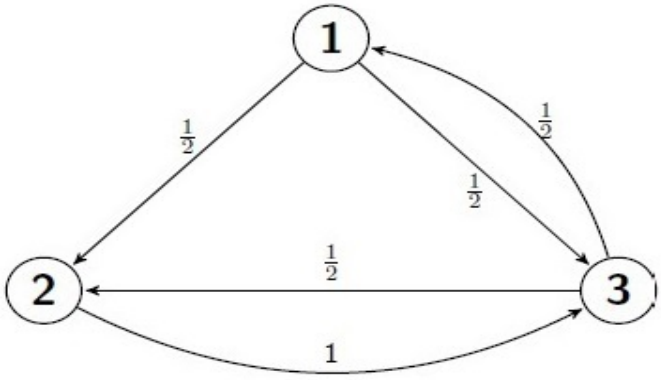
Question Shuffling Allowed : No

Question Id : 640653388166 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (14 to 16)

Question Label : Comprehension

A system can be in one of 3 possible states at a given time. At the next instant, it changes its state as represented pictorially in the diagram below. The number beside an arrow shows the transition probabilities from the beginning state of the arrow to the ending state of the arrow (e.g. in the diagram M2Q1:1, you can see that there is an arrow starting at state 1 and ending at state 2, with the number $\frac{1}{2}$ beside the arrow. It implies that the probability of transition from state 1 to state 2 is $\frac{1}{2}$). No arrow from state 2 to state 1 indicates that direct transition is not possible (equivalently the transition probability is 0). The probability of transition from a state to itself is 0.



M2Q1:1

The information in the diagram is represented by the matrix

$P = \begin{bmatrix} 0 & \frac{1}{2} & \frac{1}{2} \\ 0 & 0 & 1 \\ \frac{1}{2} & \frac{1}{2} & 0 \end{bmatrix}$, where the ij-th entry of P denotes the probability of transition from state i to state j. Let the probabilities that the system is in State 1, State 2 or State 3 initially (i.e., at $t = 0$) be X_0^1, X_0^2, and X_0^3, respectively. This is represented by the initial distribution vector (3×1 matrix) and is denoted by $X_0 = \begin{bmatrix} X_0^1 \\ X_0^2 \\ X_0^3 \end{bmatrix}$.

For any positive integer n, the distribution vector at $t = n$ is denoted by X_n and is given by the equation $P^T X_{n-1} = X_n$.

Answer the given subquestions from the given information.

Sub questions

Question Number : 14 Question Id : 640653388167 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Select Question

Suppose at $t = 2$ the distribution vector X_2 is $\begin{bmatrix} \frac{1}{3} \\ \frac{1}{2} \\ \frac{2}{3} \end{bmatrix}$. Which of the following options are true?

Options :

6406531290317. ✔ $X_0 = X_2$.

6406531290318. ✔ $X_0 = X_1$.

6406531290319. ✖ $X_0 \neq X_n$ for some $n \in \mathbb{N}$.

6406531290320. ✖ There are infinitely many vectors, which are possible candidates for X_0.

6406531290321. ✖ There are infinitely many vectors, which are possible candidates for X_1.

Question Number : 15 Question Id : 640653388168 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

Suppose at $t = 1$ the distribution vector

X_1 is $\begin{bmatrix} \frac{1}{2} \\ \frac{1}{2} \\ 0 \end{bmatrix}$. Which of the following options

is true?

Options :

6406531290322. ✖ The system had positive initial probabilities of being in State 1 or State 2.

6406531290323. ✔ The system was initially in State 3.

6406531290324. ✖ The system was initially in State 1.

6406531290325. ✖ The system had positive initial probabilities of being in State 2 and State 3.

Question Number : 16 Question Id : 640653388169 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 set of correct option(s).

Options :

6406531290326. ✔ Both P and P^2 have the same reduced row echelon form.

6406531290327. ✖ P is already in reduced row echelon form.

6406531290328. ✖ $P^2 = \lambda P$ for some real number λ.

6406531290329. ✖ P^2 is already in reduced row echelon form.

Statistics2

Section Id :	64065323970
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
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 :	64065355750
Question Shuffling Allowed :	No

Question Number : 17 Question Id : 640653388170 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:SEMESTER 2/DIRECT ENTRY DIPLOMA : STATISTICS FOR DATA SCIENCE 2"

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 :

6406531290330. ✔ YES

6406531290331. ✖ NO

Question Number : 18 Question Id : 640653388171 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 ($F_X(x)$)	$E[X]$	Var(X)
Uniform(A) $A = \{a, a+1, \ldots, b\}$	$\frac{1}{n}$, $x = k$ $n = b - a + 1$ $k = a, a+1, \ldots, b$	$\begin{cases} 0 & x < 0 \\ \frac{k-a+1}{n} & k \le x < k+1 \\ & k = a, a+1, \ldots, b-1, b \\ 1 & x \ge n \end{cases}$	$\frac{a+b}{2}$	$\frac{n^2-1}{12}$
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 ($F_X(x)$)	$E[X]$	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,
$$P(|\ X - \mu\ | \ge k\sigma) \le \frac{1}{k^2}$$

Options :

6406531290332. ✔ Useful Data has been mentioned above.

6406531290333. ✖ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 64065355751

Question Shuffling Allowed : Yes

Question Number : 19 Question Id : 640653388175 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 and Y be two independent Bernoulli(1/3) random variables. Define another random variable $Z = |X - Y|$. Find the PMF of Z.

Options :

6406531290340. ✖

z	0	1
$f(z)$	1/2	1/2

6406531290341. ✔

z	0	1
$f(z)$	5/9	4/9

6406531290342. ✖

z	0	1
$f(z)$	4/9	5/9

6406531290343. ✖

z	-1	0	1
$f(z)$	2/9	5/9	2/9

Question Number : 20 Question Id : 640653388177 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 be a Poisson random variable with mean equal to 20. Which of the following bounds can be obtained using Markov's inequality?

Options :

6406531290345. ✖ $P(X > 30) \geq \frac{20}{30}$

6406531290346. ✔ $P(X > 30) \leq \frac{20}{31}$

6406531290347. ✖ $P(X > 25) \geq \frac{20}{25}$

6406531290348. ✖ $P(X < 25) \leq \frac{20}{25}$

Question Number : 21 Question Id : 640653388178 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 are correct?

Options :

6406531290349. ✖ The probability density function (PDF) of a continuous random variable X must be continuous.

6406531290350. ✔ The cumulative distribution function (CDF) of a continuous random variable X must be continuous.

6406531290351. ✖ The sum of two independent binomial random variables must be a binomial random variable.

6406531290352. ✖ For a random variable X, mean and variance cannot be equal.

Sub-Section Number : 3

Sub-Section Id : 64065355752

Question Shuffling Allowed : Yes

Question Number : 22 Question Id : 640653388176 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 joint PMF of two discrete random variables X and Y is given in the following table:

Y \ X	0	1
0	$\frac{1}{12}$	$\frac{1}{3}$
1	0	$\frac{1}{4}$
2	$\frac{1}{6}$	$\frac{1}{6}$

Joint PMF of X and Y

Calculate $\text{Cov}(X, Y)$. 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 :

-0.15 to -0.05

Sub-Section Number : 4

Sub-Section Id : 64065355753

Question Shuffling Allowed : No

Question Id : 640653388172 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (23 to 24)

Question Label : Comprehension

The joint PMF of two discrete random variables X and Y is given in the following table:

Y \ X	0	1	2	$f_Y(y)$
0	a	$\frac{1}{3}$	c	$\frac{2}{3}$
1	$\frac{1}{9}$	b	d	$\frac{1}{3}$
$f_X(x)$	$\frac{1}{3}$	$\frac{1}{2}$	$\frac{1}{6}$	1

Joint PMF of X and Y

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 23 Question Id : 640653388173 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 values of *c* and *d*.

Options :

6406531290334. ✖ $c = 1/9, d = 1/3.$

6406531290335. ✖ $c = 2/9, d = 1/6.$

6406531290336. ✖ $c = 2/9, d = 1/3.$

6406531290337. ✔ $c = 1/9, d = 1/18.$

Question Number : 24 Question Id : 640653388174 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

Are X and Y independent?

Options :

6406531290338. ✔ Yes

6406531290339. ✖ No

Sub-Section Number :	5
Sub-Section Id :	64065355754
Question Shuffling Allowed :	No

Question Id : 640653388179 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (25 to 26)

Question Label : Comprehension

A fair coin is tossed twice. Let X denote the number of heads obtained.

Let Y be defined as

$$Y = \begin{cases} 0, & \text{if no heads are obtained} \\ 1, & \text{if the first head appears on the first toss} \\ 2, & \text{if the first head appears on the second toss} \end{cases}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 25 Question Id : 640653388180 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which among the following can be the joint PMF of X and Y ?

Options :

6406531290353. ✖

Y \ X	0	1	2
0	0	0	0
1	0	1/4	1/4
2	0	1/4	1/4

6406531290354. ✖

Y \ X	0	1	2
0	1/4	0	0
1	0	1/2	1/4
2	0	0	0

6406531290355. ✔

Y \ X	0	1	2
0	1/4	0	0
1	0	1/4	1/4
2	0	1/4	0

6406531290356. ✖

Y \ X	0	1	2
0	1/4	0	0
1	0	1/4	0
2	0	1/4	1/4

Question Number : 26 Question Id : 640653388181 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 $P(Y \geq 1 \mid X = 1)$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Id : 640653388182 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (27 to 28)

Question Label : Comprehension

A fair die is thrown three times. Let

X_1 represent the number obtained in the 1st throw,

X_2 represent the number obtained in the 2nd throw,

X_3 represent the number obtained in the 3rd throw.

Suppose all the throws are independent. Let

$$X = \max(X_1, X_2, X_3)$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 27 Question Id : 640653388183 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

Compute the CDF of X, $F_X(k)$, where $k \in \{1, 2, \ldots, 6\}$.

Options :

6406531290358. ✖ $F_X(k) = \left(\frac{k}{6}\right)$

6406531290359. ✖ $F_X(k) = \left(\frac{1}{6}\right)^3$

6406531290360. ✖ $F_X(k) = \left(\frac{k+1}{6}\right)^3$

6406531290361. ✔ $F_X(k) = \left(\frac{k}{6}\right)^3$

Question Number : 28 Question Id : 640653388184 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 *P(X = 3)*. 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 :

0.085 to 0.089

Question Id : 640653388185 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (29 to 30)

Question Label : Comprehension

Aman answers a question correctly with a probability of 1/5 independent of other questions. Suppose he is called for an interview where he can be asked either 1 or 2, or 3 questions with probability 1/3 each. Let X denote the number of questions he is asked during the interview. Let Y denote the number of questions he answers correctly during the interview.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 29 Question Id : 640653388186 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 Aman is asked two questions during the interview, what is the probability that he will answer only one correct? 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 :

0.30 to 0.34

Question Number : 30 Question Id : 640653388187 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 *P(X = Y)*. 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 :

0.081 to 0.084

Question Id : 640653388188 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (31 to 32)

Question Label : Comprehension

Consider a function $f : \mathbb{R} \longrightarrow \mathbb{R}$ such that

$$f(x) = \begin{cases} \frac{1}{b} & -1 \leq x < 0 \\ ax(x+1)(x-1) & 0 \leq x \leq 1 \\ 0 & \text{Otherwise} \end{cases}$$

where a, b are any real constants.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 31 Question Id : 640653388189 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

Among the options below, for what values of *a* and *b*, is the function *f* a valid density function?

Options :

6406531290365. ✖ $a = 3, b = 4$

6406531290366. ✔ $a = -3, b = 4$

6406531290367. ✖ $a = -3, b = 3$

6406531290368. ✖ $a = 4, b = 3$

Question Number : 32 Question Id : 640653388190 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

With the choice of a, b given in the previous question, find $P\left(X \leq -\frac{1}{2} \mid X < 1\right)$. Enter the answer correct to three decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.125

Question Id : 640653388191 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (33 to 34)

Question Label : Comprehension

Suppose a fair die is rolled. Let X and Y be defined as

$$X = \begin{cases} 1, & \text{if the number is even} \\ 0, & \text{otherwise} \end{cases}$$

$$Y = \begin{cases} 1, & \text{if the number is prime} \\ 0, & \text{otherwise} \end{cases}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 33 Question Id : 640653388192 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 $E[XY]$. 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 :

0.15 to 0.18

Question Number : 34 Question Id : 640653388193 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 $\mathrm{Var}(XY)$. 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 :

0.135 to 0.141

CT

Section Id :	64065323971
Section Number :	3
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
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 :	64065355755
Question Shuffling Allowed :	No

Question Number : 35 Question Id : 640653388194 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:SEMESTER 1/DIRECT ENTRY DIPLOMA : COMPUTATIONAL THINKING "

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 :

6406531290372. ✔ Yes

6406531290373. ✖ No

Question Number : 36 Question Id : 640653388195 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

SeqNo	Name	Gender	DateOfBirth	TownCity	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

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

Library

SeqNo	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

SeqNo	Name	Gender	Nationality	Host country	Year	Sport	Medal
0	Karnam Malleswari	F	Indian	Australia	2000	Weightlifting	Bronze
			- - -				
49	Michael Phelps	M	American	China	2008	Swimming	Gold

Three sample cards out of 30 for Shopping Bills dataset

Options :

6406531290374. ✔ Useful Data has been mentioned above.

6406531290375. ✖ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 64065355756

Question Shuffling Allowed : Yes

Question Number : 37 Question Id : 640653388196 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

Select the most appropriate datatype specific to "Scores" dataset for the left column.

Field	Data Type
a. Is Bhuvanesh's total marks > 200 ?	1. String
b. Gender	2. Character
c. TownCity	3. Boolean
d. Sequence number	4. Integer

Options :

6406531290376. ✔ a - (3), b - (2), c- (1), d - (4)

6406531290377. ✖ a - (1), b - (2), c- (4), d - (3)

6406531290378. ✖ a - (2), b - (3), c- (1), d - (4)

6406531290379. ✖ a - (3), b - (1), c- (3), d - (4)

Sub-Section Number : 3

Sub-Section Id : 64065355757

Question Shuffling Allowed : Yes

Question Number : 38 Question Id : 640653388197 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

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

```
count = 0, Flag = False
while(Table 1 has more rows){
    Read the first row X in Table 1
    if(X.PartOfSpeech == "Noun"){
        Flag = True
    }
    else{
        if(Flag and X.PartOfSpeech == "Verb"){
            count = count + 1
        }
    }
    Move X to Table 2
}
```

Options :

6406531290380. ✖ Number of nouns before the first verb in the dataset

6406531290381. ✖ Number of verbs before the first noun in the dataset

6406531290382. ✖ Number of nouns after the first verb in the dataset

6406531290383. ✔ Number of verbs after the first noun in the dataset

Question Number : 39 Question Id : 640653388198 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

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

```
count = 0, A = 0
while(Table 1 has more rows){
    Read the first row X in Table 1
    if(X.Gender == 'M' or X.Mathematics > X.Physics){
        A = 1
    }
    else{
        count = count + 1
    }
    Move X to Table 2
}
```

Options :

6406531290384. ✖ Number of male students whose Physics marks are greater than Mathematics marks

6406531290385. ✖ Number of male students whose Physics marks are greater than or equal to Mathematics marks

6406531290386. ✔ Number of female students whose Physics marks are greater than or equal to Mathematics marks

6406531290387. ✖ Number of female students whose Physics marks are less than or equal to Mathematics marks

Question Number : 40 Question Id : 640653388200 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

The following pseudocode is executed using the "Shopping Bills" dataset. Procedure **findCommon** takes pair of cards **X** and **Y** as input and returns True if the two cards share at least one common item otherwise returns False. What will **count** represent at the end of the execution?

```
count = 0
while(Pile 1 has more cards){
    Read the top card X from Pile 1
    Move the card X to Pile 2
    while(Pile 1 has more Cards){
        Read the top card Y from Pile 1
        if(X.ShopName != Y.ShopName and findCommon(X, Y)){
            count = count + 1
        }
        Move the card Y to Pile 3
    }
    Move all the cards from Pile 3 to Pile 1
}
```

Options :

6406531290392. ✖ Number of pairs of bills from the same shop with at least one common item

6406531290393. ✔ Number of pairs of bills from the different shops with at least one common

item

6406531290394. ✖ Number of pairs of bills with at least two common items

6406531290395. ✖ Number of pairs of bills from the different shops with no common items

Sub-Section Number : 4

Sub-Section Id : 64065355758

Question Shuffling Allowed : Yes

Question Number : 41 Question Id : 640653388199 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

The following pseudocode is executed using the “Scores” dataset. What will **count** represent at the end of the execution?

```
count = 0
while(Table 1 has more rows){
    Read the first row X in Table 1
    Move X to Table 2
    Flag = True
    while(Table 1 has more rows){
        Read the first row Y in Table 1
        if(X.Mathematics == Y.Mathematics){
            Flag = False
            Move Y to Table 2
        }
        else{
            Move Y to Table 3
        }
    }
    if(Flag){
        count = count + 1
    }
    Move all rows from Table 3 to Table 1
}
```

Options :

6406531290388. ✖ Number of students with same Mathematics marks

6406531290389. ✖ Number of pairs of students with same Mathematics marks

6406531290390. ✔ Number of students with distinct Mathematics marks

6406531290391. ✖ Number of pairs of students with distinct Mathematics marks

Question Number : 42 Question Id : 640653388201 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

The following pseudocode is executed using the "Words" table. At the end of the execution, **count** stores the number of pairs of words with same letter count where both are either nouns or both end with a full stop. Choose the correct code fragment to complete the pseudocode.

```
count = 0
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
        if(***Statement 1***){
            if(X.PartOfSpeech == "Noun"){
                if(***Statement 2***){
                    count = count + 1
                }
            }
            else{
                if(***Statement 3***){
                    count = count + 1
                }
            }
        }
    }
    Move all rows from Table 3 to Table 1
}
```

Options :

6406531290396. ✖ Statement 1: **X**.PartOfSpeech == **Y**.PartOfSpeech

Statement 2: **X**.LetterCount == **Y**.LetterCount

Statement 3: **X**.Word and **Y**.Word end with a full stop

6406531290397. ✖ Statement 1: **X**.Word and **Y**.Word end with a full stop

Statement 2: **X**.PartOfSpeech == **Y**.PartOfSpeech

Statement 3: **X**.LetterCount == **Y**.LetterCount

6406531290398. ✖ Statement 1: **X**.LetterCount == **Y**.LetterCount

Statement 2:**X**.Word and **Y**.Word end with a full stop

Statement 3: **X**.PartOfSpeech == **Y**.PartOfSpeech

6406531290399. ✔ Statement 1: **X**.LetterCount == **Y**.LetterCount

Statement 2: **X**.PartOfSpeech == **Y**.PartOfSpeech

Statement 3: **X**.Word and **Y**.Word end with a full stop

Sub-Section Number : 5

Sub-Section Id : 64065355759

Question Shuffling Allowed : Yes

Question Number : 43 Question Id : 640653388202 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Select Question

Sripriya has used a variable **min** to find the minimum total score using “Scores” dataset. There are many ways of initializing **min**. Choose the correct option(s) regarding the initialization of **min**.

It is a Multiple Select Question (MSQ)

Options :

6406531290400. ✖ Initialize **min** to 0

6406531290401. ✔ Pick any random card **X** from the dataset and **min** = **X**.Total

6406531290402. ✔ Pick the top card **X** from the dataset and **min** = **X**.Total

6406531290403. ✔ Initialize **min** with any value greater than the possible maximum total score

6406531290404. ✖ Initialize **min** with any value less than the possible minimum total score

Sub-Section Number : 6

Sub-Section Id : 64065355760

Question Shuffling Allowed : Yes

Question Number : 44 Question Id : 640653388203 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

The following pseudocode is executed using the "Scores" dataset. At the end of the execution, **count** captures the number of boys who scored at least 75 marks in Chemistry. Choose the correct code fragment(s) to complete the pseudocode.

It is a Multiple Select Question (MSQ).

```
count = 0
while(Table 1 has more rows){
    Read the first row X in Table 1
    ********************************
    *********Fill the code*********
    ********************************
    Move X to Table 2
}
```

Options :

```
if(X.Gender == 'M' or X.Chemistry >= 75){
    count = count + 1
}
```

6406531290405. ✖

```
if(X.Gender == 'M'){
    A = 1
}
if(X.Chemistry >= 75){
    B = 1
}
if((A + B) > 1){
    count = count + 1
}
```

6406531290406. ✖

6406531290407. ✔

```
A = 0, B = 0
if(X.Gender == 'M'){
    A = 1
}
if(X.Chemistry >= 75){
    B = 1
}
if((A + B) > 1){
    count = count + 1
}
```

```
A = 0, B = 1
if(X.Gender == 'M'){
    A = 1
}
if(X.Chemistry < 75){
    B = 0
}
if((A + B) > 1){
    count = count + 1
}
```

6406531290408. ✔

Question Number : 45 Question Id : 640653388204 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

The following pseudocode is executed using the “Scores” dataset. At the end of the execution, **A** captures the number of students who are male from Bengaluru or have scored more marks in Physics than average Physics marks. Assume that **Avg** holds the value of the average Physics marks. But the pseudocode may have mistakes. Identify all such mistakes (if any). Assume that all statements not listed in the options below are free of errors.

It is a Multiple Select Question (MSQ).

```
1  A = 0
2  while(Table 1 has more rows){
3      Read the first row X in Table 1
4      C = False, D = False
5      if(X.Gender == 'F' and X.CityTown == "Bengaluru"){
6          C = True
7      }
8      if(X.Physics < Avg){
9          D = True
10     }
11     if(C or D){
12         A = A + 1
13     }
14     Move X to Table 2
15 }
```

Options :

6406531290409. ✖ Line 1

6406531290410. ✔ Line 5

6406531290411. ✔ Line 8

6406531290412. ✖ Line 12

6406531290413. ✖ No error in the code

Question Number : 46 Question Id : 640653388205 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

The following pseudocode is executed using the “Words” dataset. At the end of the execution, **count** captures the number of pairs of words with either same letter count or same part of speech but not both. Choose the correct code fragment(s) to complete the pseudocode.

It is a Multiple Select Question (MSQ).

```
count = 0
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
        count = count + findPair(X, Y)
    }
    Move all rows from Table 3 to Table 1
}
Procedure findPair(X, Y)
    ***************************
    ***** Fill the code ******
    ***************************
End findPair
```

Options :

```
A = 0, B = 0
if(X.LetterCount== Y.LetterCount or X.PartOfSpeech == Y.PartOfSpeech){
    A = A + 1
}
if(X.LetterCount== Y.LetterCount and X.PartOfSpeech == Y.PartOfSpeech){
    B = B + 1
}
return(A-B)
```

6406531290414. ✔

```
A = 0, B = 0
if(X.LetterCount== Y.LetterCount and X.PartOfSpeech == Y.PartOfSpeech){
    A = A + 1
}
if(X.LetterCount== Y.LetterCount or X.PartOfSpeech == Y.PartOfSpeech){
    B = B + 1
}
return(A-B)
```

6406531290415. ✖

6406531290416. ✔

```
A = False, B = False
if(X.LetterCount== Y.LetterCount){
    A = True
}
if(X.PartOfSpeech == Y.PartOfSpeech){
    B = True
}
if((A and not B) or (not A and B)){
    return(1)
}
return(0)
```

```
A = False, B = False
if(X.LetterCount== Y.LetterCount){
    A = True
}
if(X.PartOfSpeech == Y.PartOfSpeech){
    B = True
}
if((A or not B) and (not A or B)){
    return(1)
}
return(0)
```

6406531290417. ✖

Question Number : 47 Question Id : 640653388206 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

The following pseudocode is executed using the "Library" dataset. Assume that Table 1 contains all the books authored by "Narayan" only. Also assume that the "Year" field of each book is distinct in the Table.

```
Procedure groupBooks(Table 1)
    A = 2023, B = 0
    while(Table 1 has more rows){
        Read the first row Z from Table 1
        if(Z.Year < A){
            A = Z.Year
            B = Z.SeqNo
        }
        Move Z to Table 2
    }
    while(Table 2 has more rows){
        Read the first row K from Table 2
        if(K.SeqNo == B){
            Move K to Table 3
        }
        else{
            Move K to Table 4
        }
    }
End groupBooks
```

Which of the following statement(s) are correct at the end of execution of this pseudocode?

It is a Multiple Select Question (MSQ).

Options :

6406531290418. ✔ Table 2 will be empty

6406531290419. ✖ Table 3 will have one record corresponding to the most recently published book of "Narayan".

6406531290420. ✔ Table 3 will have one record corresponding to the oldest published book of "Narayan".

6406531290421. ✖ Table 4 will have one record corresponding to the oldest published book of "Narayan".

6406531290422. ✖ Table 4 will have one record corresponding to the most recently published book of "Narayan".

Question Number : 48 Question Id : 640653388207 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

The procedure **countGirls** is executed using the "Scores" dataset which counts the number of girls who have got more than the subject-wise average marks in at least one of the three subjects. Assume that the subject-wise average marks for Physics, Chemistry and Mathematics are stored in variables **P**,**C** and **M** respectively. Choose the correct code fragment(s) to complete the procedure.

It is a Multiple Select Question (MSQ).

```
Procedure countGirls(P,C,M)
    count = 0
    while(Table 1 has more rows){
        Read the first row X from Table 1
        ************************
        ****Fill in the code****
        ************************
        Move X to Table 2
    }
    return(count)
End countGirls
```

Options :

```
if(X.Gender == 'F'){
    if(X.Mathematics > M or X.Physics > P or X.Chemistry > C){
        count = count + 1
    }
}
```

6406531290423. ✔

```
if(X.Gender == 'F'){
    if(not(X.Mathematics < M and X.Physics < P and X.Chemistry < C)){
        count = count + 1
    }
}
```

6406531290424. ✖

```
if(X.Gender == 'F' and (X.Mathematics < M or X.Physics < P or X.Chemistry < C)){
    count = count + 1
}
```

6406531290425. ✖

```
if(X.Gender == 'F' and (X.Mathematics > M or X.Physics > P or X.Chemistry > C)){
    count = count + 1
}
```

6406531290426. ✔

Sub-Section Number : 7

Sub-Section Id : 64065355761

Question Shuffling Allowed : No

Question Id : 640653388208 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (49 to 50)

Question Label : Comprehension

Answer the given subquestions.

Sub questions

Question Number : 49 Question Id : 640653388209 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

The following pseudocode is executed using the “Olympics” dataset. Procedure **doSomething** accepts a Table of rows which contains rows of same player. Assume that every player has won at least two medals and only one medal in any year. What will (**A-B**) represent at the end of the execution?

```
Procedure doSomething(Table T1)
    A = 0, B = 0
    while(Table T1 has more rows){
        Read the first row Z from Table T1
        if(Z.Year > A){
            B = A
            A = Z.Year
        }
        if(Z.Year < A and Z.Year > B){
            B = Z.Year
        }
        Move the row Z to Table T2
    }
    return((A - B))
End doSomething
```

Options :

6406531290427. ✖ Year gap between first and second medal won by a player

6406531290428. ✖ Year gap between first and latest medal won by a player

6406531290429. ✔ Year gap between latest and second latest medal won by a player

6406531290430. ✖ Year gap between first and second latest medal won by a player

Question Number : 50 Question Id : 640653388210 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

The following pseudocode is executed on the "Olympics" dataset. Use the procedure **doSomething** in the previous question. What will **count** represent at the end of the execution? Assume that every player has won at least two medals and only one medal in a year.

```
count = 0, max = 0
while(Table 1 has more rows){
    Read the first row X from Table 1
    Move the row X to Table 2
    while(Table 1 has more rows){
        Read the first row Y from Table 1
        if(X.Name == Y.Name){
            Move the row Y to Table 2
        }
        else{
            Move the row Y to Table 3
        }
    }
    diff = doSomething(Table 2)
    if(diff == max){
        count = count + 1
    }
    if(diff > max){
        max = diff
        count = 1
    }
    Delete all the rows from Table 2
    Move all the rows from Table 3 to Table 1
}
```

Options :

6406531290431. ✖ Number of players with maximum year gap between first and second medal

6406531290432. ✖ Number of players with minimum year gap between first and second medal

6406531290433. ✔ Number of players with maximum year gap between latest and second latest medal

6406531290434. ✖ Number of players with minimum year gap between latest and second latest medal

Intro to Python

Section Id :	64065323972
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	14

Number of Questions to be attempted :	14
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065355762
Question Shuffling Allowed :	No

Question Number : 51 Question Id : 640653388211 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:SEMESTER 2/DIRECT ENTRY DIPLOMA : INTRODUCTION TO PYTHON"

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 :

6406531290435. ✔ YES

6406531290436. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065355763
Question Shuffling Allowed :	Yes

Question Number : 52 Question Id : 640653388212 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

E1 and **E2** are Boolean expressions. Consider the following expression:

```
1 | not(E1 and E2) == (not E1 and not E2)
```

What can you say about the value of the expression given above?

Options :

6406531290437. ✔ It is **True** if and only if **E1** and **E2** have same values

6406531290438. ✖ It is **False** if and only if **E1** and **E2** have the same value

6406531290439. ✖ It is always **True**

6406531290440. ✖ It is always **False**

Question Number : 53 Question Id : 640653388213 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:

```
1 | a, b, c, d = input()
2 | print((a + b + c) * int(d))
```

What will be the output of the code given above for the following input ?

Input

```
1 | 1234
```

Options :

6406531290441. ✔

```
1 | 123123123123
```

6406531290442. ✖

```
18
```

6406531290443. ✖

```
24
```

6406531290444. ✖

```
492
```

6406531290445. ✖

```
123412341234
```

Question Number : 54 Question Id : 640653388215 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

If **n** is a positive integer, then what will be the value of **count** at the end of execution of the code given below?

```
n = int(input())
count = 0
for x in range(1, n + 1):
    for y in range(x + 1, n + 1):
        count = count + 1
```

Options :

6406531290450. ✖ n^2

6406531290451. ✖ $n(n+1)$

6406531290452. ✖ $n(n+1)/2$

6406531290453. ✔ $n(n-1)/2$

Sub-Section Number : 3

Sub-Section Id : 64065355764

Question Shuffling Allowed : Yes

Question Number : 55 Question Id : 640653388216 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 be the output of the code snippet given below?

```
L = [0]
for i in range(1, 10):
    size = len(L)
    value = i + L[size-1]
    L.append(value)
print(L)
```

Options :

6406531290454. ✖

```
[0, 1, 2, 3, 4, 5, 6, 7, 8, 9]
```

6406531290455. ✔

```
[0, 1, 3, 6, 10, 15, 21, 28, 36, 45]
```

6406531290456. ✖

```
[1, 3, 6, 10, 15, 21, 28, 36, 45]
```

6406531290457. ✖

```
[0, 1, 3, 6, 10, 15, 21, 28, 36, 45, 55]
```

Question Number : 56 Question Id : 640653388218 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

If **n** is a positive integer, what is the output of the following code? Assume that natural numbers start from 1, that is, 0 is not a natural number.

```
a = n
for i in range(1, n):
    a = a + i
b = a
for j in range(1, a):
    b = b * j
print(b)
```

Options :

6406531290462. ✖ Sum of the factorial of the first **n-1** natural numbers

6406531290463. ✖ Factorial of the sum of the first **n-1** natural numbers

6406531290464. ✖ Sum of the factorial of the first **n** natural numbers

6406531290465. ✔ Factorial of the sum of the first **n** natural numbers

Question Number : 57 Question Id : 640653388219 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

L is a non-empty list of positive integers that is already defined. Consider the following snippet of code:

```
flag1, flag2 = True, True
for i in range(1, len(L)):
    if L[i] > L[i - 1]:
        flag2 = False
    elif L[i] < L[i - 1]:
        flag1 = False
if flag1:
    print('one')
elif flag2:
    print('two')
else:
    print('three')
```

What is the output of the code if L = [394, 289, 120, 719, 50, 27, 15] ?

Options :

6406531290466. ✖

```
one
```

6406531290467. ✖

```
two
```

6406531290468. ✔

```
three
```

6406531290469. ✖

```
four
```

Sub-Section Number : 4

Sub-Section Id : 64065355765

Question Shuffling Allowed : Yes

Question Number : 58 Question Id : 640653388214 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Select Question

A is a positive integer that represents the age. Consider the following snippet of code:

```
if 0 < A <= 14:
    print('child')
elif 14 < A <= 24:
    print('youth')
elif 24 < A <= 64:
    print('adult')
else:
    print('senior')
```

Two snippets of code are equivalent if they produce the same output for any given input. Select all snippets of code that are equivalent to the code given above.

Options :

6406531290446. ✔

```
if 0 < A <= 14:
    print('child')
if 14 < A <= 24:
    print('youth')
if 24 < A <= 64:
    print('adult')
if A > 64:
    print('senior')
```

6406531290447. ✖

```
if 0 < A <= 14:
    print('child')
if 14 < A <= 24:
    print('youth')
elif 24 < A <= 64:
    print('adult')
else:
    print('senior')
```

6406531290448. ✔

```
if 0 < A <= 14:
    print('child')
elif 14 < A <= 24:
    print('youth')
elif 24 < A <= 64:
    print('adult')
elif A > 64:
    print('senior')
```

```
if 0 < A <= 14:
    print('child')
if 14 < A <= 24:
    print('youth')
if 24 < A <= 64:
    print('adult')
else A > 64:
    print('senior')
```

6406531290449. ✖

Sub-Section Number : 5

Sub-Section Id : 64065355766

Question Shuffling Allowed : Yes

Question Number : 59 Question Id : 640653388217 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Which of the following options print the pair of "Welcome to Python Quiz!" and "All the best!!" alternatively on separate lines **n** times? There should be one line space between two pairs and there should not be any space after the last pair. Here, **n** is a positive integer that has already been defined. Your answer should be applicable for any positive integer.

Sample output for n = 3

```
Welcome to Python Quiz!
All the best!!

Welcome to Python Quiz!
All the best!!

Welcome to Python Quiz!
All the best!!
```

Options :

6406531290458. ✖

```
for i in range(n):
    print('Welcome to Python Quiz!')
    print('All the best!!')
    print()
```

6406531290459. ✔

```
print('Welcome to Python Quiz!')
print('All the best!!')
for i in range(n - 1):
    print()
    print('Welcome to Python Quiz!')
    print('All the best!!')
```

6406531290460. ✔

```
for i in range(n):
    print('Welcome to Python Quiz!')
    print('All the best!!')
    if(i != n - 1):
        print()
```

6406531290461. ✖

```
for i in range(n - 1):
    print('Welcome to Python Quiz!')
    print('All the best!!')
    if(i != n - 1):
        print()
```

Question Number : 60 Question Id : 640653388221 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Reverse a sentence based on words. The i^{th} word from the left in the input sentence is the i^{th} word from the end in the output sentence.

Consider following example:

```
sentence = "i know how to code in python"
modified_sentence = "python in code to how know i"
```

Choose all the options that accepts a sentence as input and prints the modified sentence.

Options :

```
sentence = input()
words = sentence.split(' ')
n = len(words)
for i in range(n - 1, 0, -1):
    print(words[i] + ' ', end = '')
print(words[0])
```

6406531290471. ✔

```
sentence = input()
words = sentence.split(' ')
n = len(words)
for i in range(n - 1, -2, -1):
    print(words[i] + ' ', end = '')
```

6406531290472. ✖

```
sentence = input()
words = sentence.split(' ')
n = len(words)
for i in range(n - 1, -1, -1):
    print(words[i] + ' ', end = '')
print(words[0])
```

6406531290473. ✖

```
words = sentence.split(' ')
n = len(words)
for i in range(n - 1):
    print(words[n - i - 1], end = ' ')
print(words[0])
```

6406531290474. ✔

Question Number : 61 Question Id : 640653388222 Question Type : MSQ Is Question

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

Correct Marks : 4

Question Label : Multiple Select Question

Select all matrices **M** for which the following code prints **True** to the console.

```
n = len(M)
flag = True
for i in range(n):
    for j in range(n):
        if (i != j) and (M[i][j] + M[j][i] != 0):
            flag = False
print(flag)
```

Options :

6406531290475. ✖

```
[[1, 2, 3], [2, 5, 4], [3, 4, 6]]
```

6406531290476. ✖

```
[[1, 5, 3, 4], [5, 1, 4, 6], [3, 4, 2, 8], [4, 6, 8, 3]]
```

6406531290477. ✔

```
[[1, 2, -3], [-2, 5, 4], [3, -4, 6]]
```

6406531290478. ✖

```
[[-1, 5, -3, 4], [-5, 1, -4, 6], [-3, 4, 2, 8], [-4, -6, -8, 3]]
```

Sub-Section Number : 6

Sub-Section Id : 64065355767

Question Shuffling Allowed : Yes

Question Number : 62 Question Id : 640653388223 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Select Question

For what values of **a**, **b** and **c** does the code given below print a sequence which has **0** as one of the elements?

```
for i in range(a, b, c):
    print(i)
```

Options :

6406531290479. ✔

```
a = 10, b = -1, c = -1
```

6406531290480. ✔

```
a = -10, b = 1, c = 1
```

6406531290481. ✖

```
a = 10, b = -2, c = 0
```

6406531290482. ✔

```
a = -5, b = 5, c = 5
```

Question Number : 63 Question Id : 640653388224 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Select Question

Select all snippets of code that print the following sequence of **n** lines, where **n** is a positive integer that is already defined. The **i**th line in the output corresponds to the first **i** Fibonacci numbers, for $1 \leq i \leq n$. Assume that 0 and 1 are the first two Fibonacci numbers. There should be a single space after every number. Specifically, there should be a single space after the last number in any given line.

Sample output for n = 7

```
0
0 1
0 1 1
0 1 1 2
0 1 1 2 3
0 1 1 2 3 5
0 1 1 2 3 5 8
```

Options :

```
L = [0, 1]
for i in range(n - 2):
    L.append(L[-1] + L[-2])
for i in range(1, n + 1):
    for j in range(i):
        print(L[j], end = ' ')
    print()
```

6406531290483. ✔

```
i = 0
L = []
while i < n:
    if i == 0:
        L.append(0)
    elif i == 1:
        L.append(1)
    else:
        L.append(L[-1] + L[-2])
    i += 1
    for j in range(i):
        print(L[j], end = ' ')
    print()
```

6406531290484. ✔

6406531290485. ✖

```
i = 0
L = []
while i <= n:
    if i == 0:
        L.append(0)
    elif i == 1:
        L.append(1)
    else:
        L.append(L[-1] + L[-2])
    i += 1
    for j in range(i):
        print(L[j], end = ' ')
    print()
```

```
L = [0, 1]
for i in range(n):
    L.append(L[-1] + L[-2])
for i in range(1, n + 1):
    for j in range(i):
        print(L[j], end = ' ')
    print()
```

6406531290486. ✔

Sub-Section Number : 7

Sub-Section Id : 64065355768

Question Shuffling Allowed : Yes

Question Number : 64 Question Id : 640653388220 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

R is a zero-matrix (all entries are zeros) of size 3 x 3 and

$$P = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix}, Q = \begin{bmatrix} 1 & 1 & -1 \\ 1 & 1 & -1 \\ 1 & 1 & -1 \end{bmatrix}$$

What is the output of the following snippet of code?

```
val = 0
for i in range(3):
    for j in range(3):
        R[i][j] = P[i][j] * Q[i][j]
        val = val + R[i][j]
print(val)
```

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

9

DBMS

Section Id :	64065323973
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No

Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065355769
Question Shuffling Allowed :	No

Question Number : 65 Question Id : 640653388225 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"

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 :

6406531290487. ✔ YES

6406531290488. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065355770
Question Shuffling Allowed :	Yes

Question Number : 66 Question Id : 640653388226 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Consider the relational schema given below.
student(*roll_no*, *name*, *house_name*)

Which of the following queries will return the student's name and number of students in their respective houses?

Options :

6406531290489. ✖

```
SELECT e.name AS student_name, dc.house_count AS  count
FROM student e,
    (SELECT house_name, COUNT(*) AS house_count
    FROM student
    GROUP BY name) AS dc
    WHERE e.house_name = dc.house_name;
```

6406531290490. ✔

```
SELECT e.name AS student_name, dc.house_count AS  count
FROM student e,
    (SELECT house_name, COUNT(*) AS house_count
    FROM student
    GROUP BY house_name) AS dc
    WHERE e.house_name = dc.house_name;
```

6406531290491. ✖

```
WITH house_count AS (select
house_name, COUNT(*) AS house_count FROM student
GROUP BY house_name)

SELECT e.name AS student_name , dc.house_count AS count
FROM student e, house_count dc
WHERE e.name = dc.name;
```

6406531290492. ✔

```
WITH house_count AS (select
house_name, COUNT(*) AS house_count FROM student
GROUP BY house_name)

SELECT e.name AS student_name , dc.house_count AS count
FROM student e, house_count dc
WHERE e.house_name = dc.house_name;
```

Question Number : 67 Question Id : 640653388227 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Consider the relation bike(*name*, *model*, *price*). Assume that no two bikes have the same price.
Choose the appropriate query/queries to find the names of four least expensive bikes.

Options :

6406531290493. ✔

```
SELECT name  FROM bike
ORDER BY price
FETCH FIRST 4 ROWS ONLY
```

6406531290494. ✖

```
SELECT name  FROM bike
ORDER BY price DESC
FETCH FIRST 4 ROWS ONLY
```

6406531290495. ✖

```
SELECT name FROM bike a
WHERE
(SELECT COUNT(price)
FROM bike b
WHERE b.price>a.price)<4
```

6406531290496. ✖

```
SELECT name FROM bike a
WHERE
(SELECT COUNT(price)
FROM bike b
WHERE b.price>a.price)>4
```

Question Number : 68 Question Id : 640653388231 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Consider the following relations:
auto_part(*pid*, *pname*, *color*)
auto_suppliers(*sid*, *sname*, *location*)
catalog(*pid*, *sid*, *price*)
Choose the correct relational algebra expressions to find the suppliers ID (*sid*) who supplies 'Red' or 'Black' colored auto parts.

Options :

6406531290503. ✖ $\Pi_{sid}(\sigma_{color='Red'}(auto\_part \bowtie catalog)) \vee \Pi_{sid}(\sigma_{color='Black'}(auto\_part \bowtie catalog))$

6406531290504. ✖ $\Pi_{sid}(\sigma_{color='Red' \vee color='Black'}(auto\_part \bowtie auto\_suppliers))$

6406531290505. ✔ $\Pi_{sid}(\sigma_{color='Red'}(auto\_part \bowtie catalog)) \cup \Pi_{sid}(\sigma_{color='Black'}(auto\_part \bowtie catalog))$

6406531290506. ✖ $\Pi_{sid}(\sigma_{color='Red'}(auto\_part \bowtie auto\_suppliers)) \cup \Pi_{sid}(\sigma_{color='Black'}(auto\_part \bowtie auto\_suppliers))$

6406531290507. ✖ $\Pi_{sid}(\sigma_{color='Red'}(auto\_part \bowtie catalog)) \cap \Pi_{sid}(\sigma_{color='Black'}(auto\_part \bowtie catalog))$

Question Number : 69 Question Id : 640653388232 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Consider the following relations:
auto_part($\underline{pid}, pname, color$)
auto_suppliers($\underline{sid}, sname, location$)
catalog($\underline{pid, sid}, price$)

TRC

1. $\{x \mid \exists s \in auto\_suppliers\ \exists c \in catalog\ \exists p \in auto\_part(s.location = \text{'}Mumbai\text{'} \wedge c.price = 5000 \wedge x.sid = c.sid \wedge x.pname = p.pname \wedge s.sid = c.sid \wedge p.pid = c.pid)\}$
2. $\{x \mid \exists p \in auto\_parts\ \exists c \in catalog(p.pname = \text{'}Suspension\text{'} \wedge c.price = 5000 \wedge x.pid = p.pid \wedge p.pid = c.pid)\}$
3. $\{x \mid \exists p \in auto\_parts\ \exists c \in catalog\ \exists s \in auto\_suppliers(p.pname = \text{'}Suspension\text{'} \wedge c.price = 5000 \wedge x.pid = p.pid \wedge x.sname = s.sname \wedge p.pid = c.pid \wedge s.sid = c.sid)\}$
4. $\{x \mid \exists s \in auto\_suppliers\ \exists c \in catalog(s.location = \text{'}Mumbai\text{'} \wedge c.price = 5000 \wedge x.sid = c.sid \wedge s.sid = c.sid)\}$

DRC

a. $\{< m >| \exists m, n, o(< m, n, o > \in auto\_parts \wedge n = \text{'}Suspension\text{'}) \wedge \exists a, b, c(< a, b, c > \in catalog \wedge c = 5000 \wedge m = a)\}$
b. $\{< p >| \exists p, q, r(< p, q, r > \in auto\_suppliers \wedge r = \text{'}Mumbai\text{'}) \wedge \exists a, b, c(< a, b, c > \in catalog \wedge c = 5000 \wedge p = b)\}$
c. $\{< p >| \exists p, q, r(< p, q, r > \in auto\_suppliers \wedge r = \text{'}Mumbai\text{'}) \wedge \exists a, b, c(< a, b, c > \in catalog \wedge c = 5000)\}$
d. $\{< m >| (< m, n, o > \in auto\_parts \wedge n = \text{'}Suspension\text{'}) \wedge (< a, b, c > \in catalog \wedge c = 5000 \wedge m = a)\}$
e. $\{< p, n >| \exists m, n, o(< m, n, o > \in auto\_parts) \wedge \exists p, q, r(< p, q, r > \in auto\_suppliers \wedge r = \text{'}Mumbai\text{'}) \wedge \exists a, b, c(< a, b, c > \in catalog \wedge c = 5000 \wedge m = a \wedge p = b)\}$
f. $\{< m, q >| \exists m, n, o(< m, n, o > \in auto\_parts \wedge n = \text{'}Suspension\text{'}) \wedge \exists p, q, r(< p, q, r > \in auto\_suppliers) \wedge \exists a, b, c(< a, b, c > \in catalog \wedge c = 5000 \wedge m = a \wedge p = b)\}$
g. $\{< p, n >| \exists m, n, o(< m, n, o > \in auto\_parts) \wedge \exists p, q, r(< p, q, r > \in auto\_suppliers \wedge r = \text{'}Mumbai\text{'}) \wedge \exists a, b, c(< a, b, c > \in catalog \wedge c = 5000)\}$
h. $\{< m, q >| \exists m, n, o(< m, n, o > \in auto\_parts \wedge n = \text{'}Suspension\text{'}) \wedge \exists p, q, r(< p, q, r > \in auto\_suppliers) \wedge \exists a, b, c(< a, b, c > \in catalog \wedge c = 5000)\}$

Match the TRC expression to its correct equivalent DRC expression.

Options :

6406531290508. ✖ 1-e, 2-d, 3-f, 4-c

6406531290509. ✔ 1-e, 2-a, 3-f, 4-b

6406531290510. ✖ 1-g, 2-a, 3-h, 4-b

6406531290511. ✖ 1-g, 2-d, 3-h, 4-c

Sub-Section Number : 3

Sub-Section Id : 64065355771

Question Shuffling Allowed : Yes

Question Number : 70 Question Id : 640653388228 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 Table 1 and predict the output of the query that follows.

id	name	dept_name	salary
10101	Srinivasan	Comp. Sci.	65000.00
12121	Wu	Finance	90000.00
15151	Mozart	Music	40000.00
22222	Einstein	Physics	95000.00
32343	El Said	History	60000.00
33456	Gold	Physics	87000.00
45565	Katz	Comp. Sci.	75000.00
58583	Califieri	History	62000.00
76543	Singh	Finance	80000.00
76766	Crick	Biology	72000.00
83821	Brandt	Comp. Sci.	92000.00
98345	Kim	Elec. Eng.	80000.00

Table 1: **instructor**

```
SELECT COUNT(*) FROM instructor AS a
WHERE a.salary > SOME(SELECT b.salary
                 FROM instructor AS b
                 where b.dept_name='History')
AND a.salary  >  ALL(SELECT c.salary
                 FROM instructor AS c
                 WHERE c.dept_name='Accountancy');
```

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Sub-Section Number : 4

Sub-Section Id : 64065355772

Question Shuffling Allowed : Yes

Question Number : 71 Question Id : 640653388229 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Select Question

Consider the following SQL statement:

```
CREATE TABLE Student(
        Roll_no varchar(8) primary key,
        Name varchar(10),
        Dept_name varchar(10),
        Semester varchar(10),
        check (Semester in ('Fall', 'Spring', 'Rainy')));
```

Identify the correct INSERT statement for table **Student**.

Options :

6406531290498. ✖
```
INSERT INTO Student ('CS101','Rakesh','CS','Rainy')
```

6406531290499. ✖
```
INSERT INTO Student(Roll_no,Name,Dept_name,Semester)
values('CS102','Ram','CS','Summer')
```

6406531290500. ✔
```
INSERT INTO Student(Roll_no,Name,Dept_name,Semester)
values('CS104','Shyam','CS','Spring')
```

6406531290501. ✔
```
INSERT INTO Student values('CS106','Mohan','CS','Rainy')
```

Sub-Section Number : 5

Sub-Section Id : 64065355773

Question Shuffling Allowed : Yes

Question Number : 72 Question Id : 640653388230 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 relations as shown in Table 2 and Table 3

shop_no	name
SH01	Tea stall
SH02	Modern Store
SH03	Balaji Store
SH04	Modern Store

Table 2: **Shop**

shop_no	item_name	price
SH01	Sugar	200
SH01	Tea leaf	500
SH02	Cookies	800
SH02	Namkeen	400
SH03	Mustard oil	700
SH04	Cookies	500

Table 3: **Shop_order**

```
SELECT name,AVG(price)
FROM Shop
NATURAL JOIN
Shop_order
GROUP BY name
HAVING AVG(price)>300
```

The number of tuples returned by the above SQL query.

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 73 Question Id : 640653388233 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 table 4 and table 5 .

a	b	c
a1	b1	c1
a2	b2	c2
a3	b3	c3
a4	b4	c4

Table 4: Alpha

c	d	e
c1	d1	e1
c2	d2	e2
c1	d1	e3
c2	d4	e4

Table 5: Beta

Find out the number of tuples returned by the following relational algebra expression

$(\text{Alpha} \times \text{Beta}) \div \Pi_{a,b}(\text{Alpha})$

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Sub-Section Number : 6

Sub-Section Id : 64065355774

Question Shuffling Allowed : Yes

Question Number : 74 Question Id : 640653388234 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 E-R diagram as shown in figure 1:

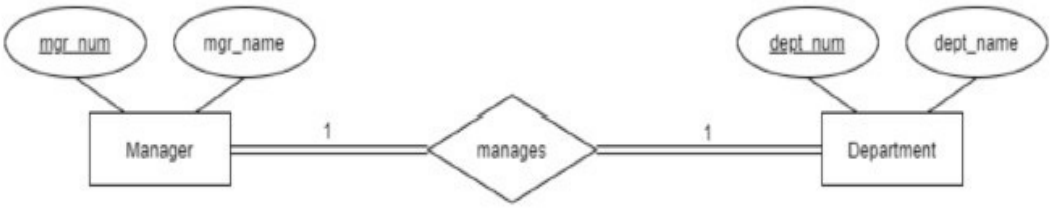


Figure 1: ER-Diagram

Which among the following is the correct relational schema for the given ER Diagram?

Options :

6406531290513. ✖ $\mathbf{Manager}(\underline{mgr\_num}, mgr\_name, dept\_name)$
$\mathbf{Department}(\underline{dept\_num}, dept\_name)$

6406531290514. ✖ $\mathbf{Manager}(\underline{mgr\_num}, mgr\_name)$
$\mathbf{Department}(\underline{dept\_num}, dept\_name)$

6406531290515. ✖ $\mathbf{Mgr\_dept}\ (\underline{mgr\_num}, dept\_num, mgr\_name, dept\_name)$

6406531290516. ✔ $\mathbf{Mgr\_dept}\ (\underline{mgr\_num, dept\_num}, mgr\_name, dept\_name)$

Question Number : 75 Question Id : 640653388237 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 relation **insurance**(*ins_id, company_name, ins_type, ratings*) shown in Figure 3.

ins_id	company_name	ins_type	ratings
I0001	Naturol	Health	5
I0002	Prismz	Health	4
I0003	Mind Free	Education	2
I0004	Capevirgo	Life-Term	3

Figure 3: **insurance**

Which among the following options will be the correct output for the given query?

```
SELECT 'Good' AS no_of_goodcompanies
FROM insurance
WHERE ratings != 2
AND ratings != 3
```

Options :

Output:

no_of_goodcompanies
Naturol
Prismz
Mind Free
Capevirgo

6406531290525. ✖

Output:

no_of_goodcompanies

6406531290526. ✖

Output:

no_of_goodcompanies
Naturol
Prismz

6406531290527. ✖

Output:

no_of_goodcompanies
Good
Good

6406531290528. ✔

Question Number : 76 Question Id : 640653388238 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 relational schemas.

employee(*emp_id, emp_name, dob, dept_id, desg_id*)
department(*dept_id, dept_name*)
designation(*desg_id, desg_name, salary*)

Choose the correct options to fill in the blanks of the given query so that it returns the lowest salary in 'Information Technology' department.

```
SELECT ___A___(de.salary)
FROM employee AS e
INNER JOIN department AS d ON e.dept_id = d.dept_id
INNER JOIN designation AS de ON e.desg_id = de.desg_id
___B___ d.dept_name = 'Information Tech.'
___C___ d.dept_name
```

Options :

6406531290529. ✖ A:MIN, B:ORDER BY, C:HAVING

6406531290530. ✖ A:MIN, B:GROUP BY, C:HAVING

6406531290531. ✖ A:MIN, B:ORDER BY, C:WHERE

6406531290532. ✔ A:MIN, B:WHERE, C:GROUP BY

Sub-Section Number : 7

Sub-Section Id : 64065355775

Question Shuffling Allowed : Yes

Question Number : 77 Question Id : 640653388235 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 SQL query.

```
SELECT s_name FROM students WHERE dept_name = 'Geology'
```

Which among the following steps of query processing will convert the above query to the given relational algebra expression?

$$\Pi_{s\_name}(\sigma_{dept\_name='Geology'}(students))$$

Options :

6406531290517. ✖ Evaluation Engine

6406531290518. ✖ Optimizer

6406531290519. ✖ Execution Plan

6406531290520. ✔ Parser and Translator

Question Number : 78 Question Id : 640653388239 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 organization called **Super Kids** offers educational and recreational opportunities for disabled children. The details of all the students have been added to Table Students. In case, a student's guardian has more than one contact address. So, a new column has to be created named 'Secondary Contact No.' which will include the contact details of the guardians having more than one contact number. Which among the following categories of SQL commands will be used to add a new column for the table?

Options :

6406531290533. ✖ DML

6406531290534. ✖ DCL

6406531290535. ✔ DDL

6406531290536. ✖ TCL

Sub-Section Number : 8

Sub-Section Id : 64065355776

Question Shuffling Allowed : Yes

Question Number : 79 Question Id : 640653388236 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 relation **customers**(*cus_id, cus_name, credit_score*) shown in Figure 2.

cus_id	cus_name	credit_score
C001	Suresh	200
C002	Naksh	180
C003	Ramesh	270
C004	Ram	300
C005	Pratik	400
C006	Lokesh	350

Figure 2: **customers**

Which among the following queries will return the output given below?

cus_id	creditscore
C001	50
C003	67
C006	87

Options :

6406531290521. ✖

```
SELECT cus_id, credit_score/4 AS creditscore
FROM customers
WHERE cus_name NOT LIKE '%e'
AND cus_name LIKE '%a%'
```

6406531290522. ✔

```
SELECT cus_id, credit_score/4 AS creditscore
FROM customers
WHERE cus_name LIKE '%e%'
ORDER by cus_name desc
```

6406531290523. ✖

```
SELECT cus_id, credit_score/4 AS creditscore
FROM customers
WHERE cus_name LIKE '%e_'
ORDER by cus_name asc
```

6406531290524. ✖

```
SELECT cus_id, credit_score/4 AS creditscore
FROM customers
WHERE cus_name LIKE '%s%'
AND cus_name NOT LIKE '_o%'
```

Question Number : 80 Question Id : 640653388240 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 two relational schemas **Faculty**(*f_id, name, dept_name*) and **Student**(*s_id, name, dept_name*) as shown in the Figure 4.

f_id	name	dept_name
F001	Marry	Biology
F003	Abhi	Zoology
F004	Henry	Biology
F008	Shima	Physics
F002	Sunil	Biology
F009	Rose	Zoology
F007	Harry	Physics

s_id	name	dept_name
S001	Shima	Physics
S002	Rose	Zoology
S003	Henry	Zoology
S004	Abhi	Biology
S005	Marry	Biology
S006	Abhi	Physics

Figure 4: **Faculty and Student**

What will be the total numbers of tuples resulting from the following relational algebra expression?

$$\Pi_{name,dept\_name}(Faculty \bowtie Student)$$

Options :

6406531290537. ✖ 1

6406531290538. ✖ 2

6406531290539. ✖ 4

6406531290540. ✔ 3

PDSA

Section Id :	64065323974
Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	17
Number of Questions to be attempted :	17

Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065355777
Question Shuffling Allowed :	No

Question Number : 81 Question Id : 640653388241 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"

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 :

6406531290541. ✔ YES

6406531290542. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065355778
Question Shuffling Allowed :	Yes

Question Number : 82 Question Id : 640653388242 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

```
def fun(m,n):
    if m == n:
        return n
    else:
        if m > n:
            return fun(m-n, n)
        else:
            return fun(m, n-m)
```

What does the function `fun` compute?

Options :

6406531290543. ✖ `m + n` using repeated subtraction

6406531290544. ✖ `m mod n` using repeated subtraction

6406531290545. ✔ The greatest common divisor of `m` and `n`

6406531290546. ✖ The least common multiple of `m` and `n`

Question Number : 83 Question Id : 640653388243 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

```
def prime_bad(n):
  if n < 2:
    return False
  for i in range(2, int(n**0.5)):
    if n % i == 0:
      return False
  return True
```

Here is a function `prime_bad` that takes a positive integer `n` as input and returns `True` if the number is prime and `False` otherwise. There is an error in this function. For which of the following input values of `n` , does function `prime_bad` return an **incorrect** output?

Options :

6406531290547. ✖ 36

6406531290548. ✔ 25

6406531290549. ✖ 64

6406531290550. ✖ 17

Question Number : 84 Question Id : 640653388244 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

$f1(n) = 10n^3 + 6n$

$f2(n) = 2n^2 + (\log n)^2$

$f3(n) = 2\log(\log n) + 10^2$

$f4(n) = 100n^2 logn + 10^3$

$f5(n) = 8n\log n + 20n + 25$

Arrange the above functions in increasing order of asymptotic complexity.

Options :

6406531290551. ✖ $f3(n), f5(n), f2(n), f1(n), f4(n)$

6406531290552. ✔ $f3(n), f5(n), f2(n), f4(n), f1(n)$

6406531290553. ✖ $f3(n), f4(n), f2(n), f5(n), f1(n)$

6406531290554. ✖ $f4(n), f3(n), f2(n), f1(n), f5(n)$

Question Number : 85 Question Id : 640653388245 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 a list `L` of tuples `[(7, 8, 1), (3, 7, 5), (7, 9, 5), (6, 9, 5), (7, 6, 1), (9, 9, 0)]`. The following `sort` function is executed on the list `L`.

```
1  def sort(L):
2      n = len(L)
3      if n < 1:
4          return(L)
5      for i in range(n):
6          j = i
7          while(j > 0 and L[j][1] < L[j-1][1]):
8              (L[j],L[j-1]) = (L[j-1],L[j])
9              j = j - 1
10     return(L)
```

Which of the following list is returned by the function `sort(L)`?

Options :

6406531290555. ✖ `[(7, 6, 1), (3, 7, 5), (7, 8, 1), (6, 9, 5), (7, 9, 5), (9, 9, 0)]`

6406531290556. ✖ `[(7, 6, 1), (3, 7, 5), (7, 8, 1), (9, 9, 0), (6, 9, 5), (7, 9, 5)]`

6406531290557. ✔ `[(7, 6, 1), (3, 7, 5), (7, 8, 1), (7, 9, 5), (6, 9, 5), (9, 9, 0)]`

6406531290558. ✖ `[(7, 6, 1), (3, 7, 5), (7, 8, 1), (7, 9, 5), (9, 9, 0), (6, 9, 5)]`

Question Number : 86 Question Id : 640653388246 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 an input list `L` of `n` distinct elements, and the aim is to sort it in increasing order. Which of the following statement(s) is/are **true**?

1. Input in increasing order is the worst case for Insertion sort, but not for Quick sort.
2. Input in increasing order is the worst case for Quick sort, but not for Insertion sort.
3. Input in decreasing order is the worst case for both Quick sort and Insertion sort.

Options :

6406531290559. ✖ 1 and 2

6406531290560. ✖ 1 and 3

6406531290561. ✔ 2 and 3

6406531290562. ✖ 1, 2 and 3

Question Number : 87 Question Id : 640653388247 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 a list `L` of `n` sorted numbers that are circularly shifted `k` positions to the right.

For example, `[-1,0,3,4,9,12]` is a sorted list.

`[9,12,-1,0,3,4]` : circularly shifted `2` positions to the right.

`[3,4,9,12,-1,0]` : circularly shifted `4` positions to the right.

What will be the complexity of the **most efficient algorithm** to search for the smallest element in `L` for the two cases listed below?

I. Value of `k` is not known.

II. Value of `k` is known.

Options :

6406531290563. ✖ I. $O(n)$, II. $O(1)$

6406531290564. ✖ I. $O(\log n)$, II. $O(\log n)$

6406531290565. ✖ I. $O(n)$, II. $O(\log n)$

6406531290566. ✔ I. $O(\log n)$, II. $O(1)$

Question Number : 88 Question Id : 640653388248 Question Type : MCQ Is Question

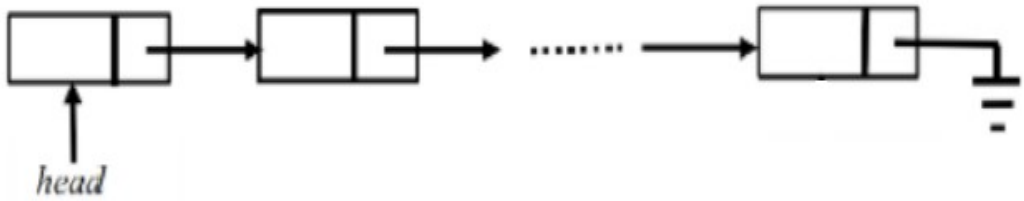
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

```
class Node:
    def __init__(self,data):
        self.data = data
        self.next = None
```

Consider an implementation of a singly linked list, where each node is created using the given class `Node`. Suppose it has a `head` variable that points to the first node of the linked list.



Suppose we want to perform the following operations on the given linked list:-

1. Insertion of the new node at the first position of the linked list.
2. Insertion of the new node at the last position of the linked list.
3. Deletion of the first node of the linked list.
4. Deletion of the last node of the linked list.

Which of the above operation can be performed in **constant time** $O(1)$?

Options :

6406531290567. ✖ 1 and 2

6406531290568. ✖ 2, 3 and 4

6406531290569. ✔ 1 and 3

6406531290570. ✖ 1, 3 and 4

Question Number : 89 Question Id : 640653388249 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 hash table of size 10 uses open addressing with hash function `h(k) = k mod 10`, and linear probing. After inserting 7 keys into an empty hash table, the table is as shown below.

Index	Key(k)
0	
1	21
2	32
3	53
4	83
5	75
6	14
7	43
8	
9	

Which of the following option **cannot** be a possible order in which the key could have been inserted in the hash table?

Options :

6406531290571. ✖ 21, 32, 53, 83, 75, 14, 43

6406531290572. ✖ 75, 53, 83, 21, 32, 14, 43

6406531290573. ✔ 75, 21, 32, 83, 53, 14, 43

6406531290574. ✖ 21, 75, 53, 32, 83, 14, 43

Question Number : 90 Question Id : 640653388250 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. Friend suggestion algorithm for social networking site	d. Queue

Options :

6406531290575. ✔ 1-d, 2-a, 3-c, 4-b

6406531290576. ✖ 1-d, 2-b, 3-c, 4-a

6406531290577. ✖ 1-d, 2-a, 3-b, 4-c

6406531290578. ✖ 1-c, 2-a, 3-d, 4-b

Question Number : 91 Question Id : 640653388251 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 implementation for stack.

```
class Stack:
    def __init__(self):
        self.stack = []
    def Push(self,v):
        self.stack.append(v)
    def isempty(self):
        return(self.stack == [])
    def Pop(self):
        v = None
        if not self.isempty():
            v = self.stack.pop()
        return(v)
```

```
def fun(s):
    if (not s.isempty()):
        i = s.Pop()
        fun(s)
        s.Push(i)
```

Let S be a stack `[5, 3, 7, 2, 8, 1, 4]` created using the given class `Stack`. What will be the state of the stack after the execution of `fun(s)` ?

Options :

6406531290579. ✔ `[5, 3, 7, 2, 8, 1, 4]`

6406531290580. ✖ `[4, 3, 7, 2, 8, 1, 5]`

6406531290581. ✖ `[4, 1, 8, 2, 7, 3, 5]`

6406531290582. ✖ `[3, 4, 2, 7, 1, 8, 5]`

Question Number : 92 Question Id : 640653388252 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 undirected connected graph G has 7 vertices. The sum of the degrees of all the vertices in G is d. The number of vertices of odd degree in G is k, Which of these values are possible for d and k?

Options :

6406531290583. ✖ $d = 27, k = 3$

6406531290584. ✖ $d = 30, k = 3$

6406531290585. ✖ $d = 31, k = 4$

6406531290586. ✔ $d = 32, k = 4$

Question Number : 93 Question Id : 640653388253 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Let G be an undirected connected graph and T be a breadth-first search tree for G, let x and y be nodes in T belonging to the levels i and j respectively, and let (x, y) be an edge of G. Then i and j differ by at most___.

Options :

6406531290587. ✖ 0

6406531290588. ✔ 1

6406531290589. ✖ 2

6406531290590. ✖ 3

Question Number : 94 Question Id : 640653388254 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 a connected, directed graph G on which **DFS** is executed. `pre` and `post` numbering is used in the DFS algorithm on the graph. In which of the following situations can we conclude that edge `(u,v)` is a **Cross edge**?

Options :

6406531290591. ✖ `pre[u] = 3, post[u] = 6, pre[v] = 1, post[v] = 10`

6406531290592. ✔ `pre[u] = 7, post[u] = 8, pre[v] = 4, post[v] = 5`

6406531290593. ✖ `pre[u] = 2, post[u] = 9, pre[v] = 7, post[v] = 8`

6406531290594. ✖ `pre[u] = 2, post[u] = 9, pre[v] = 4, post[v] = 5`

Sub-Section Number :	3
Sub-Section Id :	64065355779
Question Shuffling Allowed :	Yes

Question Number : 95 Question Id : 640653388257 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Select Question

Which of the following statement(s) is/are **true** about Breadth First Search (BFS) on an undirected graph?

Options :

6406531290597. ✔ BFS systematically computes reachability in graphs.

6406531290598. ✖ The Time complexity of BFS is *O(mn)* when Adjacency List is used and $O(m^2)$ when Adjacency Matrix is used, where *m* represents the number of vertices and *n* represents the number of edges.

6406531290599. ✖ BFS cannot be used to check for cycles in the graph.

6406531290600. ✔ Paths discovered by BFS are the shortest paths in terms of the number of edges from source to destination.

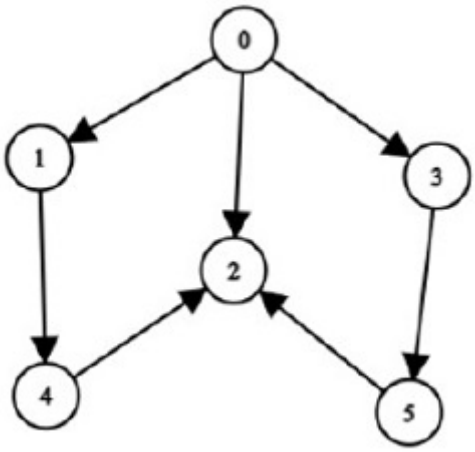
Sub-Section Number :	4
Sub-Section Id :	64065355780
Question Shuffling Allowed :	Yes

Question Number : 96 Question Id : 640653388255 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 DAG



The number of different topological orderings of the vertices of the graph is ___.

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Question Number : 97 Question Id : 640653388256 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

A university offers an online learning program in which there are 11 courses in total. The program is divided into **semesters** of 6 months. Students can take any number of courses in one semester, but they can take a course only if they have finished taking its prerequisites.

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

There is no constraint on how many courses a student can take in a semester. The minimum number of **semesters** required to complete all 11 courses is ___.

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

AppDev1

Section Id :	64065323975
Section Number :	7
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	17
Number of Questions to be attempted :	17
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065355781
Question Shuffling Allowed :	No

Question Number : 98 Question Id : 640653388258 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"

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 :

6406531290601. ✔ YES

6406531290602. ✖ NO

Sub-Section Number : 2

Sub-Section Id : 64065355782

Question Shuffling Allowed : Yes

Question Number : 99 Question Id : 640653388260 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

A certain text document consisting of only alphanumeric characters (including spaces) takes 35,552 bits, when encoded with UCS-4 (32 bit) encoding. How many bits will the same document take if encoded with ASCII 7 bit encoding?
(Concept: Encoding efficiency)

Options :

6406531290607. ✖ 6666 bits

6406531290608. ✔ 7777 bits

6406531290609. ✖ 8888 bits

6406531290610. ✖ 17,776 bits

Question Number : 100 Question Id : 640653388261 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

For a certain table "worker" in SQLite database having one of its fields as "First_name", the correct SQL query to fetch all "First_name" values from "worker" table using the alias name as "Worker_name" is:

(Concept: basic SQL queries)

Options :

6406531290611. ✖ `Select First_name ALIAS Worker_name from worker;`

6406531290612. ✖ `Select Worker_name For First_name from worker;`

6406531290613. ✔ `Select First_name AS Worker_name from worker;`

6406531290614. ✖ `Select First_name from worker;`

Question Number : 101 Question Id : 640653388265 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 Python code snippet.

```
from jinja2 import Template
temp = """{% for num in seq|reject("odd") %}
{{ num+2 }}
{% endfor %}
"""
seq = [6,5,71,13,30,22]
output = Template(temp)
print(output.render(seq = seq))
```

What will be the output if the given code is executed?

Options :

6406531290627. ✔
8
32
24

6406531290628. ✖
5
71
13

6406531290629. ✖
7
73
15

6406531290630. ✖
6
5
71
13
30
22

Sub-Section Number : 3

Sub-Section Id : 64065355783

Question Shuffling Allowed : Yes

Question Number : 102 Question Id : 640653388259 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.

(Concept: Python string and Jinja2 templates)

```
from string import Template as T1
from jinja2 import Template as T2

info = {'girl1': 'Mary', 'girl2': 'Samantha',
        'girl3': 'girl2', 'girl4': 'girl1',
        'city1':'Moscow', 'city2':'city1'}

t1 = T1("{{$girl4}} and {{$girl3}} arrived at the {{city2}} station early
and waited for the bus.")

out1 = t1.substitute(info)

out2 = T2(out1)

print(out2.render(info))
```

What will be the output on the terminal?

Options :

6406531290603. ✖ girl2 and girl1 arrived at the city1 station early and waited for the bus.

6406531290604. ✖ Samantha and Mary arrived at the Moscow station early and waited for the bus.

6406531290605. ✔ Mary and Samantha arrived at the city1 station early and waited for the bus.

6406531290606. ✖ Error

Question Number : 103 Question Id : 640653388262 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 snippets given below.

(Concept: HTML and CSS)

File 1: index.html:

```
<head>
    <link rel="stylesheet" href="style.css">
</head>
<body>
    <h3>The CSS Box Model</h3>
    <div class="my_border box">
        <h3 class="title">Border</h3>
        <div class="my_padding box">
            <h3 class="title">Padding</h3>
            <div class="my_content box">
                <h3 class="title">Content</h3>
            <div>
        <div>
    <div>
</body>
```

File 2: style.css:

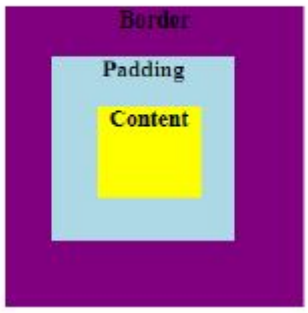
```
div.my_border
 {background-color: purple;
  border: 2px dotted grey;
  height: 130px;
  width: 130px;}

div.my_padding
 {background-color: lightblue;
 height: 80px;
 width: 80px;}

div.my_content
 {background-color: yellow;
   height: 40px;
   width: 45px; }

.title
 {text-align: left;
  font-size: 10px;
  font-style: italic;}

.box
{margin: 10px 20px;
    padding: 0px;}
```

What will be rendered by the browser, when the above HTML file is loaded?

Options :

6406531290615. ✖

The CSS Box Model



The CSS Box Model

6406531290616. ✖

The CSS Box Model

6406531290617. ✖

The CSS Box Model

6406531290618. ✔

Question Number : 104 Question Id : 640653388263 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 given below.

(Concept: Flask and concepts of HTTP methods)

```
from flask import Flask, request, url_for

app = Flask(__name__)

@app.route('/dashboard')
def dashboard():
    return 'This is the dashboard'

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

@app.route('/login', methods=['GET', 'POST'])
def login():
    if request.method == 'POST':
        return (url_for('user', username='student_1'))
    else:
        return (url_for('dashboard'))

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

If the above flask application is running on URL "http://127.0.0.1:5000", which of the following is the correct output if a user visits the URL "http://127.0.0.1:5000/login", using a browser?

Options :

6406531290619. ✖ This is the dashboard.

6406531290620. ✖ This is student_1 profile.

6406531290621. ✖ "404 NOT FOUND" error

6406531290622. ✔ /dashboard

Question Number : 105 Question Id : 640653388264 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following HTML code below.

```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="UTF-8"/>
<style>
body{text-align: center;}
p{font-size: 30px;font-style: italic;color: black;}
.blue{color: red;}
.red{color: green;}
.green{color: blue;}
#myId{color: grey;}
</style>
</head>
<body>
<div>
<h2 class="red">Happy Coding</h2>
<p class="blue">1st class</p>
<p class="red" id="myId">2nd class</p>
<p class="green">3rd class </p>
</div>
</body>
```

How will the browser render the above HTML file?
Match the rendered colour for the text.

1. Happy Coding	a. green
2. 1st Class	b. blue
3. 2nd Class	c. red
4. 3rd Class	d. grey

Options :

6406531290623. ✖ 1- b, 2 - a, 3- d, 4 - c

6406531290624. ✔ 1- a, 2 - c, 3- d, 4 - b

6406531290625. ✖ 1- a, 2 - b, 3- c , 4 - d

6406531290626. ✖ 1- a, 2 - c, 3- b, 4 - d

Question Number : 106 Question Id : 640653388266 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 tables.

User Table:

Id	Name	Age
1	Mala	50
2	Kala	30
3	Saamy	25
4	Ramya	30

Book Table:

Id	Bookname	Username
1	Python	Saamy
2	Java	Kala
3	C	Mala
4	Modern App	Ramya

If the above tables are given as inputs, what will be the output of the following query?

```
SELECT u.Name, b.Bookname FROM User as u, Book as b WHERE b.Username = u.Name
```

Options :

6406531290631. ✔

	Name	Bookname
1	Mala	C
2	Kala	Java
3	Saamy	Python
4	Ramya	Modern App

6406531290632. ✖

	Name	Bookname
1	Mala	50
2	Kala	30
3	Saamy	25
4	Ramya	30

6406531290633. ✖

	Bookname	Name
1	Python	Kala
2	Java	Saamy
3	C	Mala
4	Modern App	Ramya

6406531290634. ✖

	Bookname	Name
1	C	Mala
2	Java	Kala
3	Python	Ramya
4	Modern App	Saamy

Question Number : 107 Question Id : 640653388270 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 correct match with respect to **MVC** Software design pattern.

	Action		Component
1	Defining business logic	A	View
2	Display the data to user	B	Model
3	Databases, indexing for easy searching	C	Controller
4	User interfaces for finding information		
5	Stores core data for the application		

Options :

6406531290644. ✖ 1-A, 2-C, 3-A, 4-B, 5-B

6406531290645. ✖ 1-C, 2-B, 3-A, 4-B, 5-A

6406531290646. ✔ 1-C, 2-A, 3-B, 4-A, 5-B

6406531290647. ✖ 1-A, 2-B, 3-C, 4-B, 5-A

Question Number : 108 Question Id : 640653388276 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 and CSS styling.

```
<html>
    <head>
        <style>
            h3 {
                color: red;
            }
            .content {
                color: green;
            }
        </style>
    </head>
    <body>
        <h3 class = "content">This is the main Content</h3>
        <button onclick = "remove_class"> Click Me </button>
    </body>
</html>
```

Assuming clicking the button with the text "Click Me" removes the class "content" from the "h3" element, what will be the text colour of the text placed inside the "h3" element, before and after clicking the button with the text "Click Me" (Assume a normal browser is used which shows black text on white background)?

Options :

6406531290665. ✖ Before: Red
After: Green

6406531290666. ✖ Before: Red
After: Black

6406531290667. ✔ Before: Green
After: Black

6406531290668. ✖ Before: Green
After: Red

Sub-Section Number : 4

Sub-Section Id : 64065355784

Question Shuffling Allowed : Yes

Question Number : 109 Question Id : 640653388268 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

A Server S needs to retrieve data from two datacenters D1 and D2 located at 1800 kilometres and 2400 kilometres respectively. Server S and D1 are connected via medium M1 through which information can be transferred with the speed of 1.5×10^8 m/sec, and server S and D2 are connected via medium M2. If the server received data from both the data centres at the same time, what must be the speed of information transfer in medium M2?

(Concept: Performance parameters of a network)

Options :

6406531290636. ✖ 1.5×10^8 m/sec

6406531290637. ✔ 2×10^8 m/sec

6406531290638. ✖ 2.7×10^8 m/sec

6406531290639. ✖ 3×10^8 m/sec

Question Number : 110 Question Id : 640653388271 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 code for flask application.

main.py:

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

@app.route('/viewdata/')
def student_list():
    student_data={
        'rollno': [1001,1002,1003,1004,1005],
        'name': ['Amit','Ravi','Karthik','Ankur','Ishan'],
        'course':['Python','MAD1','MAD2','DBMS','MAD2']
    }
    return render_template("viewlist.html",st = student_data)
if __name__ == '__main__':
    app.run()
```

viewlist.html:

```
<!DOCTYPE html>
<html lang="en">

<head>
    <title>Document</title>
    <style>
        table, th, td {
            border: 1px solid black;
        }
    </style>
</head>

<body>
    <table>
        <tr>
            <th>Sno</th>
            <th>Roll No</th>
            <th>Name</th>
            <th>Course</th>
        </tr>


<!-- missing code block -->
    HTML code block
<!-- missing code block -->



    </table>
</body>

</html>
```

Suppose we want to display the student_data in the following table format for route "http://127.0.0.1:5000/viewdata/":

Sno	Roll No	Name	Course
1	1001	Amit	Python
2	1002	Ravi	MAD1
3	1003	Karthik	MAD2
4	1004	Ankur	DBMS
5	1005	Ishan	MAD2

Select the correct option to fill at the place of **HTML code block** in **viewlist.html** file to display the data in the above given table format without any error?

Options :

6406531290648. ✖

```
{for i in range(st['rollno']|length)}
<tr>
    <td>{{i+1}}</td>
    <td>{{st['rollno'][i]}}</td>
    <td>{{st['name'][i]}}</td>
    <td>{{st['course'][i]}}</td>
</tr>
{endfor}
```

6406531290649. ✔

```
{%for i in range(st['rollno']|length)%}
<tr>
    <td>{{i+1}}</td>
    <td>{{st[i]['rollno']}}</td>
    <td>{{st[i]['name']}}</td>
    <td>{{st[i]['course']}}</td>
</tr>
{%endfor%}
```

6406531290650. ✖

```
{# for i in range(st['rollno']|length) #}
<tr>
    <td>{{i+1}}</td>
    <td>{{st['rollno'][i]}}</td>
    <td>{{st['name'][i]}}</td>
    <td>{{st['course'][i]}}</td>
</tr>
{# endfor #}
```

6406531290651. ✖

```
{{for i in range(st['rollno']|length)}}
<tr>
    <td>{% i+1 %}</td>
    <td>{% st['rollno'][i] %}</td>
    <td>{% st['name'][i] %}</td>
    <td>{% st['course'][i] %}</td>
</tr>
{{endfor}}
```

Sub-Section Number : 5

Sub-Section Id : 64065355785

Question Shuffling Allowed : Yes

Question Number : 111 Question Id : 640653388275 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Select Question

Which of the following statement(s) is/are true regarding HTML and encodings?
Concepts Covered: Encoding Standards, HTML & CSS

Options :

6406531290661. ✔ The HTML tags are case-insensitive.

6406531290662. ✖ Both UTF-8 and UTF-32 are variable length encodings.

6406531290663. ✖ The UTF-8 can only be used for encoding (2^{16} + 1) characters.

6406531290664. ✔ The External CSS is preferred over internal and inline CSS for developing large websites.

Sub-Section Number : 6

Sub-Section Id : 64065355786

Question Shuffling Allowed : Yes

Question Number : 112 Question Id : 640653388269 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

Question Label : Multiple Select Question

Which of the following option(s) will generate the HTML code equivalent to the below HTML code?

[Concepts covered: Programmatic HTML generation]

```
<!DOCTYPE html>
<html>
  <head>
    <title>My title</title>
  </head>
  <body>
    <div>
      <div>
        <h2>inside title</h2>
      </div>
      <p>some text in a paragraph</p>
    </div>
  </body>
</html>
```

Options :

6406531290640. ✖

```
import pyhtml as h
t = h.html(
    h.head(h.title('My title')),
    h.body(
        h.div(h.div(h.p(h.h2('inside title'),
        ('some text in a paragraph'))))
    ))
print(t.render())
```

6406531290641. ✖

```
from jinja2 import Template
template = """<!DOCTYPE html>
<html>
  <head>
    <title>{{ title}}</title>
  </head>
  <body>
    <div>

      <div>
        <h2>{{header}}</h2>
      </div>
      <p>{{content}}</p>
    </div>
  </body>
</html>"""
t = Template(template)
print(t.render( header = 'My Title', title = 'Paragraph', content = 'This is
the content'))
```

6406531290642. ✔

```
import pyhtml as h
t = h.html(
    h.head(h.title('My title')),
    h.body(
        h.div(h.div(h.h2('inside title')),
        h.p('some text in a paragraph'))
    ))
print(t.render())
```

6406531290643. ✔

```
from jinja2 import Template
temp_val = { 0: "<div><h2>inside title</h2></div>",
        1: "<title>My title</title>",
        2: "<p>some text in a paragraph</p>"  }

template = """<!DOCTYPE html>
<html>
  <head>
    {{val[1]}}
  </head>
  <body>
    <div>
      {{val[0]}}
      {{val[2]}}
    </div>
  </body>
</html>"""
t = Template(template)
print(t.render( val = temp_val))
```

Sub-Section Number : 7

Sub-Section Id : 64065355787

Question Shuffling Allowed : Yes

Question Number : 113 Question Id : 640653388267 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 below table student:

(Concept: SQL INNER JOIN)

student

Rollno	Name	Grade
CE01	Anil	A
CE02	Sunil	B
EE01	Kapil	B
EE02	Anil	C
EE03	Adil	D

How many tuples are retrieved by the below SQL query?

Note: The answer must be an integer.

```
SELECT *
FROM (SELECT Rollno, Name FROM student) AS A INNER JOIN
(SELECT Name, Grade FROM student) AS B on A.Name = B.Name;
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

7

Sub-Section Number : 8

Sub-Section Id : 64065355788

Question Shuffling Allowed : No

Question Id : 640653388272 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (114 to 115)

Question Label : Comprehension

Consider the following instance of relational tables:

Student

S_Id	Student_Name	City
1001	Sunil	Delhi
1002	Madhur	Chennai
1003	Nihal Surya	Mumbai
1004	Rama Yamuna	Delhi
1005	Sunil	Chennai
1006	Madhur	Chennai

Course

C_Id	Course_Name
CS2001	DBMS
CS2002	PDSA
CS2003	MAD1

Result

S_Id	C_Id	Marks
1001	CS2002	70
1002	CS2003	68
1003	CS2003	76
1004	CS2003	86
1005	CS2001	49
1006	CS2003	73

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 114 Question Id : 640653388273 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2.5

Question Label : Multiple Select Question

Which of the following statement is/are always true for the given instance of the relational tables?

Options :

6406531290652. ✔ The average of Marks for any particular course can be retrieved if the value of the column "Course_Name" is known.

6406531290653. ✖ The Marks of students in each course can be uniquely identified if the value of the column "Student_Name" is known.

6406531290654. ✔ All Course_Name in which at least one student is enrolled can be identified if all the values of column "S_Id" are known.

6406531290655. ✖ The City of the student can be uniquely identified if the value of the column "Student_Name" is known.

6406531290656. ✔ The number of enrolled students in any particular course can be retrieved if the value of the column "Course_Name" is known.

Question Number : 115 Question Id : 640653388274 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 **S_Id(s)** is/are returned by the following SQL query for the given instance of the relational tables?

```
select R.S_Id from Student S join Result R on S.S_Id=R.S_id join
Course C on R.C_Id=C.C_Id where R.Marks>70 and S.City='Chennai' and
C.Course_name='MAD1'
```

Options :

6406531290657. ✖ 1005

6406531290658. ✔ 1006

6406531290659. ✖ 1006,1002

6406531290660. ✖ 1002, 1005

MLF

Section Id :	64065323976
Section Number :	8
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065355789
Question Shuffling Allowed :	No

Question Number : 116 Question Id : 640653388277 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"

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 :

6406531290669. ✔ Yes

6406531290670. ✖ No

Sub-Section Number : 2

Sub-Section Id : 64065355790

Question Shuffling Allowed : Yes

Question Number : 117 Question Id : 640653388278 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

The ML team in a movie production company wanted to predict whether a movie will earn 100 cr or not by using some classification models. Therefore, the team collected presence/absence of various factors $\mathbf{x} = [x_1, x_2, x_3]$ from the movies in the past. The data and the corresponding labels are shown in the Table below.

$\mathbf{x}$	y
[0,1,1]	0
[1,0,1]	1
[1,0,0]	1
[1,1,1]	1
[1,1,0]	1

Compute the loss of the model if they use

$$u(z) = \begin{cases} 1, & \text{if } z \geq 0 \\ 0, & \text{otherwise} \end{cases}$$

and $z = 0.5x_1 - x_2 + 0.4x_3$

Note: 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 :

0.38 to 0.42

Question Number : 118 Question Id : 640653388284 Question Type : SA Calculator : None

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

Correct Marks : 4

Question Label : Short Answer Question

Find the linear approximation (L) of $f(x, y) = 3x^3 + 4y^2 + 10$ around $(1, 1)$ and use it to compute L(1.2, 0.8). What will be the value of $f(1.2, 0.8) - L(1.2, 0.8)$? Enter the answer up to two decimals accuracy.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.50 to 0.58

Question Number : 119 Question Id : 640653388291 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 second degree polynomial that fits the below is $ax^2 + bx + c$, then what is the value of $a + b + c$?

x	y
1	3
2	4
3	8

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 :	64065355791
Question Shuffling Allowed :	Yes

Question Number : 120 Question Id : 640653388279 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Identify which of the following requires use of classification technique.

Options :

6406531290672. ✔ Credit card fraud detection.

6406531290673. ✔ Sentiment analysis

6406531290674. ✖ Predicting number of emails a user will receive in a single day.

6406531290675. ✔ Predicting whether the patient is having cancer or not.

Question Number : 121 Question Id : 640653388286 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Two vectors v_1 and v_2 are such that $v_1 = -2v_2$. If $v_1 = (1, 2, 3)^T$, and we have another vector $v_3 = (1, -5, 3)^T$, then which of the following statements is/are true?

Options :

6406531290682. ✔ Vectors v_1 and v_2 are parallel to each other.

6406531290683. ✖ Vectors v_1 and v_2 are perpendicular to each other.

6406531290684. ✖ Vectors v_2 and v_3 are not perpendicular to each other.

6406531290685. ✔ Vectors v_2 and v_3 are perpendicular to each other.

6406531290686. ✔ Vectors v_1 and v_3 are perpendicular to each other.

Question Number : 122 Question Id : 640653388289 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Which of the following is/are not the eigen vectors of the matrix $\begin{bmatrix} 5 & 2 \\ 3 & 6 \end{bmatrix}$?

Options :

6406531290692. ✖ $(1, -1)^T$

6406531290693. ✔ $(1, 1)^T$

6406531290694. ✖ $(1, 1.5)^T$

6406531290695. ✖ $(2, 3)^T$

Sub-Section Number : 4

Sub-Section Id : 64065355792

Question Shuffling Allowed : Yes

Question Number : 123 Question Id : 640653388280 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 sets $(x^i, y^i) = [(1,1),(2,2),(3,4),(4,5),(5,5)], i = 1$ to 5, Consider the regression model $f(x) = x + 1$. 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 : Equal

Text Areas : PlainText

Possible Answers :

0.6

Question Number : 124 Question Id : 640653388282 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

What will be the directional derivative of $f(x, y, z) = xyz$ at point (-1, 1, 2) along the direction given by the unit vector $(\frac{1}{3}, \frac{-2}{3}, \frac{2}{3})$ Enter the answer up to two decimals accuracy.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

1.3 to 1.4

Question Number : 125 Question Id : 640653388283 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 what value of k, will the following function be continuous?

$$f(x) = \begin{cases} \frac{tan5x}{sin2x}, & \text{if } x \neq 0 \\ 2k & \text{if } x = 0 \end{cases}$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1.25

Question Number : 126 Question Id : 640653388285 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 matrix $S = \begin{bmatrix} 2 & -2 & 4 \\ 1 & 1 & -1 \\ -1 & 1 & -2 \\ -2 & -2 & 2 \end{bmatrix}$ what is the dimension of its column space?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 127 Question Id : 640653388288 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 length of orthogonal projection vector of $(4,4,6)^T$ on to a line through $(2,3,6)^T$? Round the answer to nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

8

Question Number : 128 Question Id : 640653388290 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

If $A = PDP^{-1}$ where $P = \begin{bmatrix} 1 & 2 \\ 1 & -5 \end{bmatrix}$ and $D = \begin{bmatrix} -1 & 0 \\ 0 & 6 \end{bmatrix}$, then what is the summation of all the diagonal elements of A^4

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1297

Question Number : 129 Question Id : 640653388292 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 values of α and β for which the matrix $A = \begin{bmatrix} 4 & \alpha \\ 4 & \beta \end{bmatrix}$ has eigenvalues equal to -2 and -6. Enter your answer as $2 \times \alpha + \beta \times 2$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-42

Sub-Section Number :	5
Sub-Section Id :	64065355793
Question Shuffling Allowed :	Yes

Question Number : 130 Question Id : 640653388281 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

Does the limit for the following function exist at $x = -1$?

$f(x) = \dfrac{|x+1|}{x}$

(Provide 1 as answer for 'Yes' and 0 for 'No'.)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Sub-Section Number : 6

Sub-Section Id : 64065355794

Question Shuffling Allowed : Yes

Question Number : 131 Question Id : 640653388287 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

In a linear regression problem $X\theta = y$, with features $X = \begin{bmatrix} 1 & 2 & 3 \\ 1 & 1 & 2 \\ 3 & 1 & 5 \end{bmatrix}$ $y = (16, 9, 18)^T$, what is the weight vector θ?

Options :

6406531290687. ✔ $(-3, 2, 5)^T$

6406531290688. ✖ $(3, 2, 5)^T$

6406531290689. ✖ $(-1, 1, 6)^T$

6406531290690. ✖ $(-3, 5, 2)^T$

Java

Section Id : 64065323977

Section Number : 9

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065355795
Question Shuffling Allowed :	No

Question Number : 132 Question Id : 640653388293 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"

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 :

6406531290699. ✔ YES

6406531290700. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	64065355796
Question Shuffling Allowed :	Yes

Question Number : 133 Question Id : 640653388294 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
interface Bookable{
    public default void book(){
        System.out.println("Books");
    }
}
interface Cancelable{
    public default void cancel(){
        System.out.println("Cancels");
    }
}
class Ticket implements Bookable, Cancelable{
    public void book(){
        System.out.println("Book ticket");
    }
}
public class Test {
    public static void main(String[] args) {
        Bookable b1 = new Ticket();
        b1.book();
        b1.cancel();
    }
}
```

Choose the correct option

Options :

6406531290701. ✖ This program generates compiler error because neither is class `Ticket` declared as abstract nor does it override method `cancel( )`.

6406531290702. ✔ This program generates compiler error because `b1` of type `Bookable` cannot invoke method `cancel( )`.

6406531290703. ✖ This program generates the output:

```
Book ticket
Cancels
```

6406531290704. ✖

This program generates the output:

```
Books
Cancels
```

Question Number : 134 Question Id : 640653388297 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
interface Iterator{
  public boolean has_next();
  public Object get_next();
}
class Faculty{
  // ...
  private class FacIter implements Iterator{
    // ....
    public boolean has_next() {
      // ...
      return false;
    }
    public Object get_next() {
      // ...
    }
  }
  public Iterator getIterator() {
      return new FacIter();
  }
}
public class Test{
    public static void main(String[] args) {
        Faculty fList = new Faculty();
        //CODE BLOCK                          // LINE-1
        boolean hasNext = iter.has_next();    // LINE-2
    }
}
```

Identify the appropriate statements to fill in place of LINE-1 in order to correctly invoke method has_next() as given in LINE-2.

Options :

6406531290713. ✖ `Iterator iter = new FacIter();`

6406531290714. ✔ `Iterator iter = fList.getIterator();`

6406531290715. ✖ `FacIter iter = fList.getIterator();`

6406531290716. ✖ Method `has_next()` cannot be invoked from an outside class.

Question Number : 135 Question Id : 640653388298 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class Coffee{
    public void orderCoffee(){
        CoffeeMaker m = new CoffeeMaker(this);  // LINE 1
        m.prepareCoffee();
        System.out.println("Coffee served");
    }
    public void alarm(){
        System.out.println("Collected coffee");
    }
}
class CoffeeMaker{
    Coffee c;
    public CoffeeMaker(Coffee c){
        this.c = c;
    }
    public void prepareCoffee(){
        System.out.println("Coffee prepared");
        c.alarm();                              // LINE 2
    }
}
public class Test {
    public static void main(String[] args) {
        Coffee c1 = new Coffee();
        c1.orderCoffee();
    }
}
```

Choose the correct option.

Options :

6406531290717. ✖ This program generates compiler error at `LINE 1`
Reason: An object of `CoffeeMaker` cannot be created inside method `orderCoffee` because it uses an object of `Coffee` in its constructor.

6406531290718. ✖ This program generates the output:
`Coffee prepared`
followed by runtime error
Reason: A method inside class `Coffee` is invoking method `prepareCoffee` inside class `CoffeeMaker`, whereas `prepareCoffee` is invoking another method in class `Coffee`.

6406531290719. ✖

This program generates compiler error at LINE 2
Reason: A method inside class Coffee is invoking method prepareCoffee inside class CoffeeMaker, whereas prepareCoffee is invoking another method in class Coffee.

This program generates the output:

```
Coffee prepared
Collected coffee
Coffee served
```

6406531290720. ✔

Question Number : 136 Question Id : 640653388300 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
interface Printable{
    public default void print(){
        System.out.println("prints");
    }
}
class Address implements Printable{          //LINE 1
}
class Customer implements Printable{
    public void print() {
        System.out.println("prints name along with bill");
    }
}
public class Test{
    public static void main(String[] args) {
        Printable p1 = new Address();
        p1.print();                                  // LINE 2
        Printable p2 = new Customer();
        p2.print();
    }
}
```

Choose the correct option.

Options :

6406531290725. ✖ Compiler error at `LINE 1` because class `Address` is not abstract

6406531290726. ✔ This program generates output:

```
prints
prints name along with bill
```

6406531290727. ✖ This program generates output:

```
prints
prints
```

6406531290728. ✖ Runtime error because method `print()` is not defined for class `Address` (see `LINE 2`)

Question Number : 137 Question Id : 640653388302 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class Player{
    private String name;
    private double salary;
    public Player(String n, double s) {
        name = n;
        salary = s;
    }
    public String toString() {
        return "name = " + name + ", salary = " + salary;
    }
}
class Captain extends Player{
    String viceCaptain;
    public Captain(String vc) {
        //LINE-1
    }
    public Captain(String n, double s, String vc) {
        //LINE-2
        viceCaptain = vc;
    }
    public String toString() {
        return super.toString()+", viceCaptain = "+viceCaptain;

        }
    }
    public class ConTest {
        public static void main(String[] args) {
            Player obj = new Captain("XYZ");
            System.out.println(obj);
        }
    }
```

Choose the correct option to fill in place of LINE-1 and LINE-2 so that the output is:

```
name = ABC, salary = 5000000.0, viceCaptain = XYZ
```

Options :

6406531290733. ✖
```
LINE-1 :  this("ABC", 5000000.00, vc);
LINE-2 :  this(n, s);
```

6406531290734. ✔
```
LINE-1 :  this("ABC", 5000000.00, vc);
LINE-2 :  super(n, s);
```

6406531290735. ✖

```
LINE-1 :  super("ABC", 5000000.00, vc);
LINE-2 :  super(n, s);
```

6406531290736. ✖

```
LINE-1 :  super("ABC", 5000000.00, vc);
LINE-2 :  this(n, s);
```

Question Number : 138 Question Id : 640653388303 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class MLA{
    public void campaign() {
        System.out.println("Campaigns in one constituency");
    }
    public void service() {
        System.out.println("Serves one constituency");
    }
    public void monitor() {
        System.out.println("Monitors development of one constituency");
    }
}
class MP extends MLA{
    public void campaign() {
        System.out.println("Campaigns in nine constituencies");
    }
    public void service() {
        System.out.println("Serves nine constituencies");
    }
    public void monitor() {
        System.out.println("Monitors development of nine constituencies");
    }
}
class PM extends MP{
    public void campaign() {
        System.out.println("Campaigns anywhere in the country");
    }
    public void service() {
        System.out.println("Serves the country");
    }
    public void monitor() {
        System.out.println("Monitors development of the country");
    }
}
public class ModTest {
    public static void main(String[] args) {
        MLA obj1 = new PM();
        MP obj2 = new PM();
        PM obj3 = new PM();
        obj1.campaign();
        obj2.service();
        obj3.monitor();

    }
}
```

What will the output be?

Options :

Campaigns in one constituency
Serves one constituency
Serves nine constituencies
Monitors development of one constituency
Monitors development of nine constituencies
Monitors development of the country

6406531290737. ✖

6406531290738. ✔

```
Campaigns anywhere in the country
Serves the country
Monitors development of the country
```

6406531290739. ✖

```
Campaigns in one constituency
Serves one constituency
Monitors development of one constituency
```

6406531290740. ✖

```
Campaigns in one constituency
Serves nine constituencies
Monitors development of the country
```

Question Number : 139 Question Id : 640653388305 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
public class SwitchTest{
    public static void main(String args[]){
        for(int i = 2; i > 0; i--) {
            switch(i){
                case 1:
                    System.out.println("Concepts");
                case 2:
                    switch(i){
                        case 1:
                            System.out.println("using Java");
                            break;
                        case 2:
                            System.out.println("Programming");
                    }
            }
        }
    }
}
```

What will the output be?

Options :

6406531290745. ✖ Programming Concepts

6406531290746. ✖ Concepts using Java

6406531290747. ✖ Programming using Java

6406531290748. ✔ Programming Concepts using Java

Question Number : 140 Question Id : 640653388306 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class AsstDirector{
    String name;
    double salary;
    public AsstDirector(String name, double salary) {
        this.name = name;
        this.salary = salary;
    }
    public String toString() {
        return "name = "+  name +" salary = " + salary + " ";
    }
}
class Director extends AsstDirector{
    int asst_count;
    public Director(String n, AsstDirector a, int ac) {
        super(n, 1.5*(a.salary));
        this.asst_count = ac;
    }
    public Director(Director d) {
        super(d.name, d.salary);
        this.asst_count = d.asst_count;
    }
    public String toString() {
        return super.toString() + "asst_count = " + asst_count;
    }
}
public class ConTest{
    public static void main(String args[]){
        AsstDirector obj1 = new AsstDirector("ABC", 5000);
        AsstDirector obj2 = new Director("XYZ", obj1, 3);
        AsstDirector obj3 = new Director((Director)obj2);
        System.out.println(obj1);
        System.out.println(obj2);
        System.out.println(obj3);
    }
}
```

What will the output be?

Options :

6406531290749. ✖
```
name = ABC salary = 5000.0
name = XYZ salary = 5000.0 asst_count = 3
name = XYZ salary = 5000.0 asst_count = 3
```

6406531290750. ✖
```
name = ABC salary = 5000.0
name = ABC salary = 5000.0 asst_count = 3
name = XYZ salary = 7500.0 asst_count = 3
```

```
name = ABC remuneration = 5000.0
name = XYZ remuneration = 7500.0 asst_count = 3
```

6406531290751. ✔ `name = XYZ remuneration = 7500.0 asst_count = 3`

```
name = ABC salary = 5000.0
name = XYZ salary = 7500.0 asst_count = 3
```

6406531290752. ✖ `name = ABC salary = 5000.0 asst_count = 3`

Question Number : 141 Question Id : 640653388307 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
public class Student {
    private String name;
    private static String course;
    private final int sems;
    Student(){
        name = null;
        course = null;
        sems = 8;
    }
    public String toString() {
        return "name = " + name + ", course = " + course + ", sems = " + sems ;
    }
    public static void main(String[] args) {
        Student obj1 = new Student();
        Student obj2 = new Student();
        obj1.name = "ABC";          //LINE-1
        Student.course = "BTECH";
        obj2.name = "XYZ";          //LINE-2
        System.out.println(obj1);
        System.out.println(obj2);
    }
}
```

What will the output be?

Options :

6406531290753. ✖ Compilation errors at LINE-1 and LINE-2 because private variable name cannot be accessed without using an accessor method.

6406531290754. ✔ The program generates the output:

```
name = ABC, course = BTECH, sems = 8
name = XYZ, course = BTECH, sems = 8
```

6406531290755. ✖ The program generates the output:

```
name = ABC, course = null, sems = 8
name = XYZ, course = null, sems = 8
```

6406531290756. ✖ The program generates the output:

```
name = ABC, course = null, sems = 8
name = XYZ, course = BTECH, sems = 8
```

Question Number : 142 Question Id : 640653388308 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class Teacher{
  String name;
  String[] projects;

  public Teacher(String n, String[] p){
    name = n;
    projects = p;
  }
  public Teacher(Teacher t){
    this.name = t.name;
    this.projects = t.projects;
  }
}
public class Test{
  public static void main(String[] args){
    String[] p  = {"P001", "P002", "P003"};
    Teacher t1 = new Teacher("siva", p);
    Teacher t2 = new Teacher(t1);
    t2.name= "vishal";
    t2.projects[0] = "P005";
    System.out.println(t1.name + "," +t1.projects[0]);
    System.out.println(t2.name + "," +t2.projects[0]);
  }
}
```

What will the output be?

Options :

6406531290757. ✖ It generates output:
siva,P005
siva,P005

6406531290758. ✖ It generates output:
siva,P001
vishal,P005

6406531290759. ✖ It generates output:
vishal,P001
vishal,P005

6406531290760. ✔

It generates output:

```
siva,P005
vishal,P005
```

Sub-Section Number : 3

Sub-Section Id : 64065355797

Question Shuffling Allowed : Yes

Question Number : 143 Question Id : 640653388295 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 Summable{
    public Object twoSum(Object o1);
}
abstract class Printable implements Summable{
    public abstract void print();
}
class ComplexNumber extends Printable{
    double x, y;
    public ComplexNumber(){
    }
    public ComplexNumber(double n1, double n2){
        x = n1;
        y = n2;
    }
    // ------- CODE BLOCK -------
    public void print(){
        System.out.println(x+"+i"+ y);
    }
}
public class Test{
    public static void main(String[] args){
        ComplexNumber c = new ComplexNumber();
        ComplexNumber c1 = new ComplexNumber(4, 3);
        ComplexNumber c2 = new ComplexNumber(2.3, 4.5);
        c = c1.twoSum(c2);
        c.print();
    }
}
```

Identify the correct option to be filled in place of CODE BLOCK to generate the output
6.3+i7.5

Options :

```
public ComplexNumber twoSum(Object obj){
    ComplexNumber c = new ComplexNumber(this.x, this.y);
    if(obj instanceof ComplexNumber){
        ComplexNumber c1 = (ComplexNumber)obj;
        c.x = c.x + c1.x;
        c.y = c.y + c1.y;
    }
    return c;
}
```

6406531290705. ✔

6406531290706. ✖

```
public Object twoSum(ComplexNumber c1){
    ComplexNumber c = new ComplexNumber(this.x, this.y);
    c.x = c.x + c1.x;
    c.y = c.y + c1.y;
    return c;
}
```

```
public ComplexNumber twoSum(ComplexNumber c1){
    ComplexNumber c = new ComplexNumber(this.x, this.y);
    c.x = c.x + c1.x;
    c.y = c.y + c1.y;
    return c;
}
```

6406531290707. ✖

```
public ComplexNumber twoSum(Object obj){
    ComplexNumber c = new ComplexNumber(this.x, this.y);
    c.x = c.x + obj.x;
    c.y = c.y + obj.y;
    return c;
}
```

6406531290708. ✖

Question Number : 144 Question Id : 640653388296 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

Match the following:

A. Subtyping	I. Region of the program where a variable is available for use
B. Return value Link	II. Enables catching of bug in source code early on
C. Scope	III. Duration/time during which a variable is available in the memory
D. Static Typing	IV. Points to the location to store the result
	V. Relationship of interfaces
	VI. Relationship of implementations
	VII. Points to the start of previous activation record

Options :

6406531290709. ✖ A-VI, B-IV, C-I, D-II

6406531290710. ✖ A-V, B-VII, C-I, D-IV

6406531290711. ✔ A-V, B-IV, C-I, D-II

6406531290712. ✖ A-VI, B-VII, C-III, D-II

Sub-Section Number : 4

Sub-Section Id : 64065355798

Question Shuffling Allowed : Yes

Question Number : 145 Question Id : 640653388299 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

If the given Aadhaar number is in the master list of Aadhaar numbers, the following Java program should print `Valid Passenger`. Otherwise, it should print `Invalid Passenger`.

```
interface Enquiry{
  public void printValidity();
}
class Verification{
  String[] AadhaarList;
  String AadharNum;
  // .. Constructors, accessors as needed
  public Enquiry checkValidAadhar(){
    if(AadhaarList.contains(AadharNum))
        return new PassedEnquiry();
    return new FailedEnquiry();
  }
  private class PassedEnquiry implements Enquiry{
    public void printValidity(){
        System.out.println("Valid Passenger");
    }
  }
  private class FailedEnquiry implements Enquiry{
    public void printValidity(){
        System.out.println("Invalid Passenger");
    }
  }
}
public class AadhaarEnquiry {
  public static void main(String[] args) {
    Verification tv = new Verification("123");  //AadharNum for tv
    //LINE-1
  }
}
```

Identify the correct statement(s) to fill in the blank at `LINE-1`, such that the program produces the correct output.

Options :

6406531290721. ✔
```
Enquiry e = tv.checkValidAadhar();
e.printValidity();
```

6406531290722. ✔
```
tv.checkValidAadhar().printValidity();
```

6406531290723. ✖
```
tv.printAvailability();
```

```
Enquiry e = new Enquiry();
e = b.checkValidAadhar();
e.printValidity();
```

6406531290724. ✖

Question Number : 146 Question Id : 640653388301 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Consider the Java code given below.

```
class Bicycle{
    private String model;
    private String price;
    public Bicycle(String m, String p) {
        model = m;
        price = p;
    }
    public String toString() {
        return "model = " + model + ", price = " + price;
    }
}
class Bike extends Bicycle{
    private String gears;
    public void setGears(String g) {
        gears = g;
    }
    public Bike(String m, String p) {
        super(m, p);
    }
    public String toString() {
        return super.toString()+", gears = " + gears;
    }
}
class Car extends Bike{
    private String airBags;
    public void setAirBags(String ab) {
        airBags = ab;
    }
    public Car(String m, String p) {
        super(m, p);
    }
    public String toString() {
        return super.toString()+", airBags = " + airBags;
    }
}
public class DynamicTest {
    public static void main(String[] args) {
        //CODE BLOCK
        ((Bike)obj1).setGears("5 Gears");
        ((Car)obj2).setGears("6 Gears");
        ((Car)obj2).setAirBags("2 Air bags");

        System.out.println(obj1);
        System.out.println(obj2);
    }
}
```

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

```
model = Pulsar320, price = 1.2L, gears = 5 Gears
model = Maruthi200, price = 25L, gears = 6 Gears, airBags = 2 Air bags
```

Options :

6406531290729. ✔

```
Bicycle obj1 = new Bike("Pulsar320", "1.2L");
Bicycle obj2 = new Car("Maruthi200", "25L");
```

6406531290730. ✖

```
Bike obj1 = new Bicycle("Pulsar320", "1.2L");
Car obj2 = new Bicycle("Maruthi200", "25L");
```

6406531290731. ✔
```
Bicycle obj1 = new Bike("Pulsar320", "1.2L");
Bike obj2 = new Car("Maruthi200", "25L");
```

6406531290732. ✖
```
Car obj1 = new Bicycle("Pulsar320", "1.2L");
Car obj2 = new Bike("Maruthi200", "25L");
```

Question Number : 147 Question Id : 640653388304 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Consider the Java code given below.

```
class Instructor{
    public void doTasks() {
        System.out.println("QPs,Live Sessions");
    }
}
class CoreInstructor extends Instructor{
    public void doTasks() {
        System.out.println("Assign and monitor works");
    }
}
class HOD extends CoreInstructor{
    public void setTeams() {
        System.out.println("Setting teams and monitor teams");
    }
}
```

Choose the correct option(s).

Options :

6406531290741. ✔ `CoreInstructor` and `HOD` are subtypes of `Instructor`.

6406531290742. ✖ `Instructor` is a subtype of `CoreInstructor` as well as `HOD`.

6406531290743. ✖ Both `Instructor` and `CoreInstructor` are subtypes of `HOD`.

6406531290744. ✔ HOD is a subtype of CoreInstructor as well as Instructor.

AppDev2

Section Id :	64065323978
Section Number :	10
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	17
Number of Questions to be attempted :	17
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065355799
Question Shuffling Allowed :	No

Question Number : 148 Question Id : 640653388309 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"

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 :

6406531290761. ✔ Yes

6406531290762. ✖ No

Sub-Section Number : 2

Sub-Section Id : 64065355800

Question Shuffling Allowed : Yes

Question Number : 149 Question Id : 640653388315 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 Vue application with markup "index.html" and javascript file "app.js".

index.html:

```
<div id = "app">
      <h3> Header Section </h3>
      <main></main>
      <h3> Footer Section </h3>
</div>
<script src="app.js"></script>
```

app.js:

```
const main = {
    template : `
                <div>
                    <h3> Main Section </h3>
                </div>
               `

}

const comp = {
    'main' : main
}

new Vue({
    el : "#app"
})
```

If the file "index.html" is opened with the help of a browser. What will be rendered on the browser?

Options :

6406531290783. ✖ Header Section

Main Section

Footer Section

6406531290784. ✖ The app will show a warning, and nothing will be shown on the browser.

6406531290785. ✔ Header Section

Footer Section

6406531290786. ✖ The app will not show any warning, but nothing will be shown on the browser.

Sub-Section Number : 3

Sub-Section Id : 64065355801

Question Shuffling Allowed : Yes

Question Number : 150 Question Id : 640653388312 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.

```
var xyz = 40;

function demo () {
    xyz = 20;


    function xyz () {
        console.log("Number is:", xyz)
    }
}
demo()
console.log("Number is:", xyz)
```

Options :

6406531290771. ✖ Number is: 20

6406531290772. ✔ Number is: 40

6406531290773. ✖ Number is: undefined

6406531290774. ✖ Number is:

Question Number : 151 Question Id : 640653388316 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

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

index.html:

```
<div id = "app">
        <h3>Number : {{total_num}}</h3>
        <button @click = "update_num"> Click Me </button>
</div>
<script src="app.js"></script>
```

app.js:

```
new Vue({
    el : "#app",
    data : {
        num : 9,
    },
    computed : {
        total_num : function () {
            return this.num % 3 == 0 ? this.num * 3 + 5 : this.num / 4 + 6;
        }
    },
    methods : {
        update_num : function () {
            this.num = this.num < 10 ? this.num * 4 + 1 : this.num * 3 - 5;
        }
    }
})
```

If the file "index.html" is opened with the help of a browser. What will be rendered on the browser (excluding the button) for the first time and after clicking the button with the text "Click Me" twice?

Options :

6406531290787. ✖ Before Click: Number : 32

After Click: Number : 149

6406531290788. ✔ Before Click: Number : 32

After Click: Number : 32.5

6406531290789. ✖ Before Click: Number : 8.25

After Click: Number : 106

6406531290790. ✖ Before Click: Number : 8.25

After Click: Number : 149

Question Number : 152 Question Id : 640653388317 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 logged on to the console, if the program written below is executed?

```
{
  let x = 10
  {
    let getNum = () => {
      return x + 10
    }
   console.log(getNum())
  }
}
```

Options :

6406531290791. ✔ 20

6406531290792. ✖ NaN

6406531290793. ✖ Undefined

6406531290794. ✖ ReferenceError

Question Number : 153 Question Id : 640653388318 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 logged on to the console, if the program written below is executed?

```
function outer(x) {
  let a = 20
  function inner(y) {
    function innerMost(z) {
      return x + y + z + a
    }
    return innerMost
  }
  return inner
}
console.log(outer(19)(20)(30))
```

Options :

6406531290795. ✖ Undefined

6406531290796. ✔ 89

6406531290797. ✖ Will return a function reference

6406531290798. ✖ 71

Question Number : 154 Question Id : 640653388319 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 logged on to the console, if the program written below is executed?

```
let x = 10
var y = 10,
  z = 10
{
  let x = 20
  var z = 20
  function test() {
    var y = 20
  }
}
console.log(x, y, z)
```

Options :

6406531290799. ✖ 10 20 10

6406531290800. ✖ 20 20 20

6406531290801. ✖ 10 20 20

6406531290802. ✔ 10 10 20

Question Number : 155 Question Id : 640653388321 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 logged on to the console, if the program written below is executed?

```
const obj1 = { x: 10, y: 20 },
  obj2 = { x: 30, y: 40 }

function area() {
  return this.x * this.y
}

function test() {
  return area.call(obj1)
}

console.log(test.call(obj1), test.call(obj2))
```

Options :

6406531290807. ✖ 200, 1200

6406531290808. ✖ 1200, 200

6406531290809. ✖ 1200, 1200

6406531290810. ✔ 200, 200

Question Number : 156 Question Id : 640653388322 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 logged on to the console, if the program written below is executed?

```
class Circle {
  constructor(r) {
    this.r = r
  }
}

Circle.prototype.area = function () {
  return 3.14 * this.r
}

const obj1 = new Circle(2)
console.log(
  Circle.prototype === obj1.prototype,
  Circle.prototype === obj1.__proto__
)
```

Options :

6406531290811. ✖ false false

6406531290812. ✔ false true

6406531290813. ✖ true true

6406531290814. ✖ true false

Question Number : 157 Question Id : 640653388323 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following Vue app with markup "index.html" and javascript file "app.js".

index.html:

```
<html lang="en">
  <head>
    <style>
      .dark-mode {
        color: white;
        background-color: black;
      }
    </style>
  </head>
  <body>
    <div id="app">
      <h1 :class="{'dark-mode': darkMode}">IITM online degree</h1>
    </div>
    <script
src="https://cdn.jsdelivr.net/npm/vue@2.7.8/dist/vue.js"></script>
    <script src="app.js"></script>
  </body>
</html>
```

app.js:

```
new Vue({
  el: '#app',
  name: 'app',
  data: {
    darkMode: false,
  },
  created() {
    this.darkMode = true
  },
})
```

What will be the text colour and background colour of text "IITM Online degree", assuming a normal browser is used, which shows black coloured text on a white background?

Options :

6406531290815. ✖ Black, White

6406531290816. ✔ White, Black

6406531290817. ✖ Black, Black

6406531290818. ✖ White, White

Sub-Section Number : 4

Sub-Section Id : 64065355802

Question Shuffling Allowed : Yes

Question Number : 158 Question Id : 640653388313 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the below javascript program, and predict the output, if executed.

```
var num = 30

const obj1 = {
    num : 10,
    func : function (key) {
        let temp = () => {
            console.log("Number 1:", num, "Number 2:", this.num, "Sum:",
this.num + num + key)
        }
        temp()
    }
}

const obj2 = {
    num : 20,
    func : function (key) {
        console.log("Function Called !!", key)
    }
}

new_func = obj1.func.bind(obj2, 50)
new_func()
```

Options :

6406531290775. ✖ Number 1: 10 Number 2: 30 Sum: 90

6406531290776. ✖ Number 1: 20 Number 2: 30 Sum: 100

6406531290777. ✔ Number 1: 30 Number 2: 20 Sum: 100

6406531290778. ✖ Number 1: 30 Number 2: 10 Sum: 90

Question Number : 159 Question Id : 640653388320 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 logged on to the console, if the program written below is executed?

```
function getY() {
  return () => this.y
}

const Obj1 = {
  y: 45,
  getY: getY,
  obj3: {
    y: 15,
    getY: getY,
  },
}

console.log(Obj1.obj3.getY()(), Obj1.getY()())
```

Options :

6406531290803. ✖ Undefined, Undefined

6406531290804. ✖ 45, 15

6406531290805. ✔ 15, 45

6406531290806. ✖ 15, Undefined

Question Number : 160 Question Id : 640653388324 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:

```
<body>
    <div id="app">
      <h3 id="total">Total: {{total}}</h3>
      <h4 id="strike">{{batsmans.strike.name}}: {{batsmans.strike.run}}</h4>
      <h4 id="non-strike">{{batsmans.nonStrike.name}}:
{{batsmans.nonStrike.run}}</h4>
      <div>
        <button @click="total+=1">1</button>
        <button @click="total+=2">2</button>
      </div>
    </div>
    <script
src="https://cdn.jsdelivr.net/npm/vue@2.7.8/dist/vue.js"></script>
    <script src="app.js"></script>
  </body>
```

app.js:

```
class Player {
  constructor(name) {
    this.name = name
    this.run = 0
  }
}

new Vue({
  el: '#app',
  data: {
    batsmans: {
      strike: new Player('Rohit Sharma'),
      nonStrike: new Player('Virat Kohli'),
    },
    total: 30,
  },
  watch: {
    total(newRun, oldRun) {
      change = newRun - oldRun
      this.batsmans.strike.run += change
      if (change % 2 == 0) {
        this.changeStrike()
      }
    },
  },
  methods: {
    changeStrike() {
      temp = this.batsmans.strike
      this.batsmans.strike = this.batsmans.nonStrike
      this.batsmans.nonStrike = temp
    },
  },
})
```

If the user clicks on the button with the text "2" four times and "1" twice. What will be rendered inside the element with ID "total", "strike", and "non-strike"?

Options :

6406531290819. ✖ Total: 10, Virat Kohli: 0, Rohit Sharma: 10

6406531290820. ✔ Total: 40, Rohit Sharma: 6, Virat Kohli: 4

6406531290821. ✖ Total: 40, Virat Kohli:6, Rohit Sharma: 4

6406531290822. ✖ Total: 10, Rohit Sharma: 0, Virat Kohli: 10

Question Number : 161 Question Id : 640653388325 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:

```
<html lang="en">
  <head>
    <style>
      .sold {
        color: red;
      }
    </style>
  </head>
  <body>
     <div id="app">
      <Product
        v-for="(product, index) in products"
        :product="product"
        @buy="buy"
        :key="index"
      />
    </div>
    <script
src="https://cdn.jsdelivr.net/npm/vue@2.7.8/dist/vue.js"></script>
    <script src="app.js"></script>
  </body>
</html>
```

app.js:

```
const Product = {
  template: `<div :class="{sold:product.sold}">
    <h4>{{product.name}}</h4>
    <h3>Price:{{product.price}}</h3>
    <div><button @click="$emit('buy', product.id)"> Buy </button></div>
    </div>`,
  props: ['product'],
}

new Vue({
  el: '#app',
  components: { Product },
  data() {
    return {
      products: [
        { id: 1, name: 'Watch', price: '200', sold: true },
        { id: 2, name: 'Mobile', price: '4000', sold: true },
      ],
    }
  },
  methods: {
    buy(id) {
      prod = this.products.find((prod) => {
        return prod.id == id
      })
      prod.sold = false
    },
  },
})
```

If the user clicks on the button with the text "Buy" corresponding to the product having ID "2". What will be the text colour of the rendered "Product" component, corresponding to the product having ID "1" and "2", respectively?

Options :

6406531290823. ✖ Black, Black

6406531290824. ✖ Black, Red

6406531290825. ✔ Red, Black

6406531290826. ✖ Red, Red

Sub-Section Number : 5

Sub-Section Id : 64065355803

Question Shuffling Allowed : Yes

Question Number : 162 Question Id : 640653388310 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Select Question

Which of the following statement(s) is/are false regarding javascript language?

Options :

6406531290763. ✖ The equality operator "===" is used to avoid coercion in the language.

6406531290764. ✔ A variable declared using the keyword "var" can be used anywhere in the program

6406531290765. ✔ The keyword "break" is used to terminate the execution of the program in the language

6406531290766. ✖ The JavaScript language is a dynamically typed language

Question Number : 163 Question Id : 640653388311 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Select Question

Which of the following statement(s) is/are true regarding javascript language?

Options :

6406531290767. ✔ The variables declared outside all functions using "var" keyword are initialized with the value "undefined", until the code execution reaches the initialization statement for that

particular variable.

6406531290768. ✖ The variables declared outside all functions using “const” keyword are initialized with the value “null”, until the code execution reaches the initialization statement for that particular variable.

6406531290769. ✔ The function expressions in the language are not hoisted

6406531290770. ✖ A javascript object can not have its own functions or methods

Question Number : 164 Question Id : 640653388314 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Select Question

Which of the following statement(s) is/are false regarding the state of a web application?

Options :

6406531290779. ✖ The system state is usually a huge collection of information

6406531290780. ✔ The system state is dependent on the user interface.

6406531290781. ✖ Your Amazon wish list is an example of application state.

6406531290782. ✔ Your Amazon wish list is an example of system state

MLT

Section Id :	64065323979
Section Number :	11
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	100
Display Number Panel :	Yes
Group All Questions :	No

Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065355804
Question Shuffling Allowed :	No

Question Number : 165 Question Id : 640653388326 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"

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 :

6406531290827. ✔ Yes

6406531290828. ✖ No

Sub-Section Number :	2
Sub-Section Id :	64065355805
Question Shuffling Allowed :	Yes

Question Number : 166 Question Id : 640653388327 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 kernel:

$$k : R^2 \times R^2 \rightarrow R$$
$$k(x, y) = (x^T y)^2 + 1$$

Which of the following transformation mapping ϕ may correspond to the kernel k?

Options :

6406531290829. ✖ $\phi([x_1, x_2]^T) = [x_1, x_1x_2, x_2, 1]^T$

6406531290830. ✖ $\phi([x_1, x_2]^T) = [x_1^2, x_1 + x_2, x_2^2, 1]^T$

6406531290831. ✖ $\phi([x_1, x_2]^T) = [x_1, \sqrt{2}x_1^2x_2^2, x_2, 1]^T$

6406531290832. ✔ $\phi([x_1, x_2]^T) = [x_1^2, \sqrt{2}x_1x_2, x_2^2, 1]^T$

Question Number : 167 Question Id : 640653388328 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Multiple Choice Question

A function k is defined as

$$k : \mathbb{R} \times \mathbb{R} \rightarrow \mathbb{R}$$
$$k(x_1, x_2) = x_1 + x_1^2x_2^2 + x_1x_2 + 1$$

Is k a valid kernel?

Options :

6406531290833. ✖ Yes

6406531290834. ✔ No

Question Number : 168 Question Id : 640653388329 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

Let X be a data matrix of shape (d, n) for a centered dataset. The first principal component of the dataset is $\left[\frac{\sqrt{5}}{3}, \frac{2}{3}\right]^T$. What will the scalar proxy of the point $[2, 3]^T$ be on the first principal component?

Options :

6406531290835. ✖ $\frac{2\sqrt{5}}{3} + 6$

6406531290836. ✖ $\frac{2\sqrt{5} + 2}{3}$

6406531290837. ✖ $\frac{2\sqrt{5}}{9} + 2$

6406531290838. ✔ $\frac{2\sqrt{5}}{3} + 2$

Question Number : 169 Question Id : 640653388331 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 scenario where you observe that 8 of your friends $\{f_1, \ldots, f_8\}$ have scored the following marks in a quiz: {6, 3, −5, −4, 2, −3, 5, −2} respectively.

Which of the cluster initializations given below will result in clusters where your friends with positive marks are in one cluster and the rest are in another after executing one step of the Lloyd's algorithm?

$I_1 : z_1 = z_2 = z_3 = z_4 = z_5 = z_6 = z_7 = 2$ and $z_8 = 1$
$I_2 : z_1 = z_2 = z_3 = z_4 = 1$ and $z_5 = z_6 = z_7 = z_8 = 2$

Options :

6406531290842. ✖ I_1: No, I_2: No

6406531290843. ✔ I_1: Yes, I_2: Yes

6406531290844. ✖ I_1: Yes, I_2: No

6406531290845. ✖ I_1: No, I_2: Yes

6406531290846. ✖ Insufficient Information

Sub-Section Number : 3

Sub-Section Id : 64065355806

Question Shuffling Allowed : Yes

Question Number : 170 Question Id : 640653388330 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 following data set:

$$\left\{x_1 = \begin{bmatrix}0\\2\end{bmatrix}, x_2 = \begin{bmatrix}2\\0\end{bmatrix}, x_3 = \begin{bmatrix}0\\0\end{bmatrix}, x_4 = \begin{bmatrix}0\\-2\end{bmatrix}, x_5 = \begin{bmatrix}-2\\0\end{bmatrix}, x_6 = \begin{bmatrix}0\\1\end{bmatrix}, x_7 = \begin{bmatrix}0\\-1\end{bmatrix}\right\}$$

For $k = 3$, assume that the following cluster assignment is given to us which shows the clusters assigned to all data points but x_3 :

$$z = \{3, 1, ?, 2, 1, 3, 2\}$$

What should be the cluster assigned to the data point x_3?

Options :

6406531290839. ✔ 1

6406531290840. ✖ 2

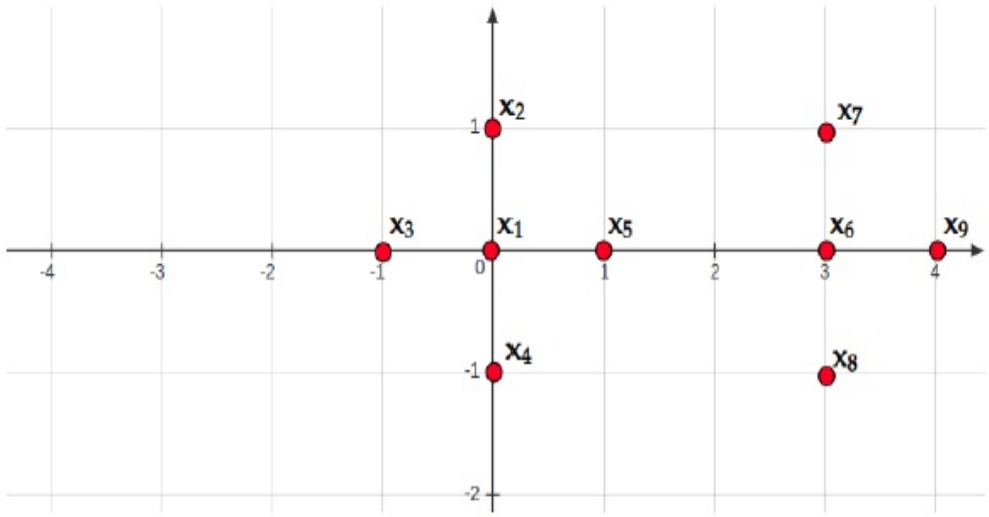
6406531290841. ✖ 3

Question Number : 171 Question Id : 640653388332 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 data points shown in the following image:



Consider that in the initialization step of K-means with $k = 2$, the data points x_1 and x_6 got selected as initial cluster centers. That is, $\mu_1^0 = (0, 0)$ and $\mu_2^0 = (3, 0)$. As per these cluster centers, the data points were then assigned to either cluster 1 or cluster 2. After this assignment, what will be the value of the objective function (Obj)? Further, as per the assignment of data points, the cluster centers will be re-computed for the next iteration. What will be the value of μ_1^1 and μ_2^1?

Options :

6406531290847. ✖ $Obj = 7, \mu_1^1 = (1, 0), \mu_2^1 = (3.33, 0)$

6406531290848. ✖ $Obj = 17, \mu_1^1 = (1, 0), \mu_2^1 = (3.25, 0)$

6406531290849. ✔ $Obj = 7, \mu_1^1 = (0, 0), \mu_2^1 = (3.25, 0)$

6406531290850. ✖ $Obj = 17, \mu_1^1 = (0, 0), \mu_2^1 = (3.33, 0)$

Sub-Section Number : 4

Sub-Section Id : 64065355807

Question Shuffling Allowed : Yes

Question Number : 172 Question Id : 640653388333 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

In the context of EM algorithm, select all true statements from the options given below. There are n data-points and K mixtures. The index i corresponds to the i^{th} data-point, the index k corresponds to the k^{th} mixture. f is the density of a Gaussian. All other symbols have their usual meaning.

Options :

6406531290851. ✔ $\pi_k = P(z_i = k)$

6406531290852. ✖ $\sum_{i=1}^{n} \lambda_k^i = 1$

6406531290853. ✔ $\lambda_k^i = P(z_i = k \mid x_i)$

6406531290854. ✖ $\lambda_k^i = f(x_i \mid z_i = k)$

Sub-Section Number : 5

Sub-Section Id : 64065355808

Question Shuffling Allowed : Yes

Question Number : 173 Question Id : 640653388334 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Short Answer Question

Consider a centered dataset of 100 points in $\mathbb{R}^{10}$. Standard PCA is performed on this dataset. Consider the following ratio:

$$\theta = \frac{\text{variance along the first principal component}}{\text{sum of variances along all ten principal components}}$$

What is the minimum value of θ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.09 to 0.11

Question Number : 174 Question Id : 640653388335 Question Type : SA Calculator : None

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

Correct Marks : 5

Question Label : Short Answer Question

Consider a centered dataset of 1000 points in $\mathbb{R}^{10}$. Standard PCA is performed on this dataset. What is the maximum number of principal components that can be retained so that the compression ratio does not fall below 1.64 ? The compression ratio is defined as:

$$\frac{\text{size of original dataset}}{\text{size of reconstructed dataset}}$$

Assume that each real number occupies one unit of storage space. Note that we are interested in the reconstructions and not just in the scalar projections. So, the reconstructed dataset will also be in $\mathbb{R}^{10}$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Question Number : 175 Question Id : 640653388341 Question Type : SA Calculator : None

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

Correct Marks : 5

Question Label : Short Answer Question

Consider a dataset with 50 points in which all points are either 0 or 1. We use a Bernoulli distribution with parameter p to model this problem. The prior and posterior distributions for the parameter p are $\text{Beta}(15, 5)$ and $\text{Beta}(30, 40)$ respectively. How many data-points have the value 1 in this dataset? Note that $p = P(x = 1)$ as usual.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

15

Question Number : 176 Question Id : 640653388342 Question Type : SA Calculator : None

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

Correct Marks : 5

Question Label : Short Answer Question

A GMM is fit for a dataset with 5 points. At some time-step in the EM algorithm, the following are the values of λ_k^i for all points in the dataset for the k^{th} mixture after the E-step:

$$\lambda_k^1 = 0.1$$
$$\lambda_k^2 = 0.2$$
$$\lambda_k^3 = 0.3$$
$$\lambda_k^4 = 0.4$$
$$\lambda_k^5 = 0.5$$

What is the estimate of π_k after the M-step?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.29 to 0.31

Sub-Section Number : 6

Sub-Section Id : 64065355809

Question Shuffling Allowed : Yes

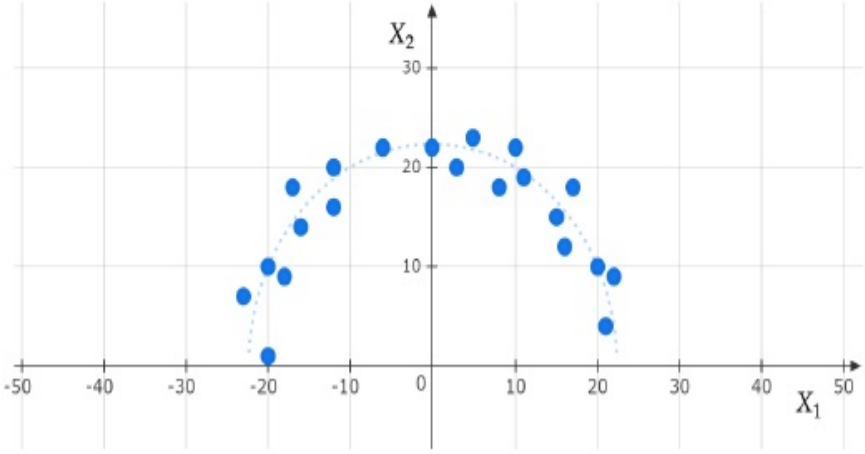
Question Number : 177 Question Id : 640653388336 Question Type : SA Calculator : None

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

Correct Marks : 7

Question Label : Short Answer Question

Consider the dataset as shown in the figure. We want to project the dataset into another feature space so that it lives in a linear subspace of a higher-dimension space. We apply the kernel PCA with a polynomial kernel of the appropriate degree to achieve the same. What will be the dimension of transformed feature space?



Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Sub-Section Number : 7

Sub-Section Id : 64065355810

Question Shuffling Allowed : No

Question Id : 640653388337 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (178 to 180)

Question Label : Comprehension

Consider the following data set:

$$\left\{x_1 = \begin{bmatrix}0\\2\end{bmatrix}, x_2 = \begin{bmatrix}2\\0\end{bmatrix}, x_3 = \begin{bmatrix}0\\0\end{bmatrix}, x_4 = \begin{bmatrix}0\\-2\end{bmatrix}, x_5 = \begin{bmatrix}-2\\0\end{bmatrix}, x_6 = \begin{bmatrix}4\\0\end{bmatrix}\right\}$$

With $k = 2$, as per k-means++, what is the probability of the following points (in that order) being chosen as initial cluster centers? Enter your answers correct up to three decimal places)

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 178 Question Id : 640653388338 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Short Answer Question

what is the probability of the following points x_2,x_1 (in that order) being chosen as initial cluster centers?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.03 to 0.04

Question Number : 179 Question Id : 640653388339 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

what is the probability of the following points x_2,x_3 (in that order) being chosen as initial cluster centers?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.01 to 0.02

Question Number : 180 Question Id : 640653388340 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

what is the probability of the following points x_2,x_5 (in that order) being chosen as initial cluster centers?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.06 to 0.07

Sub-Section Number :	8
Sub-Section Id :	64065355811
Question Shuffling Allowed :	No

Question Id : 640653388343 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (181 to 184)

Question Label : Comprehension

Consider a dataset that has 4 points in $\mathbb{R}^2$ that lie on a line passing through the origin:

$$D = \left\{ \begin{bmatrix} -4 \\ -2 \end{bmatrix}, \begin{bmatrix} -2 \\ -1 \end{bmatrix}, \begin{bmatrix} 2 \\ 1 \end{bmatrix}, \begin{bmatrix} 4 \\ 2 \end{bmatrix} \right\}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 181 Question Id : 640653388344 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

Is this dataset centered?

Options :

6406531290863. ✔ Yes

6406531290864. ✖ No

Question Number : 182 Question Id : 640653388345 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Select Question

Choose all representatives $\mathbf{w}$ for this dataset such that $||\mathbf{w}|| = 1$.

Options :

6406531290865. ✔

$\frac{1}{\sqrt{5}} \cdot \begin{bmatrix} 2 \\ 1 \end{bmatrix}$

6406531290866. ✔ $\frac{1}{\sqrt{5}} \cdot \begin{bmatrix} -2 \\ -1 \end{bmatrix}$

6406531290867. ✖ $\begin{bmatrix} -2 \\ -1 \end{bmatrix}$

6406531290868. ✖ $\begin{bmatrix} 4 \\ 2 \end{bmatrix}$

Question Number : 183 Question Id : 640653388346 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Short Answer Question

If standard PCA is performed on this dataset, what is the variance along the first principal component?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

12.4 to 12.6

Question Number : 184 Question Id : 640653388347 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 standard PCA is performed on this dataset, what is the variance along the second principal component?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Sub-Section Number :	9
Sub-Section Id :	64065355812
Question Shuffling Allowed :	No

Question Id : 640653388348 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (185 to 186)

Question Label : Comprehension

Assume that you have a dataset of five points $\{x_1, x_2, x_3, x_4, x_5\}$, all of which lie in $[0, 1]$. You hypothesise that the data points are iid random variables with the following density:

$$f(x;\theta) = \begin{cases} \theta x^{\theta-1}, & 0 \leq x \leq 1 \\ 0, & \text{otherwise} \end{cases}$$

Sub questions

Question Number : 185 Question Id : 640653388349 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

What is the log-likelihood of this dataset under this distribution?

Options :

6406531290871. ✖ $\prod_{i=1}^{5} \theta x_i^{\theta-1}$

6406531290872. ✖ $\sum_{i=1}^{5} \theta x_i^{\theta-1}$

6406531290873. ✔ $\sum_{i=1}^{5} [\log \theta + (\theta - 1) \log x_i]$

6406531290874. ✖ $\prod_{i=1}^{5} [\log \theta + (\theta - 1) \log x_i]$

Question Number : 186 Question Id : 640653388350 Question Type : SA Calculator : None

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

Correct Marks : 5

Question Label : Short Answer Question

You are given the actual values of these observations:

$$x_1 = \frac{1}{e}, \quad x_2 = \frac{1}{e^2}, \quad x_3 = \frac{1}{e^3}, \quad x_4 = \frac{1}{e^4}, \quad x_5 = \frac{1}{e^5}$$

What is the maximum likelihood estimate for θ? Enter your answer correct to three decimal places. Use $\log_e$ wherever appropriate.

Hint: Differentiate the log-likelihood with respect to θ and set it to zero.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.32 to 0.34

MLP

Section Id :	64065323980
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
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 :	64065355813
Question Shuffling Allowed :	No

Question Number : 187 Question Id : 640653388351 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"

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 :

6406531290876. ✔ YES

6406531290877. ✖ NO

Sub-Section Number : 2

Sub-Section Id : 64065355814

Question Shuffling Allowed : Yes

Question Number : 188 Question Id : 640653388370 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 options represent the possible type of machine learning algorithm does the cluster plot shown in Figure 2 demonstrate?

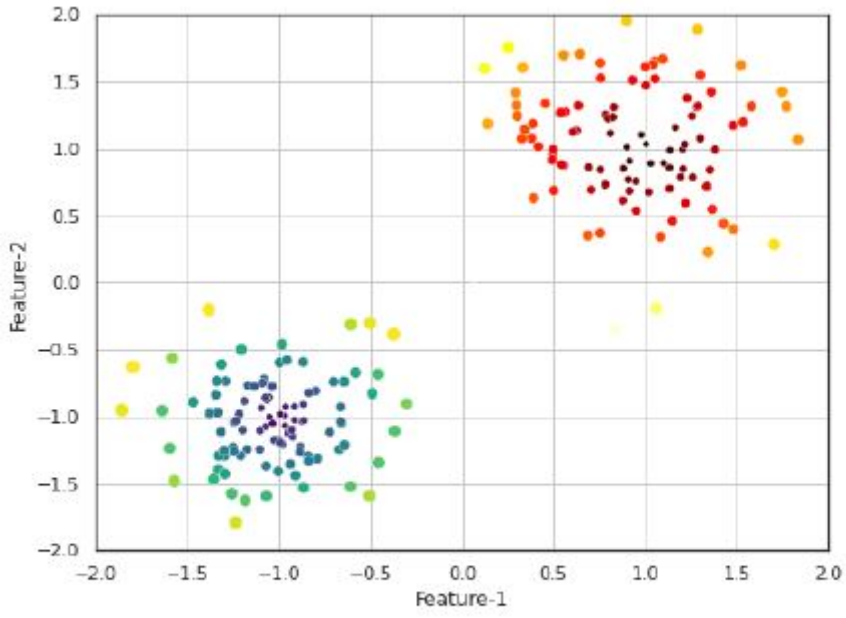


Figure 2: Cluster plot

Options :

6406531290948. ✔ K-means clustering

6406531290949. ✖ Linear regression

6406531290950. ✖ Logistic regression

6406531290951. ✖ PCA

Sub-Section Number : 3

Sub-Section Id : 64065355815

Question Shuffling Allowed : Yes

Question Number : 189 Question Id : 640653388353 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 output of the following code?

```
from sklearn.datasets import load_iris
data= load_iris()
print(type(data.data))
```

Options :

6406531290882. ✖ <class 'sklearn.utils.Bunch'>

6406531290883. ✔ <class 'numpy.ndarray'>

6406531290884. ✖ <class 'sklearn.utils.Tuple'>

6406531290885. ✖ It will result in an error.

Question Number : 190 Question Id : 640653388354 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 code blocks will generate a random n-class classification problem having a total number of features as 5 and 3 unique labels in the target variable?

Options :

6406531290886. ✖

```
from sklearn.datasets import make_classification
X, y = make_classification(n_samples=100, n_features= 5,
                           n_informative= 3, n_redundant = 1,
                           random_state=20)
```

```
from sklearn.datasets import make_classification
X, y = make_classification(n_samples=100, n_features= 5,
                           n_redundant = 3,n_clusters_per_class=2,
                           random_state=20)
```

6406531290887. ✖

```
from sklearn.datasets import make_classification
X, y = make_classification(n_samples=21, n_features= 5,
                           n_informative = 2,n_classes=3,
                           random_state=5)
```

6406531290888. ✔

```
from sklearn.datasets import make_classification
X, y = make_classification(n_samples=100, n_features= 5,
                           n_informative= 2, n_redundant = 1,
                           n_clusters_per_class=3,random_state=20)
```

6406531290889. ✖

Question Number : 191 Question Id : 640653388356 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

Go through the code snippet given below:

```
import numpy as np
j = 500
i=7
X = 4 * np.random.randn(j, i)
y =  5+ 3* np.random.randn(j)
```

What will be the shape of the feature matrix (X.shape) and the label vector (y.shape)?

Options :

6406531290894. ✖ (2000, 28) and (2000, 1)

6406531290895. ✖ (28, 2000) and (1505,1)

6406531290896. ✔ (500, 7) and (500,)

6406531290897. ✖ (2000, 7) and (1505,)

Question Number : 192 Question Id : 640653388358 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 options is likely to be the correct output of the code snippet given below?

```
import numpy as np
from sklearn.preprocessing import MaxAbsScaler
x= np.array([2, 3, -14, -4, 5]).reshape(-1,1)
mas = MaxAbsScaler()
x_new = mas.fit_transform(x)
print(x_new)
```

Options :

6406531290902. ✖ [[0.14285714] [0.0952381] [0.23809524] [-0.19047619] [1.]]

6406531290903. ✖ [[0.14285714] [0.0952381] [-0.23809524] [-1.19047619] [-1.]]

6406531290904. ✖ [[1] [0.0952381] [0.23809524] [-0.19047619] [1.2134245]]

6406531290905. ✔ [[0.14285714] [0.21428571] [-1.] [-0.28571429] [0.35714286]]

Question Number : 193 Question Id : 640653388359 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 code snippet:

```
from sklearn.datasets import load_wine
from sklearn.model_selection import train_test_split
X, y =load_wine(return_X_y = True)
print(X.shape)
```

Above code returns (178, 13) as output. Which of the following would be the correct code(s) to split X and y such that you have exactly 36 samples for test data?

Options :

6406531290906. ✖ Since 36 is not a multiple of 178,Hence exactly 36 samples for test data is not possible.

6406531290907. ✖
```
train_X, test_X, train_y, test_y = train_test_split(X, y,
test_data=0.2, random_state=42)
```

6406531290908. ✔
```
train_X, test_X, train_y, test_y = train_test_split(X, y,
test_size=36, random_state=32)
```

6406531290909. ✖
```
train_X, test_X, train_y, test_y = train_test_split(X, y,
test_data=36, random_state=2)
```

Question Number : 194 Question Id : 640653388363 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 the figure 1, what are the names of classes arranged in the decreasing order of the median values?

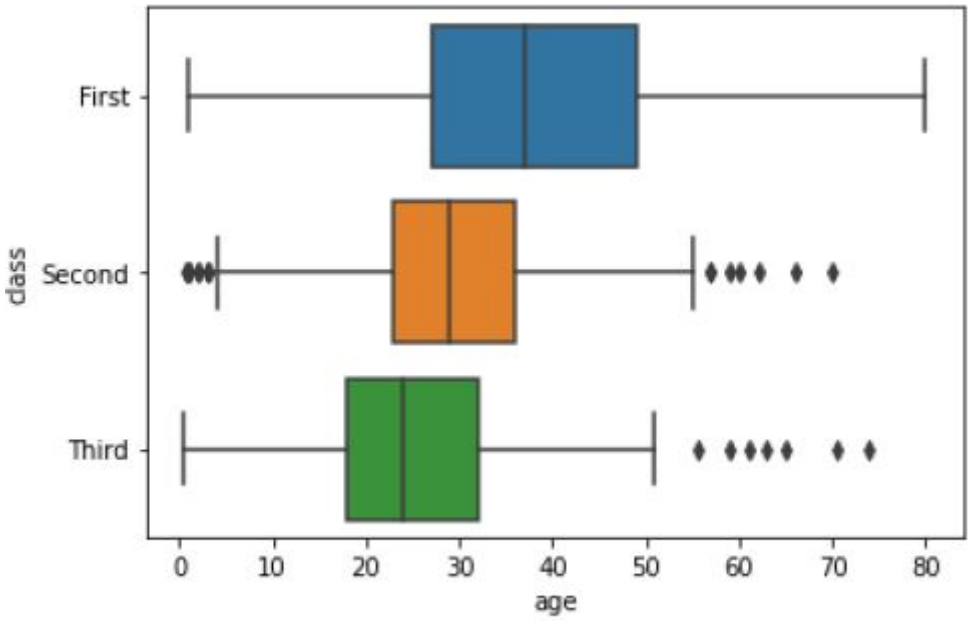


Figure 1: Box plot

Options :

6406531290926. ✔ First > Second > Third

6406531290927. ✖ Third > Second > First

6406531290928. ✖ Second < Third < First

6406531290929. ✖ Third > First > Second

Question Number : 195 Question Id : 640653388368 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 likely to be the correct output of the code given below?

```
from sklearn import linear_model
clf = linear_model.Ridge(alpha=1)
X= [[5,7], [3,2], [2, 2]]
y= [10, 20, 30]
clf.fit(X, y)
linear_model.Ridge(alpha=1,max_iter=1000, tol=0.0001,fit_intercept=True)
clf.score(X,y)*100
```

Options :

6406531290942. ✖ 0.12

6406531290943. ✖ 190.31

6406531290944. ✖ 0.93

6406531290945. ✔ 90.02

6406531290946. ✖ No evaluation metrics is mentioned, hence it will produce error

Sub-Section Number : 4

Sub-Section Id : 64065355816

Question Shuffling Allowed : Yes

Question Number : 196 Question Id : 640653388352 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following is likely to be the correct output of the code given below?

```
from math import nan
import numpy as np
from sklearn.impute import SimpleImputer
data=[(1,3),(2,4),(3,4),(4,2),(5, nan)]
imputer = SimpleImputer(missing_values = np.nan, strategy ='mean',
                        add_indicator=True)
imputer = imputer.fit(data)
data_imputed_with_indicator = imputer.transform(data)
print (data_imputed_with_indicator)
```

Options :

6406531290878. ✖ [[1. 3. 0.] [2. 4. 0.] [3. 4. 0.] [4. 2. 0.] [5. 2.6 1.]]

6406531290879. ✖ [[2. 3. 0.] [4. 5. 0.] [3. 1. 0.] [1. 2. 0.] [5. 2.75 1.]]

6406531290880. ✔ [[1. 3. 0.] [2. 4. 0.] [3. 4. 0.] [4. 2. 0.] [5. 3.25 1.]]

6406531290881. ✖ There are some mistakes in the code, hence it will produce errors.

Question Number : 197 Question Id : 640653388355 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:

```
data = np.array([2,5,2,1])
from sklearn.preprocessing import PolynomialFeatures
poly= PolynomialFeatures(degree=2, interaction_only=True)
data = data.reshape(2,2)
poly.fit_transform(data)
```

Which of the following could be the correct output?

Options :

6406531290890. ✔ array([[1., 2., 5., 10.], [1., 2., 1., 2.]])

6406531290891. ✖ array([[1., 2., 5.], [1., 2., 4.]])

6406531290892. ✖ array([[1., 2., 5., 2., 35., 49., 125., 175., 245., 343.], [1., 2., 1., 4., 2., 1., 8., 4., 2., 1.]])

6406531290893. ✖ array([[1., 2., 5., 4., 10., 25.], [1., 2., 1., 4., 2., 1.]])

Question Number : 198 Question Id : 640653388360 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 options will be the correct output of print(clf.coef_)?

```
from sklearn import linear_model
clf = linear_model.Lasso(alpha=0.1)
clf.fit([[7,1,3,1], [4, 2, 9,5], [6,2,1, 3]], [8,2,1,2])
linear_model.Lasso(alpha=0.1,max_iter=1000, tol=0.0001,
warm_start=False,fit_intercept=True)
```

Options :

6406531290910. ✖ [0.35 -0. -0.]

6406531290911. ✖ [-0.85,0]

6406531290912. ✖ [3,2,1,2]

6406531290913. ✔ Given code block will return an error.

Question Number : 199 Question Id : 640653388361 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

Go through the code snippet given below and mark the correct output.

```
from sklearn.metrics import mean_squared_error
y_true = [2, 2, 2, 1]
y_pred = [3, 5, 7, 5]
mean_squared_error(y_true, y_pred)
```

Options :

6406531290914. ✖ 1

6406531290915. ✖ 3.5

6406531290916. ✖ 5

6406531290917. ✖ 25

6406531290918. ✖ 4

6406531290919. ✔ 12.75

Question Number : 200 Question Id : 640653388362 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

Go through the code snippet given below and mark the correct output.

```
from sklearn.metrics import r2_score
y_true = [1, 2, 3, 4]
y_pred = [4, 3, 2, 1]
r2_score(y_true, y_pred)
```

Options :

6406531290920. ✖ 0.61

6406531290921. ✖ 0.83

6406531290922. ✖ 0.91

6406531290923. ✖ 1

6406531290924. ✔ -3

6406531290925. ✖ 2

Question Number : 201 Question Id : 640653388364 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following is likely to be the correct output of the code given below?

```
from sklearn.preprocessing import OneHotEncoder
enc = OneHotEncoder(handle_unknown='ignore')
X = [['Sachin', 1], ['Sehwag', 2], ['Dhoni', 2]]
b=enc.fit_transform(X).toarray()
print(b)
```

Options :

6406531290930. ✔ [[0. 1. 0. 1. 0.] [0. 0. 1. 0. 1.] [1. 0. 0. 0. 1.]]

6406531290931. ✖ [[1. 0. 0. 0. 0.] [0. 1. 0. 0. 0.] [0. 0. 1. 0. 0.]]

6406531290932. ✖ [[1. 0. 0. 1. 0.] [0. 1. 0. 0. 2.] [0. 0. 1. 0. 2.]]

6406531290933. ✖ [[1. 0. 0. 1. 0.] [0. 1. 0. 0. 1.] [0. 0. 1. 0. 1.]]

Question Number : 202 Question Id : 640653388371 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 code blocks will correctly take the learning rate as 'invscaling' ?

Options :

6406531290952. ✖
```
from sklearn.model_selection import SGDRegressor
SGD_regressor = LinearRegressor(learning_rate='invscaling',eta0=1e-2)
```

6406531290953. ✖
```
from sklearn.model_selection import SGDRegressor
SGD_regressor = LinearRegressor(learning_rate='invscaling',eta0=0e-2)
```

6406531290954. ✔
```
from sklearn.linear_model import SGDRegressor
linear_regressor = SGDRegressor(learning_rate='invscaling',max_iter=1000,
                                tol=1e-3)
```

6406531290955. ✖ None of these

Question Number : 203 Question Id : 640653388372 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

Go through the code snippet given below and answer the following questions.

```
from sklearn.preprocessing import PolynomialFeatures
from sklearn.pipeline import Pipeline
from sklearn.preprocessing import MinMaxScaler
from sklearn.linear_model import LassoCV
from sklearn.datasets import load_diabetes
dia = load_diabetes(as_frame=True)
train_X= dia.data
train_y= dia.target

lf= np.logspace(-4, 0, num=3)

reg= Pipeline([("poly", PolynomialFeatures(degree=2)),
               ("feature_scaling", MinMaxScaler)])

las = LassoCV(cv=5,alphas=lf, random_state=0,fit_intercept = False)
results = las.fit(train_X, train_y)
```

Which of the following could be the possible output of print(results.alpha_)?

Options :

6406531290956. ✖ -0.528

6406531290957. ✖ -5

6406531290958. ✖ 0.528

6406531290959. ✖ 1.e-03

6406531290960. ✔ 0.01

Sub-Section Number : 5

Sub-Section Id : 64065355817

Question Shuffling Allowed : Yes

Question Number : 204 Question Id : 640653388357 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Select Question

Scikit-Learn’s API is remarkably well designed. The main design principles are:-

Options :

6406531290898. ✔ Nonproliferation of classes

6406531290899. ✖ Best Estimator

6406531290900. ✖ Proportion

6406531290901. ✔ Consistency

Sub-Section Number : 6

Sub-Section Id : 64065355818

Question Shuffling Allowed : Yes

Question Number : 205 Question Id : 640653388369 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

Enter the correct output of the following code block.

```
import numpy as np
from sklearn.model_selection import ShuffleSplit
X = np.array([[2, 2], [5, 4], [1, 6], [2, 8], [3, 4], [2, 6]])
y = np.array([3, 2, 1, 2, 3, 2])
rs = ShuffleSplit(n_splits=7, test_size=.25, random_state=0)
k=1
for i,j in rs.split(X):
  k+=1
print(k)
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

8

Sub-Section Number : 7

Sub-Section Id : 64065355819

Question Shuffling Allowed : No

Question Id : 640653388365 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (206 to 207)

Question Label : Comprehension

Go through the code snippet given below and answer the given subquestions.

```
import numpy as np
from sklearn.linear_model import SGDRegressor
from sklearn.pipeline import make_pipeline
n_samples, n_features = 32, 5
rng = np.random.RandomState(0)
y = rng.randn(n_samples)
X = rng.randn(n_samples, n_features)
reg = SGDRegressor(max_iter=1000,tol=1e-3,eta0= 0.04, power_t=5,
                   n_iter_no_change=3, validation_fraction=0.3,random_state=42 )
reg.fit(X, y)
print(reg.coef_)
```

Sub questions

Question Number : 206 Question Id : 640653388366 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 options will be the output of the given code?

Options :

6406531290934. ✖ array([0.02645639, -0.09121131, 0.09350173, 0.11821129])

6406531290935. ✔ [-0.05102706 0.11483443 -0.01544466 0.04813268 0.05634579]

6406531290936. ✖ array([-0.22622766, -0.0, -0.0])

6406531290937. ✖ Given code will return an error because the data-set is not given.

Question Number : 207 Question Id : 640653388367 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 could be the possible output of print(reg.score())?

Options :

6406531290938. ✖ -0.528

6406531290939. ✖ 1

6406531290940. ✖ 0.528

6406531290941. ✔ Given code will return an error

BDM

Section Id :	64065323981
Section Number :	13
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	13
Number of Questions to be attempted :	13
Section Marks :	16
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065355820
Question Shuffling Allowed :	No

Question Number : 208 Question Id : 640653388373 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"

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 :

6406531290961. ✔ YES

6406531290962. ✖ NO

Sub-Section Number : 2

Sub-Section Id : 64065355821

Question Shuffling Allowed : Yes

Question Number : 209 Question Id : 640653388374 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

Total utility increases at (a / an) _____ rate when marginal utility is decreasing but_____.

Options :

6406531290963. ✖ decreasing, negative

6406531290964. ✖ increasing, positive

6406531290965. ✔ decreasing, positive

6406531290966. ✖ increasing, negative

Question Number : 210 Question Id : 640653388375 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

Statement 1: She derives 100 utility points from eating a slice of bread.

Statement 2: She prefers bread over ice cream, and sandwiches over bread.

Which of the two utility theories, viz., the Cardinal Utility Theory (CUT) and the Ordinal Utility Theory (OUT), does each of these statements belong?

Options :

6406531290967. ✔ Statement 1: CUT; Statement 2: OUT

6406531290968. ✖ Statement 1: OUT; Statement 2: CUT

6406531290969. ✖ Statement 1: CUT; Statement 2: CUT

6406531290970. ✖ Statement 1: OUT; Statement 2: OUT

Question Number : 211 Question Id : 640653388376 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 axes (x and y) of the indifference curve represent:

Options :

6406531290971. ✖ X: Price; Y: Price

6406531290972. ✔ X: Quantity; Y:Quantity

6406531290973. ✖ X: Quantity; Y: Price

6406531290974. ✖ X: Supply; Y: Demand

Question Number : 212 Question Id : 640653388378 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

"She wanted to buy a printer. However, the ink cartridge was very expensive, and thus she had to drop the idea of getting a printer. She was also hungry and wanted a Dosa. The app on her phone gave her a better price for Idli; so she Idli over Dosa"

The first purchase decision is a classic example of _____ goods and the second is an example of _____ goods.

Options :

6406531290981. ✖ complementary; complementary

6406531290982. ✖ substitutable; substitutable

6406531290983. ✔ complementary; substitutable

6406531290984. ✖ substitutable; complementary

Question Number : 213 Question Id : 640653388380 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 person **X** consumes only 2 goods **a** and **b** in a month. Also assume that both goods **a** and **b** are normal goods for **X**. A decrease in the price of good **b** will lead to **X**'s consumption of good **a** to:

Options :

6406531290986. ✖ increase owing to substitution effect.

6406531290987. ✔ increase owing to income effect.

6406531290988. ✖ increase owing to negative income elasticity.

6406531290989. ✖ remain unchanged.

Question Number : 214 Question Id : 640653388381 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

See the following equation:

$Q = f(X_1, X_2, \ldots, X_k)$, where Q is the level of output, and $X_1, X_2, \ldots, X_k$ are variables related to labour and capital. Which of the following functions do you think best suits the definition of f?

Options :

6406531290990. ✖ Cost function

6406531290991. ✖ Demand function

6406531290992. ✔ Production function

6406531290993. ✖ Utilitarian function

Question Number : 215 Question Id : 640653388387 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

Ram's toy shop on an e-commerce website was having a dry spell. To boost the sales, he conducted a survey amongst his online friends to understand at what prices they'd buy the toys. He found out that the prices charged were high, and he corrected for this the next day. What kind of pricing strategy is Ram following?

Options :

6406531291001. ✔ Customer value pricing

6406531291002. ✖ Psychological pricing

6406531291003. ✖ Contribution pricing

6406531291004. ✖ Going rate pricing

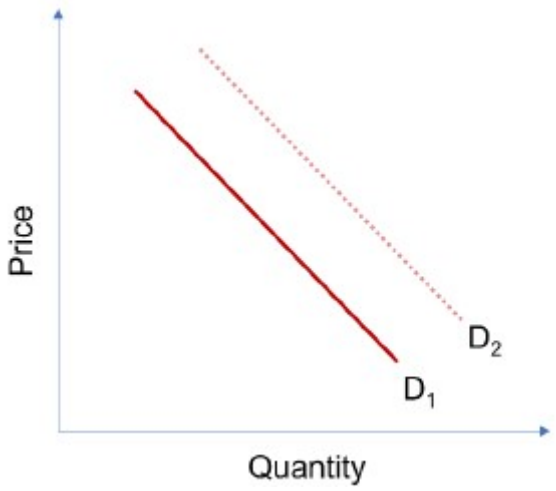
Sub-Section Number :	3
Sub-Section Id :	64065355822
Question Shuffling Allowed :	Yes

Question Number : 216 Question Id : 640653388377 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Select Question

See the Demand curves (D_1 and D_2) in the figure below. Choose all the correct statements pertaining to these curves.



Options :

6406531290975. ✔ An increase in Demand will shift the curve D_1 towards D_2

6406531290976. ✖ A Decrease in Demand will shift the curve D_1 towards D_2

6406531290977. ✔ A Decrease in Demand will shift the curve D_2 towards D_1

6406531290978. ✖ An increase in Demand will not shift the curve D_1 towards D_2

6406531290979. ✔ A Decrease in Demand will not shift the curve D_1 towards D_2

6406531290980. ✖ A Decrease in Demand will not shift the curve D_2 towards D_1

Sub-Section Number :	4
Sub-Section Id :	64065355823
Question Shuffling Allowed :	Yes

Question Number : 217 Question Id : 640653388379 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 this hypothetical example: *Coca-Cola decreased the price of 300 ml Diet Coke can from INR 40 per can to INR 38. This resulted in consumers buying 7000 cans a week. Before the price drop, consumers bought only 5000 cans a week. In the same week, Pepsi reduced the price of its Black cans from INR 38 to INR 36, which increased the sales of Pepsi Black by a whopping 25%! To add to all the complexity, in the same week, the price of petrol increased by 3%, and that of diesel by 2.5%, resulting in*

a net decrease in fuel usage by 0.02%. Given all this data, calculate the price elasticity of demand of Pepsi Black (round the answer to 2 decimal places).

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

4.5 to 4.8

Sub-Section Number : 5

Sub-Section Id : 64065355824

Question Shuffling Allowed : Yes

Question Number : 218 Question Id : 640653388382 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

Match the following:

Goods	Income Elasticity
i) Normal	1) 2.5
ii) Luxuries	2) 0.25
iii) Necessities	3) – 0.5 (negative 0.5)
iv) Inferior	4) 0.8

Options :

6406531290994. ✖ i - 1; ii - 2; iii - 4; iv - 3

6406531290995. ✖ i - 1; ii - 4; iii - 3; iv - 2

6406531290996. ✖ i - 2; ii - 1; iii - 4; iv - 3

6406531290997. ✔ i - 4; ii - 1; iii - 2; iv – 3

Sub-Section Number : 6

Sub-Section Id : 64065355825

Question Shuffling Allowed : No

Question Id : 640653388383 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (219 to 220)

Question Label : Comprehension

A firm has total assets worth INR 55000000/- of which 10000000/- is illiquid. Its total current liabilities sum up to INR 20000000/-.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 219 Question Id : 640653388384 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 quick ratio (acid-test) (round the answer to 2 decimal places)?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

2.15 to 2.30

Question Number : 220 Question Id : 640653388385 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

Current ratio for this firm (round the answer to 2 decimal places)?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

2.5 to 2.8

Sub-Section Number : 7

Sub-Section Id : 64065355826

Question Shuffling Allowed : Yes

Question Number : 221 Question Id : 640653388386 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

A firm has INR 600000/- as accounts receivable (debtors), while its annual sales turnover is INR 6500000/-. Calculate the firm’s debtor days (round the answer to 2 decimal places).

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

33.50 to 33.70

Business Analytics

Section Id : 64065323982

Section Number : 14

Section type : Online

Mandatory or Optional :	Mandatory
Number of Questions :	12
Number of Questions to be attempted :	12
Section Marks :	20
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065355827
Question Shuffling Allowed :	No

Question Number : 222 Question Id : 640653388388 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"

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 :

6406531291005. ✔ Yes

6406531291006. ✖ No

Sub-Section Number :	2
Sub-Section Id :	64065355828
Question Shuffling Allowed :	Yes

Question Number : 223 Question Id : 640653388389 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 have a dataset with minimum value of 0.05 and maximum value of 0.8. We are building an empirical distribution using the dataset. What is the probability (P) of finding the value 0.04 in the dataset?

Options :

6406531291007. ✖ P = 0.1

6406531291008. ✖ P=0.001

6406531291009. ✔ P=0

6406531291010. ✖ P>0.05

Question Number : 224 Question Id : 640653388390 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 a set of values, skewness = 1.25. What does this indicate?

Options :

6406531291011. ✔ Right tail is bigger than the left tail in the density plot

6406531291012. ✖ Left tail is bigger than the right tail in the density plot

6406531291013. ✖ Both the tails are bigger than normal

6406531291014. ✖ Both the tails are smaller than normal

Sub-Section Number : 3

Sub-Section Id : 64065355829

Question Shuffling Allowed : Yes

Question Number : 225 Question Id : 640653388391 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

P-P plot is applicable for both continuous distributions and discrete distributions. Is the statement True or False?

Options :

6406531291015. ✔ TRUE

6406531291016. ✖ FALSE

Question Number : 226 Question Id : 640653388392 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

For normal distribution, Coefficient of variation (CV) is less than one. Is the statement True or False?

Options :

6406531291017. ✖ TRUE

6406531291018. ✔ FALSE

Question Number : 227 Question Id : 640653388393 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

In a histogram plot of a set of data, if the plot shows three peaks, then the data may fit into Gaussian distribution. Is the statement True or False?

Options :

6406531291019. ✖ TRUE

6406531291020. ✔ FALSE

Sub-Section Number :	4
Sub-Section Id :	64065355830
Question Shuffling Allowed :	No

Question Id : 640653388394 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (228 to 231)

Question Label : Comprehension

You are given the following contingency table based on a sample data with two age groups and their brand preferences. You perform a chi-squared test of independence to make inferences about the population from this sample.

	Brand A	Brand B	Brand C	Brand D
40 - 50	117	91	122	102
20 - 30	100	95	108	95

Sub questions

Question Number : 228 Question Id : 640653388395 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

From the given contingency table, find the expected frequency of people belonging to the 20 – 30 age group preferring brand C?

NOTE: Enter your answer to the nearest integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

108 to 112

Question Number : 229 Question Id : 640653388396 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 calculated value of chi-squared?

NOTE: Enter your answer in two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.08 to 1.16

Question Number : 230 Question Id : 640653388397 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 p-value?

NOTE: Enter your answer in two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.74 to 0.80

Question Number : 231 Question Id : 640653388398 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

At the significance level 0.05, chi-squared tabular value is 7.81. What do you conclude?

Options :

6406531291024. ✖ Reject the null hypothesis and conclude that the categorical variables are not independent

6406531291025. ✖ Fail to reject the null hypothesis and conclude that the categorical variables are not independent

6406531291026. ✔ Fail to reject the null hypothesis and conclude that the categorical variables are independent

6406531291027. ✖ Reject the null hypothesis and conclude that the categorical variables are independent

Sub-Section Number :	5
Sub-Section Id :	64065355831
Question Shuffling Allowed :	Yes

Question Number : 232 Question Id : 640653388399 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 a factory manufactures products on three machines A, B and C. Suppose 55% of total output comes from machine A, 30% of total output comes from machine B and 15% of total output comes from machine C. From the past data, it is known that 20% of products by machine A are defectives, 10% of products by machine B are defectives and 15% of products by machine C are defectives. What is the probability that the product has come from machine C given that it is a defective?

NOTE: Enter your answer in 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 0.05

Sub-Section Number :	6
Sub-Section Id :	64065355832
Question Shuffling Allowed :	Yes

Question Number : 233 Question Id : 640653388400 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Select Question

Select which of the following are discrete data?

Options :

6406531291029. ✔ How many siblings do you have

6406531291030. ✖ Weight

6406531291031. ✔ Number of houses in your locality

6406531291032. ✔ Defects per hour

6406531291033. ✖ Pressure

Question Number : 234 Question Id : 640653388401 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Select Question

Select which of the following are continuous data?

Options :

6406531291034. ✔ Time between two successive failures of an equipment

6406531291035. ✔ Volume

6406531291036. ✖ Gender

6406531291037. ✖ Your favorite cuisines

6406531291038. ✔ Density

Sub-Section Number : 7

Sub-Section Id : 64065355833

Question Shuffling Allowed : Yes

Question Number : 235 Question Id : 640653388402 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

Select the scenario where a histogram will be an appropriate representation?

Options :

6406531291039. ✖ One item proportional to totals

6406531291040. ✔ Frequency of items

6406531291041. ✖ Correlation representation

6406531291042. ✖ Outlier identification

Sub-Section Number : 8

Sub-Section Id : 64065355834

Question Shuffling Allowed : Yes

Question Number : 236 Question Id : 640653388403 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

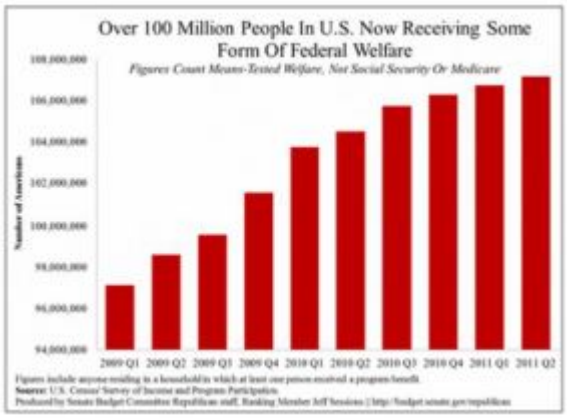
Correct Marks : 1.5

Question Label : Multiple Select Question

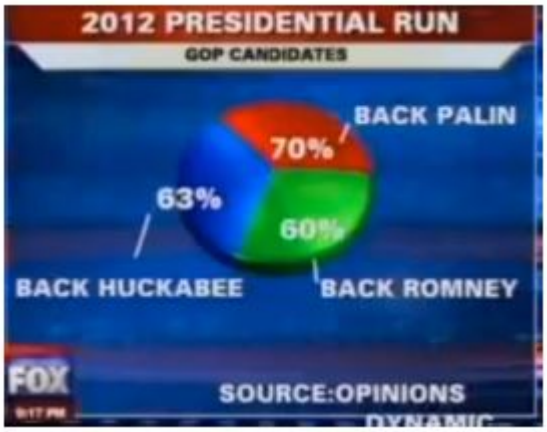
Identify the misleading visual(s).

Options :

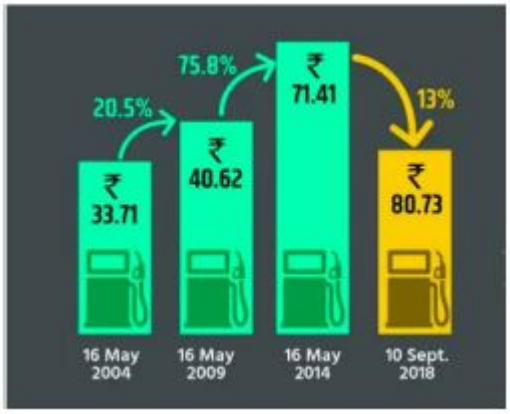
6406531291043. ✖



6406531291044. ✖



6406531291045. ✖



6406531291046. ✔ All of these

System Commands

Section Id :	64065323983
Section Number :	15
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
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 :	64065355835
Question Shuffling Allowed :	No

Question Number : 237 Question Id : 640653388404 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"

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 :

6406531291047. ✔ Yes

6406531291048. ✖ No

Sub-Section Number :	2
Sub-Section Id :	64065355836
Question Shuffling Allowed :	Yes

Question Number : 238 Question Id : 640653388413 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

Which of the following command will run the script `/home/reena/scripts/monday-greetings.sh` on every Monday at 10:10 AM in the month of October.

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 :

6406531291080. ✖ `0 0 10 10 * /home/reena/scripts/monday-greetings.sh`

6406531291081. ✖ `10 0 0 10 1 /home/reena/scripts/monday-greetings.sh`

6406531291082. ✖ `* 0 10 * 0 /home/reena/scripts/monday-greetings.sh`

6406531291083. ✔ `10 10 * 10 1 /home/reena/scripts/monday-greetings.sh`

Question Number : 239 Question Id : 640653388421 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

What will be the output from the script when the value of variable `status` is 200?

```
if [[ $status -eq 200 ]]; then
        print "Success"
else
        print "Something went wrong"
fi
```

Options :

6406531291108. ✔ `Success`

6406531291109. ✖ `Something went wrong`

6406531291110. ✖ Nothing will be printed

6406531291111. ✖ Throws an error and nothing will be printed

Sub-Section Number : 3

Sub-Section Id : 64065355837

Question Shuffling Allowed : Yes

Question Number : 240 Question Id : 640653388406 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

Select the output from the below script
Note: `rev` command will reverse

```
A="AH"
echo "${A}NN$(echo $A | rev)"
```

Options :

6406531291053. ✖ AHNNA

6406531291054. ✖ AHNNAH

6406531291055. ✖ AHHA

6406531291056. ✖ AHNN

6406531291057. ✖ NN

6406531291058. ✔ AHNNHA

6406531291059. ✖ ${A}NN$(echo $A | rev)

Question Number : 241 Question Id : 640653388414 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

Below is the output of `ls -li` command. Select the number of hardlinks and softlinks `todo.md` is having respectively.

```
$ pwd
/home/ram/tmp/6177

$ ls -li
total 0
28320712 -rw-rw-r-- 1 ram ram 0 Sep 20 13:24 notes.md
28320714 -rw-rw-r-- 1 ram ram 0 Sep 20 13:24 quicklinks.md
28320713 -rw-rw-r-- 4 ram ram 0 Sep 20 13:24 todo.md
```

Options :

6406531291084. ✖ 1, 4

6406531291085. ✖ 4,1

6406531291086. ✖ 1,0

6406531291087. ✔ 4,cannot be determined with above data

6406531291088. ✖ cannot be determined with above data,cannot be determined with above data

Question Number : 242 Question Id : 640653388418 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Multiple Choice Question

What will be the result of the keystrokes `$jddk0dw` on vi editor or `<C-e><C-k><C-k><C-a><M-d><C-d>` on emacs editor from first line first character on the text given below. `<C-x>` and `<M-x>` refers to Control + x and Meta/Alt + x respectively.

```
abcd efgh ijkl
mnop qrst uvw
xyz
```

Hint:
Emacs:
- `<C-k>` delete the entire line (from the cursor to the end)
- `<M-d>` delete word
- `<C-d>` delete character

Vi:
- `dd` delete the entire line
- `dw` delete word

Options :

6406531291096. ✖

```
abcd efgh
xyz
```

6406531291097. ✖

```
mnop qrst uvw
xyz
```

6406531291098. ✔

```
efgh ijkl
xyz
```

6406531291099. ✖

```
efgh ijkl
mnop
xyz
```

Question Number : 243 Question Id : 640653388419 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

Choose the command that matches a sequence of one or more digits at the end of the lines in the file `data.txt`.

Options :

6406531291100. ✖ `grep '^[0-9]*' data.txt`

6406531291101. ✖ `grep '[0-9][0-9]*' data.txt`

6406531291102. ✔ `grep '[0-9][0-9]*$' data.txt`

6406531291103. ✖ `grep '^[0-9][0-9]*$' data.txt`

Sub-Section Number :	4
Sub-Section Id :	64065355838
Question Shuffling Allowed :	Yes

Question Number : 244 Question Id : 640653388411 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

Select the output from the below script.

```
var="Wind"
echo "-var-"
echo "-${var2:=Air}-"
echo "-${var2:-Fire}-"
echo "-${var2:+Earth}-"
```

Options :

6406531291072. ✖

```
-Wind-
-Air-
-Fire-
-Earth-
```

6406531291073. ✖

```
-var-
-Air-
-Fire-
-Earth-
```

6406531291074. ✔

```
-Wind-
-Air-
-Air-
-Earth-
```

6406531291075. ✖

```
--
-Air-
-Air-
-Air-
```

Question Number : 245 Question Id : 640653388412 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

In an organization a particular software requires a key file while the keys will change at 6 am and 6 pm. The command `generate-key` will generate the key file with either of the option `--day` or `--night` with respect to the time at which the command is executed.
Choose the command that does the above job.

Hint:
The output of date command with and without the option are shown below.

```
$ date +%H:%M
15:06

$ date
Monday 19 September 2022 03:06:44 PM IST
```

Options :

```
[[ $(date +%H:%M) > 06:00 && $(date +%H:%M) < 18:00 ]] &&
        generate-key --day ||
        generate-key --night
```

6406531291076. ✔

```
[[ $(date) > 06:00 || $(date) < 18:00 ]] &&
        generate-key --day ||
        generate-key --night
```

6406531291077. ✖

```
[[ $(date +%H:%M) > 06:00 && $(date +%H:%M) < 18:00 ]] &&
        generate-key --night ||
        generate-key --day
```

6406531291078. ✖

6406531291079. ✖

```
[[ $(date +%H:%M) -gt 06:00 && $(date +%H:%M) -lt 18:00 ]] &&
        generate-key --day ||
        generate-key --night
```

Sub-Section Number : 5

Sub-Section Id : 64065355839

Question Shuffling Allowed : Yes

Question Number : 246 Question Id : 640653388405 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Multiple Select Question

Choose the command to print the below text in the terminal.

```
Welcome to the Summer Camp
Pichavaram
```

Options :

6406531291049. ✔

```
echo 'Welcome to the Summer Camp
Pichavaram'
```

6406531291050. ✖

```
echo 'Welcome to the Summer Camp\nPichavaram'
```

6406531291051. ✔

```
echo 'Welcome to the Summer Camp'
echo 'Pichavaram'
```

6406531291052. ✖

```
echo 'Welcome to the Summer Camp' echo 'Pichavaram'
```

Question Number : 247 Question Id : 640653388420 Question Type : MSQ Is Question

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

Correct Marks : 6

Question Label : Multiple Select Question

The contents of file.txt is given below

```
You've gotta dance like there's nobody watching,
Love like you'll never be hurt,
Sing like there's nobody listening,
And live like it's heaven on earth.
- William W. Purkey
```

Select the command that prints the output different than the contents of file.txt

Options :

6406531291104. ✖ `grep . file.txt`

6406531291105. ✖ `grep .* file.txt`

6406531291106. ✔ `grep [0-9] file.txt`

6406531291107. ✔ `grep [.] file.txt`

Question Number : 248 Question Id : 640653388423 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Multiple Select Question

Select all the files that will be copied (not moved) to `~/anotherdir` after running the below script.
Note that `stat` command is used to get the file status and with option `-c %s` is to get the total size in bytes.

```
for i in *; do
        if ! [[ $(stat -c %s "$i") -eq 0 ]]; then
                mv $i ~/anotherdir/$i
        else
                cp $i ~/anotherdir/$i
        fi
done
```

```
$ ls -l
-rw-rw-r--   1 ahmed ahmed   61432 Jul 20 18:40  temp.awk
-rw-rw-r--   1 ahmed ahmed       0 Aug  7 13:55  temp.hi
-rw-rw-r--   1 ahmed ahmed   12233 Aug 20 15:24  temp.hs
-rw-rw-r--   1 ahmed ahmed   59433 Aug  7 13:55  temp.o
-rwxrw-r--   1 ahmed ahmed       0 Aug 21 01:49  temp.py
-rwxr-xr-x   1 ahmed ahmed       0 Aug  6 17:39  temp.sh

$ stat -c %s temp.hs
12233
```

Options :

6406531291118. ✖ temp.awk

6406531291119. ✔ temp.hi

6406531291120. ✖ temp.hs

6406531291121. ✖ temp.o

6406531291122. ✔ temp.py

6406531291123. ✔ temp.sh

Sub-Section Number : 6

Sub-Section Id : 64065355840

Question Shuffling Allowed : Yes

Question Number : 249 Question Id : 640653388422 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 8

Question Label : Multiple Select Question

```
while read line; do
        $pat = '[0-3][a-g][123][xyz]'
        [[ $line =~ $pat ]] && break
done
```

Select the standard input(s) that do break the loop.

Options :

6406531291112. ✖ 8iadaz

6406531291113. ✔ 3g2z

6406531291114. ✔ jkjkjkjk2j2yjkjk

6406531291115. ✖ .a.a.a.2.2.1.

6406531291116. ✔ 00210132a1z01231

6406531291117. ✖ 1a2w01231

Sub-Section Number :	7
Sub-Section Id :	64065355841
Question Shuffling Allowed :	No

Question Id : 640653388415 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (250 to 251)

Question Label : Comprehension

Consider the below command outputs for the given subquestions.

Note that in the output of the command `ls -li` the first field is the inode number. Also that /home/ram is the home directory of the user.

```
$ pwd
/home/ram/tmp/6177

$ ls -li
total 0
28320712 -rw-rw-r-- 1 ram ram 0 Sep 20 13:24 notes.md
28320714 -rw-rw-r-- 1 ram ram 0 Sep 20 13:24 quicklinks.md
28320713 -rw-rw-r-- 4 ram ram 0 Sep 20 13:24 todo.md

$ cd /home/ram/tmp/28041

$ pwd
/home/ram/tmp/28041

$ ls -li
total 0
28320713 -rw-rw-r-- 4 ram ram  0 Sep 20 13:24 todo2.md
28320713 -rw-rw-r-- 4 ram ram  0 Sep 20 13:24 todo3.md
28320716 -rw-rw-r-- 1 ram ram  0 Sep 20 13:26 todo4.md
28320717 lrwxrwxrwx 1 ram ram 15 Sep 20 13:26 todo5.md →
../6177/todo.md
28320718 lrwxrwxrwx 1 ram ram 16 Sep 20 13:26 todo6.md →
../6177/notes.md
28320713 -rw-rw-r-- 4 ram ram  0 Sep 20 13:24 todo.md
```

Sub questions

Question Number : 250 Question Id : 640653388416 Question Type : SA Calculator : None

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

Correct Marks : 5

Question Label : Short Answer Question

With respect to the given data, how many files in `~/tmp/28041` is referring (hardlink + softlink) to the file `~/tmp/6177/todo.md` ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 251 Question Id : 640653388417 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Multiple Select Question

With respect to the given data, if the directory name `~/tmp/6177` is changed to `~/tmp/6178`, then which of the files in `~/tmp/28041` will be broken?

Options :

6406531291090. ✖ todo.md

6406531291091. ✖ todo2.md

6406531291092. ✖ todo3.md

6406531291093. ✖ todo4.md

6406531291094. ✔ todo5.md

6406531291095. ✔ todo6.md

Sub-Section Number : 8

Sub-Section Id : 64065355842

Question Shuffling Allowed : No

Question Id : 640653388407 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (252 to 254)

Question Label : Comprehension

Case 1

```
echo Welcome
read line
echo Home
```

Case 2

```
echo Welcome
read line &
echo Home
```

Sub questions

Question Number : 252 Question Id : 640653388408 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

When will the text `Home` be printed
if no input is given to stdin in case 1?

Options :

6406531291060. ✖ Immediately

6406531291061. ✖ After a minute

6406531291062. ✔ The text `Home` will not be printed

6406531291063. ✖ Not enough information

Question Number : 253 Question Id : 640653388409 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

When will the text `Home` will be printed if no input is given to stdin in case 2?

Options :

6406531291064. ✔ Immediately

6406531291065. ✖ After a minute

6406531291066. ✖ The text `Home` will not be printed

6406531291067. ✖ Not enough information

Question Number : 254 Question Id : 640653388410 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Select Question

Select the correct statement with respect to the given script?

Options :

6406531291068. ✔ The command `read line` will run in background

6406531291069. ✖ The commands `read line` and `echo Home` both will run in background

6406531291070. ✖ The processes sent to background will be killed

6406531291071. ✔ The `fg` command will move back the execution of `read line` to foreground