

Notations :

- 1.Options shown in **green** color and with ✓ icon are correct.
- 2.Options shown in **red** color and with ✗ icon are incorrect.

Question Paper Name :

IIT M DIPLOMA AN3 EXAM QPD3 16 JULY
2023

Subject Name :

2023 July: IIT M DIPLOMA AN3 EXAM QPD3

Creation Date :

2023-07-10 17:33:30

Duration :

180

Total Marks :

701

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 :	64065313730
Group Maximum Duration :	0
Group Minimum Duration :	90
Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	701
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No
Revisit allowed for group Instructions? :	Yes
Maximum Instruction Time :	0
Minimum Instruction Time :	0
Group Time In :	Minutes
Navigate To Group Summary From Last Question? :	No
Disable Submit Button During Assessment? :	No
Section Selection Time? :	0
No of Optional sections to be attempted :	0

Maths2

Section Id :	64065339081
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
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 :	64065382644
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 1 Question Id : 640653578008 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "[FOUNDATION LEVEL : MATHEMATICS FOR DATA SCIENCE II \(COMPUTER BASED EXAM\)](#)"

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 :

6406531930181. ✓ YES

6406531930182. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 64065382645

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 2 Question Id : 640653578009 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 system of linear equations in Column A with their number of solutions in column B and their geometric representation in Column C.

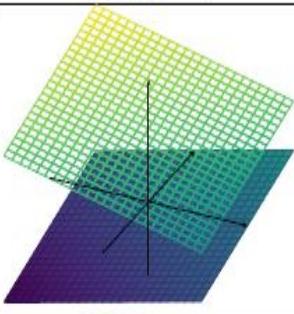
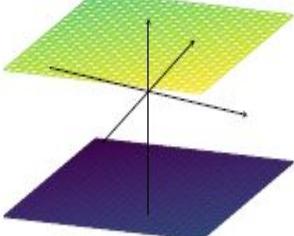
	System of linear equations (Column A)		Number of solutions (Column B)		Geometric representations (Column C)
i)	$x - 2y - z = 8, -x + 2y + z = 4$	a)	No solution	1)	
ii)	$x + y - z = 3, x - y + z = 3$	b)	Infinitely many solutions	2)	

Table: M2Q1:1

Choose the correct option from the following:

Options :

6406531930183. ✗ i) → b → 1, ii) → a → 2.

6406531930184. ❌ i) \rightarrow a \rightarrow 1, ii) \rightarrow b \rightarrow 2.

6406531930185. ❌ i) \rightarrow b \rightarrow 2, ii) \rightarrow a \rightarrow 1.

6406531930186. ✓ i) \rightarrow a \rightarrow 2, ii) \rightarrow b \rightarrow 1.

Sub-Section Number : 3

Sub-Section Id : 64065382646

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 3 Question Id : 640653578010 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following matrices satisfy $A^k = 0$ for some natural number k ?

Options :

$$\begin{bmatrix} 4 & -4 & 0 & 0 \\ 4 & -4 & 0 & 0 \\ 0 & 0 & 4 & -4 \\ 0 & 0 & 4 & -4 \end{bmatrix}$$

6406531930187. ✓

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

6406531930188. ✓

$$\begin{bmatrix} 0 & 1 & 1 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 \end{bmatrix}$$

6406531930189. ❌

6406531930190. ❌

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

Question Number : 4 Question Id : 640653578011 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following subsets of \mathbb{R}^2 is/are vector spaces with respect to usual addition and usual scalar multiplication?

Options :

6406531930191. ✓ $V_1 = \{(x, y) : 2x + 3y = 0\}$

6406531930192. ✓ $V_2 = \{(x, y) : y^2 = 0, x = 2y\}$

6406531930193. ✗ $V_3 = \{(x, y) : x = 1\}$

6406531930194. ✗ $V_4 = \{(x, y) : 2x + 3y - 1 = 0, x - y = 0\}$

Question Number : 5 Question Id : 640653578013 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Select the true statement(s).

Options :

6406531930196. ✓ Any subset of a linearly independent set is a linearly independent set.

6406531930197. ✓ Any superset of a spanning set is a spanning set.

6406531930198. ✗ Any subset of a basis is a basis.

6406531930199. ✗ Any superset of a subspace is a subspace.

Question Number : 6 Question Id : 640653578014 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the set $W = \{A \in M_n(\mathbb{R}) : \det(A^T) = 0\}$ with the usual addition and usual scalar multiplication of matrices. Which of the following is/are true?

Options :

6406531930200. ✗ W is closed under addition.

6406531930201. ✓ W is closed under scalar multiplication.

6406531930202. ✗ W is a vector space.

6406531930203. ✓ W is not a vector space.

Sub-Section Number : 4

Sub-Section Id : 64065382647

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 7 Question Id : 640653578018 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

Let $A = \begin{pmatrix} 2022 & 2023 & 2024 \\ 2022 & 2021 & 2022 \\ 2022 & 2022 & 2022 \end{pmatrix}$. What is the determinant of $\frac{1}{2}A$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

505.5

Sub-Section Number : 5

Sub-Section Id : 64065382648

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 8 **Question Id :** 640653578012 **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 system of linear equations represented in the matrix form $Ax = b$, where

$A = \begin{pmatrix} 1 & 1 & 3 \\ 1 & 2 & 4 \\ 1 & 3 & \alpha \end{pmatrix}$ and $b = \begin{pmatrix} 2 \\ 3 \\ \beta \end{pmatrix}$. What is the value of $\alpha + \beta$ if the above system has infinitely many solutions?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

9

Sub-Section Number : 6

Sub-Section Id : 64065382649

Question Shuffling Allowed : No

Is Section Default? :

null

Question Id : 640653578015 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Question Numbers : (9 to 10)

Question Label : Comprehension

What is the dimension of vector spaces for the given subquestions.

Sub questions

Question Number : 9 Question Id : 640653578016 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

$$V_1 = \{(x, y, z) \in \mathbb{R}^3 : 2x + 3y = 0 = 2z + 3x\}$$

with usual addition and scalar multiplication. _____

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 : 640653578017 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

$V_2 = \{A \in M_3(\mathbb{R}) : \text{sum of the diagonal entries of } A \text{ is 0 and sum of each row is 0}\}$ with usual addition and scalar multiplication of matrices. _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Sub-Section Number : 7

Sub-Section Id : 64065382650

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653578019 **Question Type :** COMPREHENSION **Sub Question Shuffling Allowed :** No **Group Comprehension Questions :** No **Question Pattern Type :** NonMatrix **Calculator :** None **Response Time :** N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Question Numbers : (11 to 15)

Question Label : Comprehension

Shivani, Sruthi and Smriti enjoyed shopping on a Sunday. Shivani bought 2 shirts, a T-shirt and 2 pants, whereas Sruthi bought a T-shirt and a pant and Smriti bought 2 shirts and a pant. They paid Rs. 600, Rs. 400 and Rs. 300 respectively. Suppose x_1 is the price of a shirt, x_2 is the price of a T-shirt and x_3 is the price of a pant. Then the above information forms a system of linear equations. If $Ax = b$ is the matrix representation

of the above system, where $x = \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix}$ is the vector that represents the

price of a shirt, T-shirt and pant respectively, answer the given subquestions.

Sub questions

Question Number : 11 Question Id : 640653578020 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

Choose the correct option(s):

Options :

$$A = \begin{pmatrix} 2 & 0 & 2 \\ 1 & 1 & 0 \\ 2 & 1 & 1 \end{pmatrix}, b = \begin{pmatrix} 600 \\ 400 \\ 300 \end{pmatrix}$$

6406531930207. ❌

$$A = \begin{pmatrix} 2 & 1 & 2 \\ 0 & 1 & 1 \\ 2 & 0 & 1 \end{pmatrix}, b = \begin{pmatrix} 600 \\ 400 \\ 300 \end{pmatrix}$$

6406531930208. ✓

$$A = \begin{pmatrix} 2 & 1 & 2 \\ 1 & 1 & 0 \\ 2 & 1 & 1 \end{pmatrix}, b = \begin{pmatrix} 600 \\ 400 \\ 300 \end{pmatrix}$$

6406531930209. ❌

$$A = \begin{pmatrix} 2 & 1 & 2 \\ 1 & 1 & 1 \\ 2 & 0 & 1 \end{pmatrix}, b = \begin{pmatrix} 600 \\ 400 \\ 300 \end{pmatrix}$$

6406531930210. ❌

Question Number : 12 Question Id : 640653578021 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

How many solutions does the given system $Ax = b$ have?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Number : 13 **Question Id :** 640653578022 **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

Consider the set S of solutions of the system $Ax = 0$, where A is as given. Clearly, S is a vector space with respect to usual addition and scalar multiplication. What is the dimension of S ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 14 **Question Id :** 640653578023 **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 forms a basis for S ?

Options :

6406531930213. ❌ $\{(\frac{1}{2}, 1, -1), (0, 1, -1)\}$

6406531930214. ✓ $\{(\frac{1}{2}, 1, -1)\}$

6406531930215. ✶ $\{(\frac{1}{2}, 1, 1), (0, 1, -1)\}$

6406531930216. ✶ $\{(\frac{1}{2}, 1, 1)\}$

Question Number : 15 Question Id : 640653578024 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the rank of A ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Statistics2

Section Id :	64065339082
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 :	64065382651
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 16 Question Id : 640653578025 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "[FOUNDATION LEVEL : STATISTICS FOR DATA SCIENCE II \(COMPUTER BASED EXAM\)](#)"

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

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

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

Options :

6406531930218. ✓ YES

6406531930219. ✘ NO

Question Number : 17 Question Id : 640653578026 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 ($F_X(x)$)	$E[X]$	$\text{Var}(X)$
Uniform(A) $A = \{a, a+1, \dots, b\}$	$\frac{1}{n}, \quad x = k$ $n = b - a + 1$ $k = a, a+1, \dots, b$	$\begin{cases} 0 & x < 0 \\ \frac{k-a+1}{n} & k \leq x < k+1 \\ & k = a, a+1, \dots, b-1, b \\ 1 & x \geq n \end{cases}$	$\frac{a+b}{2}$	$\frac{n^2-1}{12}$
Bernoulli(p)	$\begin{cases} p & x = 1 \\ 1-p & x = 0 \end{cases}$	$\begin{cases} 0 & x < 0 \\ 1-p & 0 \leq x < 1 \\ 1 & x \geq 1 \end{cases}$	p	$p(1-p)$
Binomial(n, p)	${}^n C_k p^k (1-p)^{n-k}, \quad k = 0, 1, \dots, n$	$\begin{cases} 0 & x < 0 \\ \sum_{i=0}^k {}^n C_i p^i (1-p)^{n-i} & k \leq x < k+1 \\ & k = 0, 1, \dots, n \\ 1 & x \geq n \end{cases}$	np	$np(1-p)$
Geometric(p)	$(1-p)^{k-1} p, \quad k = 1, \dots, \infty$	$\begin{cases} 0 & x < 0 \\ 1 - (1-p)^k & k \leq x < k+1 \\ & k = 1, \dots, \infty \end{cases}$	$\frac{1}{p}$	$\frac{1-p}{p^2}$
Poisson(λ)	$\frac{e^{-\lambda} \lambda^k}{k!}, \quad k = 0, 1, \dots, \infty$	$\begin{cases} 0 & x < 0 \\ e^{-\lambda} \sum_{i=0}^k \frac{\lambda^i}{i!} & k \leq x < k+1 \\ & k = 0, 1, \dots, \infty \end{cases}$	λ	λ

Continuous random variables:

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

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

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

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

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

Options :

6406531930220. ✓ Useful Data has been mentioned above.

6406531930221. ✖ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 64065382652

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 18 Question Id : 640653578027 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 joint PMF of two discrete random variables X and Y is given in the following table:

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

Joint PMF of X and Y

Which of the following options is correct?

Options :

6406531930222. ✘ $2a = b = 6c = 4d$

6406531930223. ✘ $2a = b = 4c = 6d$

6406531930224. ✓ $6a = 12b = 2c = 3d$

6406531930225. ✘ $9a = 18b = 3c = 2d$

Question Number : 19 Question Id : 640653578032 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 $X \sim \text{Binomial}(n, p)$. If the expected value and variance of X are 2 and $\frac{3}{2}$, respectively, find the value of $P(X = 2)$.

Options :

6406531930235. ✓
$$\frac{7 \times 3^6}{4^7}$$

6406531930236. ✗
$$\frac{7 \times 3^6}{4^8}$$

6406531930237. ✗
$${}^8C_2 \left(\frac{3^2}{4^8} \right)$$

6406531930238. ✗
$${}^4C_2 \left(\frac{3^2}{4^4} \right)$$

Sub-Section Number : 3

Sub-Section Id : 64065382653

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653578028 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (20 to 21)

Question Label : Comprehension

Suppose two fair dice are rolled. Let a random variable X denote the number obtained on the first die and let a random variable Y denote the number obtained on the second die. Define a new random variable $U = X + Y - 1$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 20 Question Id : 640653578029 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Find the range of U .

Options :

6406531930226. ✘ $T_U = \{0, 1, 2, \dots, 12\}$

6406531930227. ✘ $T_U = \{1, 2, \dots, 12\}$

6406531930228. ✘ $T_U = \{0, 1, 2, \dots, 11\}$

6406531930229. ✓ $T_U = \{1, 2, \dots, 11\}$

Question Number : 21 Question Id : 640653578030 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Find the value of $P(X = 4, U = 8)$.

Options :

6406531930230. ✘ $\frac{1}{6}$

6406531930231. ✘ $\frac{2}{3}$

6406531930232. ✓

6406531930233. * $\frac{1}{3}$

Sub-Section Number : 4
Sub-Section Id : 64065382654
Question Shuffling Allowed : Yes
Is Section Default? : null

Question Number : 22 Question Id : 640653578031 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 probability mass function of a random variable X is given as

x	-3	6	9
$P(X = x)$	1/6	1/2	1/3

Define $Y = (2X + 1)^2$. Find the expected value of Y .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

209

Question Number : 23 Question Id : 640653578033 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Let X be a continuous random variable with the following PDF:

$$f_X(x) = \begin{cases} \frac{k}{(1+x)^2}, & 0 \leq x \leq 4, \\ 0, & \text{otherwise.} \end{cases}$$

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

Hint: $\int \frac{1}{(a+bx)^2} dx = \frac{-1}{b(a+bx)}$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

1.23 to 1.27

Sub-Section Number : 5

Sub-Section Id : 64065382655

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653578034 **Question Type :** COMPREHENSION **Sub Question Shuffling Allowed :** No **Group Comprehension Questions :** No **Question Pattern Type :** NonMatrix **Calculator :** None **Response Time :** N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Question Numbers : (24 to 25)

Question Label : Comprehension

The joint PMF of two discrete random variables X and Y is

$$f_{XY}(x, y) = \begin{cases} \frac{1}{32}(x^2 + y), & x \in \{0, 1, 2, 3\}, y \in \{0, 1\}, \\ 0, & \text{otherwise.} \end{cases}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 24 Question Id : 640653578035 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

Identify the correct joint PMF

table of X and Y :

Options :

\backslash	X	0	1	2	3
Y	0	$\frac{1}{32}$	$\frac{4}{32}$	$\frac{9}{32}$	
0	0	$\frac{1}{32}$	$\frac{2}{32}$	$\frac{5}{32}$	$\frac{10}{32}$
1	$\frac{1}{32}$	$\frac{2}{32}$	$\frac{5}{32}$	$\frac{10}{32}$	

6406531930240. ✓

\backslash	X	0	1	2	3
Y	0	$\frac{1}{32}$	$\frac{4}{32}$	$\frac{10}{32}$	
0	0	$\frac{1}{32}$	$\frac{2}{32}$	$\frac{4}{32}$	$\frac{10}{32}$
1	$\frac{1}{32}$	$\frac{2}{32}$	$\frac{4}{32}$	$\frac{10}{32}$	

6406531930241. ✗

\backslash	X	0	1	2	3
Y	0	$\frac{1}{32}$	$\frac{2}{32}$	$\frac{5}{32}$	$\frac{10}{32}$
0	$\frac{1}{32}$	$\frac{2}{32}$	$\frac{5}{32}$	$\frac{10}{32}$	
1	0	$\frac{1}{32}$	$\frac{4}{32}$	$\frac{9}{32}$	

6406531930242. ✗

\backslash	X	0	1	2	3
Y	0	$\frac{1}{32}$	$\frac{4}{32}$	$\frac{9}{32}$	
0	0	$\frac{1}{32}$	$\frac{4}{32}$	$\frac{9}{32}$	
1	$\frac{1}{32}$	$\frac{2}{32}$	$\frac{5}{32}$	$\frac{10}{32}$	

6406531930243. ✗

Question Number : 25 Question Id : 640653578036 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 $P\left(\frac{1}{2} < X < \frac{5}{2} \mid X > 1\right)$. Enter

the answer correct to 2 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 Id : 640653578037 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

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

Question Numbers : (26 to 27)

Question Label : Comprehension

Ten students from classes 9 and 10 have been nominated to form the school committee.

The table below provides the number of boys and girls selected from each class:

	class 9	class 10
Boys	1	5
Girls	3	1

The committee will consist of four students, with two students selected from each class uniformly at random.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 26 Question Id : 640653578038 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Let a random variable G represent the number of girls selected for the committee. Find the range of G .

Options :

6406531930245. ✘ $T_G = \{0, 1, 2, 3\}$

6406531930246. ✓ $T_G = \{1, 2, 3\}$

6406531930247. ✘ $T_G = \{1, 2, 3, 4\}$

6406531930248. ✘ $T_G = \{0, 1, 2, 3, 4\}$

Question Number : 27 Question Id : 640653578039 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 expected number of girls selected for the committee. 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 :

1.81 to 1.85

Question Id : 640653578040 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

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

Question Numbers : (28 to 29)

Question Label : Comprehension

In a bookstore, there are two book types: Type 1 and Type 2.

Let X and Y be independent random variables representing the number of Type 1 and Type 2 books sold in a week, respectively.

Suppose X and Y follow the Poisson distribution with averages of 2 and 3, respectively. Define a new random variable $Z = X + Y$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 28 Question Id : 640653578041 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

If $Z = 5$, then which of the following options are true?

Options :

6406531930250. ❌ $(Y|Z) \sim \text{Binomial}(5, \frac{2}{5})$.

6406531930251. ✓ $(X|Z) \sim \text{Binomial}(5, \frac{2}{5})$.

6406531930252. ❌ $(X|Z) \sim \text{Binomial}(5, \frac{3}{5})$.

6406531930253. ✓ $(Y|Z) \sim \text{Binomial}(5, \frac{3}{5})$.

Question Number : 29 Question Id : 640653578042 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 $P(X = 1|Z = 5)$.

Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.24 to 0.28

Question Id : 640653578043 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

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

Question Numbers : (30 to 31)

Question Label : Comprehension

Suppose $X \sim \text{Binomial} \left(n, \frac{1}{2} \right)$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 30 Question Id : 640653578044 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 value of n for which

$$\frac{1}{30}P(X = 3) = P(X = 2).$$

Options :

6406531930255. ✘ 90

6406531930256. ✓ 92

6406531930257. ✘ 30

6406531930258. ✘ 32

Question Number : 31 Question Id : 640653578045 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

Using the Chebyshev's inequality, find

a lower bound for $P(-2\sigma \leq X - \mu \leq 2\sigma)$,

where μ and σ^2 are mean and variance

of X . Enter the answer correct to

2 decimal places

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.75

Question Id : 640653578046 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

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

Question Numbers : (32 to 33)

Question Label : Comprehension

Sruthi throws a dart onto a circular board. Let a random variable X denote the distance from the center to the point where the dart hits the board. Suppose the PDF of X is

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

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 32 Question Id : 640653578047 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 k .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 33 Question Id : 640653578048 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 value of $P\left(\frac{1}{4} \leq X \leq \frac{3}{4}\right)$. 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 :

0.66 to 0.72

CT

Section Id : 64065339083

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

Yes

Clear Response :

Maximum Instruction Time :

0

Sub-Section Number :

1

Sub-Section Id :

64065382656

Question Shuffling Allowed :

No

Is Section Default? :

null

Question Number : 34 Question Id : 640653578049 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406531930262. ✓ YES

6406531930263. ✗ NO

Question Number : 35 Question Id : 640653578050 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

Scores

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

Words

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

Library

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

Olympics

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

Three sample cards out of 30 for Shopping Bills dataset

Item List



SV Stores		Srivatsan 1		
Item	Category	Qty	Price	Cost
Carrots	Vegetables/Food	1.5	50	75
Soap	Toiletries	4	32	128
Tomatoes	Vegetables/Food	2	40	80
Bananas	Vegetables/Food	8	8	64
Socks	Footwear/Apparel	3	56	168
Curd	Dairy/Food	0.5	32	16
Milk	Dairy/Food	1.5	24	36
				567

Sun General		Vignesh 14		
Item	Category	Qty	Price	Cost
Phone Charger	Utilities	1	230	230
Razor Blades	Grooming	1	12	12
Razor	Grooming	1	45	45
Shaving Lotion	Grooming	0.8	180	144
Earphones	Electronics	1	210	210
Pencils	Stationery	3	5	15
				656

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

Options :

6406531930264. ✓ Useful Data has been mentioned above.

6406531930265. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 64065382657

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 36 Question Id : 640653578051 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?

```

1 count = 0
2 while(Table 1 has more rows){
3     flag = False
4     Read the first row X in Table 1
5     if(X.PartOfSpeech == "Adjective"){
6         flag = True
7     }
8     if(X.LetterCount <= 2){
9         flag = True
10    }
11    if(flag){
12        count = count + 1
13    }
14    Move X to Table 2
15 }
```

Options :

6406531930266. ✖ Number of words which are adjectives and have at least two letters

6406531930267. ✖ Number of words which are either adjectives or have at most two letters but not both

6406531930268. ✓ Number of words which are adjectives or have at most two letters or both

6406531930269. ✖ Number of words which are not adjectives and have exactly two letters

Question Number : 37 Question Id : 640653578052 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 "Library" dataset. What will **A** represent at the end of execution?

```

1 A = 0
2 count = 0
3 while(Table 1 has more rows){
4     Read the first row X in Table 1
5     count = count + 1
6     if(X.Author != "Kalam" and X.Language != "English"){
7         A = A + 1
8     }
9     Move X to Table 2
10 }
11 A = count - A

```

Options :

6406531930270. ✘ Number of books written by author Kalam in English

6406531930271. ✘ Number of books not written by author Kalam in English

6406531930272. ✘ Number of English books written by authors other than Kalam

6406531930273. ✓ Number of books that are written by Kalam or in English or both

Question Number : 38 Question Id : 640653578053 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 given pseudocode is executed using the "Words" dataset. Assume that **vCount(X)** returns the number of vowels in **X.Word**. What will **B** represent at the end of the execution?

```

1 SumT = 0, CountT = 0, B = 0
2 while(Pile 1 has more cards){
3     Read the top card X from Pile 1
4     if(vCount(X) > 1{
5         SumT = SumT + X.LetterCount
6         CountT = CountT + 1
7     }
8     Move X to Pile 2
9 }
10 B = SumT / CountT

```

Options :

6406531930274. ✘ Average letter count of words in the dataset

6406531930275. ✘ Sum of words that contain at least two vowels

6406531930276. ✓ Average letter count of words containing at least two vowels in the dataset

6406531930277. ✘ Average letter count of words containing at most two vowels in the dataset

Question Number : 39 Question Id : 640653578054 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 "Scores" dataset. What will C represent at the end of the execution?

```
1  C = 0
2  A = DoSomething(Table 1)
3  while(Table 2 has more rows){
4      Read the first row X from Table 2
5      if(X.Physics > A){
6          C = C + X.Total
7      }
8      Move X to Table 1
9  }
10
11 Procedure DoSomething(Table 1)
12     sum = 0
13     n = 0
14     while(Table 1 has more rows){
15         Read the first row X in Table 1
16         sum = sum + X.Physics
17         n = n + 1
18         Move X to Table 2
19     }
20     avg = sum / n
21     return (avg)
22 End DoSomething
```

Options :

6406531930278. ✘ Sum of Total marks of students whose Physics marks are less than the average

Physics marks

6406531930279. ✓ Sum of Total marks of students whose Physics marks are more than the average Physics marks

6406531930280. ✗ Sum of Physics marks of students whose Physics marks are more than the average Physics marks

6406531930281. ✗ Sum of Physics marks of students whose Physics marks are less than the average Physics marks

Question Number : 40 Question Id : 640653578055 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 **A** represent at the end of the execution?

```
1 A = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     i = 1, B = 0
5     while(i <= X.LetterCount){
6         if(ith letter of X.Word is a vowel){
7             B = B + 1
8         }
9         i = i + 1
10    }
11    if(B > 2){
12        A = A + 1
13    }
14    Move X to Table 2
15 }
```

Options :

6406531930282. ✗ Number of words with at most two vowels

6406531930283. ✓ Number of words with at least three vowels

6406531930284. ❖ Number of words with at least two vowels

6406531930285. ❖ Number of words with exactly two vowels

Sub-Section Number :	3
Sub-Section Id :	64065382658
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 41 Question Id : 640653578056 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the **Player** dataset given below that keeps track of the runs scored by each player in the test matches held.

PlayerID	Name	Trial	TestSeries	WorldCup
1	Virat Kohli	167	186	104
2	MS Dhoni	177	184	123
3	Harbhajan Singh	89	74	93
4	Gautam Gambhir	100	100	100
.
.
.
99	Qureshi Ahmed	22	134	67
100	Afzal Khan	130	130	130

The following pseudocode is executed using the "Player" dataset. A player can join a sports club if his runs are above 75 in Trial, Test Series and World Cup. The variables **A**, **B** and **C** store the number of players in GoldStriker, SilverStriker and BronzeStriker clubs respectively based on the execution of the pseudocode.

```

1 A = 0, B = 0, C = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     if(X.Trial > 75 and X.TestSeries > 75 and X.WorldCup > 75){
5         match = maxMatch(X)
6         if(match == "WorldCup"){
7             A = A + 1
8         }
9         if(match == "TestSeries"){
10            B = B + 1
11        }
12        if(match == "Trial"){
13            C = C + 1
14        }
15    }
16    Move X to Table 2
17 }
18 Procedure maxMatch(Z)
19     if(Z.Trial > Z.TestSeries){
20         if(Z.Trial > Z.WorldCup){
21             return("Trial")
22         }
23         else{
24             return("WorldCup")
25         }
26     }
27     else{
28         if(Z.TestSeries > Z.WorldCup){
29             return("TestSeries")
30         }
31         else{
32             return("WorldCup")
33         }
34     }
35 End maxMatch

```

Which club will be allotted to a player if he gets 167, 180, 180 runs in Trial, TestSeries, and WorldCup respectively ?

Options :

6406531930286. ✓ GoldStriker

6406531930287. ✶ SilverStriker

6406531930288. ✶ BronzeStriker

6406531930289. ✶ SilverStriker and BronzeStriker

Question Number : 42 Question Id : 640653578057 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

The following pseudocode is executed using the “Scores” dataset. At the end of the execution, A captures the lowest Chemistry marks scored by a male student from Vellore. Choose the correct code fragment(s) to complete the pseudocode. It is a Multiple Select Question.

```
1 A = 101
2 while (Table 1 has more rows) {
3     Read the first row X in Table 1
4     *****
5     * Fill the code   *
6     *****
7     Move X to Table 2
8 }
```

Options :

```
1 if(X.Gender != 'F' and X.CityTown == "Vellore"){
2     if(X.Chemistry > A){
3         A = X.Chemistry
4     }
5 }
```

6406531930290. ❌

```
1 if(X.Gender == 'M' and X.CityTown == "Vellore"){
2     if(X.Chemistry < A){
3         A = X.Chemistry
4     }
5 }
```

6406531930291. ✓

```
1 if(X.Gender == 'M' and X.CityTown == "Vellore"){
2     if(X.Chemistry > A){
3         A = X.Chemistry
4     }
5 }
```

6406531930292. ❌

```
1 if(X.Gender != 'F'){
2     if(X.CityTown == "Vellore"){
3         if(X.Chemistry < A){
4             A = X.Chemistry
5         }
6     }
7 }
```

6406531930293. ✓

Question Number : 43 Question Id : 640653578058 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

The following pseudocode is executed using the “Olympics” dataset. At the end of the execution, **A** stores the number of players who are either female from India or have won the match hosted by Australia in the year 2006 or both. 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 .

```
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.HostCountry == "Australia"){
6         C = True
7     }
8     if(X.Year == 2006 and X.Nationality == "India"){
9         D = True
10    }
11    if(C or D){
12        A = A + 1
13    }
14    Move X to Table 2
15 }
```

Options :

6406531930294. ❌ Line 1: Incorrect initialization of **A**

6406531930295. ✓ Line 5: Condition to update **C** is incorrect

6406531930296. ✓ Line 8: Condition to update **D** is incorrect

6406531930297. ❌ No error in the code

Sub-Section Number :	4
Sub-Section Id :	64065382659
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 44 Question Id : 640653578059 Question Type : MSQ Is Question

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

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Two words are said to be **Special** if they fulfill the following conditions:

- They are different words
- Number of letters are not same in both words
- Number of vowels are same in both words

The given pseudocode is executed using the "Words" dataset. Assume that **vCount(X)** returns the number of vowels in **X.Word**. At the end of the execution, **count** stores the number of **Special** pairs. Choose the correct code fragment(s) to complete the pseudocode. It is a Multiple Select Question

```
1 count = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     Move X to Table 2
5     while(Table 1 has more rows){
6         Read the first row Y in Table 1
7         ****
8         * Fill the code *
9         ****
10        Move Y to Table 3
11    }
12    Move all rows from Table 3 to Table 1
13 }
```

Options :

```
1 if(X.Word != Y.Word){  
2     if(X.LetterCount != Y.LetterCount){  
3         if(vCount(X) == vCount(Y)){  
4             count = count + 1  
5         }  
6     }  
7 }
```

6406531930298. ✓

```
1 if(X.Word == Y.Word){  
2     if(X.LetterCount != Y.LetterCount){  
3         if(vCount(X) == vCount(Y)){  
4             count = count + 1  
5         }  
6     }  
7 }
```

6406531930299. ✘

```
1 if(X.Word != Y.Word){  
2     if(vCount(X) == vCount(Y)){  
3         if(X.LetterCount - vCount(X) == Y.LetterCount - vCount(Y)){  
4             count = count + 1  
5         }  
6     }  
7 }
```

6406531930300. ✘

```
1 if(X.Word != Y.Word){  
2     if(vCount(X) == vCount(Y)){  
3         if(X.LetterCount - vCount(X) != Y.LetterCount - vCount(Y)){  
4             count = count + 1  
5         }  
6     }  
7 }
```

6406531930301. ✓

Sub-Section Number : 5

Sub-Section Id : 64065382660

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 45 Question Id : 640653578060 Question Type : SA Calculator : None

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

Correct Marks : 4

Question Label : Short Answer Question

What would be the value of **s** at the end of the execution of the following pseudocode if the value of **n** is 1024 ?

The operator '//' returns the quotient.

For instance, $8 // 7 = 1$ and $10 // 5 = 2$

The operator '%' returns the remainder.

For instance, $8 \% 7 = 1$ and $10 \% 5 = 0$.

```
1 r = 0, s = 0, n = 1024
2 while(n > 0){
3     r = n % 10
4     s = s + r
5     n = n // 10
6 }
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

7

Sub-Section Number : 6

Sub-Section Id : 64065382661

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 46 Question Id : 640653578061 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Let the value of **X** be "aeroplane". What is the value of **A** at the end of the execution of the pseudocode ?

```
1 i = 1
2 A = 1
3 while(i <= X.LetterCount){
4     if(ith letter of X is a vowel){
5         A = A*2
6     }
7     i = i + 1
8 }
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

32

Sub-Section Number : 7

Sub-Section Id : 64065382662

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653578062 **Question Type :** COMPREHENSION **Sub Question Shuffling Allowed :** No **Group Comprehension Questions :** No **Question Pattern Type :** NonMatrix

Calculator : None **Response Time :** N.A **Think Time :** N.A **Minimum Instruction Time :** 0
Question Numbers : (47 to 48)

Question Label : Comprehension

The SouthCo Electricity Board charges consumers according to the number of the units consumed by them per month. However, the amount is to be paid quarterly in advance as per the tariff :

Units consumed	Charges
up to 50 units	₹ 2 / unit
more than 50 units	₹ 3 / unit

For instance, suppose a consumer has consumed 30 units. He/she has to pay ₹ 2 per unit, i.e. ₹ 60.

If a customer has consumed 60 units, he/she has to pay ₹ 2 per unit for the first 50 units and ₹ 3 per unit for the remaining units so the total amount is ₹ 100 + ₹ 30 = ₹ 130

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 47 Question Id : 640653578063 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 **unit** be the number of units consumed by the consumer and **cost** be the amount of the bill to be paid. Choose the correct implementation to compute the **cost**.

Options :

```
1 cost = 0
2 if(unit <= 50){
3     cost = unit * 2
4 }
5 if(unit > 50){
6     cost = unit * 3
7 }
```

6406531930304. ✘

6406531930305. ✘

```
1 cost = 0
2 if(unit <= 50){
3     cost = unit * 2
4 }
5 if(unit > 50){
6     cost = cost + ( unit - 50 ) * 3
7 }
```

```
1 cost = 0
2 if(unit <= 50){
3     cost = unit * 2
4 }
5 if(unit > 50){
6     cost = 50 * 2 + ( unit - 50 ) * 3
7 }
```

6406531930306. ✓

```
1 cost = 0
2 if(unit <= 50){
3     cost = unit * 2
4 }
5 if(unit > 50){
6     cost = 50 * 2 + unit * 3
7 }
```

6406531930307. ✘

Question Number : 48 Question Id : 640653578064 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 SouthCo Electricity Board rates its consumers by the units consumed yearly in the following fashion :

Units (per annum)	Grade
less than 200	1
200 to 350	2
351 to 550	3
> 550	4

Consider the dataset of the SouthCo Electricity Board given below.

ConsumerID	FirstName	LastName	MeterNumber	Units	Area	YearOfRegistration
SEB000001	Shyam	Bansal	201902477	456	MG Road	2004
SEB000002	Kartik	Ahuja	202304876	512	JD Road	2004
SEB000003	Payal	Singh	202232846	234	MG Road	2005
.....
SEB189672	Neha	Kashyap	202283384	199	RNB Townhall	2023

The following pseudocode is executed using the above dataset. At the end of the execution, **A**, **B**, **C** and **D** capture the number of pairs of users who have scored the same grade , reside in the same area but have different *YearOfRegistration*. Choose the correct code fragment(s) to complete the pseudocode.

```

1 A = 0, B = 0, C = 0, D = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     if(X.Units < 200){
5         Move X to Table 2
6     }
7     if(X.Units >= 200 and X.Units <= 350){
8         Move X to Table 3
9     }
10    if(X.Units >= 351 and X.Units <= 550){
11        Move X to Table 4
12    }
13    if(***** Statement I *****){
14        Move X to Table 5
15    }
16 }
17 A = findMatch(Table 2)
18 B = findMatch(Table 3)
19 C = findMatch(Table 4)
20 D = findMatch(Table 5)
21
22 Procedure findMatch(Table T1)
23     E = 0
24     while(Table T1 has more rows){
25         Read the first row Y in Table T1
26         Move Y to Table T2
27         while(Table T1 has more rows){
28             Read the first row Z in Table T1
29             Move Z to Table T3
30             if(***** Statement II *****){
31                 E = E + 1
32             }
33         }
34         Move all rows from Table T3 to Table T1
35     }
36     return(E)
37 End findMatch

```

Options :

1	I : X.Units > 550
2	II : Y.YearOfRegistration == Z.YearOfRegistration and Y.Area != Z.Area

6406531930308. ❀

1	I : X.Units < 550
---	-------------------

2	II : Y.YearOfRegistration != Z.YearOfRegistration or Y.Area == Z.Area
---	---

6406531930309. ❀

```
1 | I : X.Units > 550  
2 | II : Y.YearOfRegistration != Z.YearOfRegistration or Y.Area == Z.Area
```

6406531930310. ✘

```
1 | I : X.Units > 550  
2 | II : Y.YearOfRegistration != Z.YearOfRegistration and Y.Area == Z.Area
```

6406531930311. ✓

Sub-Section Number : 8

Sub-Section Id : 64065382663

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 49 Question Id : 640653578065 Question Type : MSQ Is Question

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

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

The following pseudocode is executed using the "Scores" dataset. At the end of the execution, **count** captures the number of pairs of students who are of the same gender or are from the same city but not both. Choose the correct code fragment to complete the pseudocode. It is a Multiple Select Question.

```

1 count = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     Move X to Table 2
5     while(Table 1 has more rows){
6         Read the first row Y in Table 1
7         Move Y to Table 3
8         count = count + findPair(X, Y)
9     }
10    Move all rows from Table 3 to Table 1
11 }
12 Procedure findPair(X, Y)
13 ****
14 ***** Fill the code *****
15 ****
16 End findPair

```

Options :

```

1 A = 0, B = 0
2 if(X.Gender == Y.Gender or X.TownCity == Y.TownCity){
3     A = A + 1
4 }
5 if(X.Gender == Y.Gender and X.TownCity == Y.TownCity){
6     B = B + 1
7 }
8 return(A-B)

```

6406531930312. ✓

```

1 A = 0, B = 0
2 if(X.Gender == Y.Gender and X.TownCity == Y.TownCity){
3     A = A + 1
4 }
5 if(X.Gender == Y.Gender or X.TownCity == Y.TownCity){
6     B = B + 1
7 }
8 return(A-B)

```

6406531930313. ❌

6406531930314. ✓

```
1 A = False, B = False
2 if(X.Gender == Y.Gender){
3     A = True
4 }
5 if(X.TownCity == Y.TownCity){
6     B = True
7 }
8 if((A and not B) or (not A and B)){
9     return(1)
10}
11 return(0)
```

```
1 A = False, B = False
2 if(X.Gender == Y.Gender){
3     A = True
4 }
5 if(X.TownCity == Y.TownCity){
6     B = True
7 }
8 if((A or not B) and (not A or B)){
9     return(1)
10}
11 return(0)
```

6406531930315. ✶

Intro to Python

Section Id :	64065339084
Section Number :	4
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 :	64065382664
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 50 Question Id : 640653578066 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 : INTRODUCTION TO PYTHON (COMPUTER BASED EXAM)"

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

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

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

Options :

6406531930316. ✓ YES

6406531930317. ✘ NO

Question Number : 51 Question Id : 640653578067 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

Presentation

There are two types of blocks that you would see in all the questions:

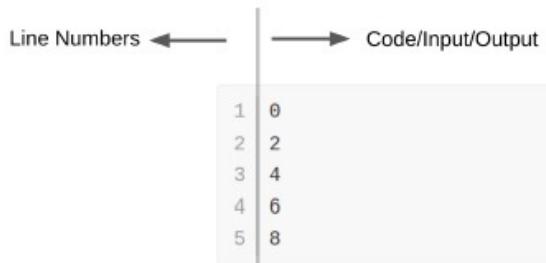
Code

```
1 | for i in range(10):  
2 |     if i % 2 == 0:  
3 |         print(i)
```

Input or Output

```
1 | 0  
2 | 2  
3 | 4  
4 | 6  
5 | 8
```

In both the blocks, please note that the region to the left of the thin vertical line — | — corresponds to line-numbers. Do not confuse the line numbers with the content of the code or the input-output. Just to be clear:



Useful information

range

Sample behaviour of the `range` function:

- `range(5)` corresponds to the sequence 0, 1, 2, 3, 4
- `range(1, 5)` corresponds to the sequence 1, 2, 3, 4
- `range(1, 1)` is the empty sequence

// operator

`//` is the floor division operator. `5 // 2` is 2 and not 2.5

NAT → integer

For all NAT questions in this exam, the answer will always be an integer and not a float value. If the answer to a question is 18, then just enter that value. Do *not* enter 18.0

Options :

6406531930318. ✓ Useful Data has been mentioned above.

6406531930319. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 64065382665

Question Shuffling Allowed : Yes

Is Section Default? :

null

Question Number : 52 Question Id : 640653578068 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:

```
1 | x = int(input())
2 | y = int(input())
3 | if x > 5:
4 |     if y > 15:
5 |         print("A")
```

For what values as input, after execution, the above code snippet does **not** produce **any output** but runs without any error?

Options :

6406531930320. ✘ x = 10 and y = 25

6406531930321. ✘ x = 6 and y = 20

6406531930322. ✓ x = 12 and y = 15

6406531930323. ✘ x = 15 and y = 16

Question Number : 53 Question Id : 640653578069 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

What is the output of the following code?

```
1 str1 = "Python"
2 str2 = "Programming"
3 str3 = str1 + " " + str2[:8] #There is single space in between quotes
4 print(len(str3))
```

Options :

6406531930324. ✓ 15

6406531930325. ✗ 14

6406531930326. ✗ 11

6406531930327. ✗ 12

Question Number : 54 Question Id : 640653578071 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:

```
1 days = int(input())
2
3 years = days // 365
4 weeks = (days % 365) // 7
5 remaining_days = (days % 365) % 7
6
7 print("Years:", years)
8 print("Weeks:", weeks)
9 print("Days:", remaining_days)
```

What will be the output if the input `days` is 437?

Options :

6406531930332. ✓ Years: 1, Weeks: 10, Days: 2

6406531930333. ✗ Years: 2, Weeks: 10, Days: 3

6406531930334. ✗ Years: 1, Weeks: 62, Days: 2

6406531930335. ✗ Years: 2, Weeks: 22, Days: 2

Question Number : 55 Question Id : 640653578072 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:

```
1 x = 15
2 y = 20
3 if x > y:
4     result = x - y
5 elif x < y:
6     result = y - x
7 else:
8     result = x + y
9
10 print(result)
```

What will be the output when you run the above snippet of code?

Options :

6406531930336. ✓ 5

6406531930337. ✗ 20

6406531930338. ✗ 35

6406531930339. ✗ 15

Sub-Section Number : 3

Sub-Section Id : 64065382666

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 56 Question Id : 640653578070 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 = 4
2 b = 7
3 c = int(input())
4 if a > b:
5     if b > c:
6         print("A")
7     elif a > c:
8         print("B")
9     else:
10        print("C")
11 else:
12     if b < c:
13         print("D")
14     else:
15         print("E")
```

Based on the above snippet of code, which of the following options is correct ?

Options :

6406531930328. ✖ If $c = 5$, then the output generated is "D"

6406531930329. ✖ If $c = 10$, then the output generated is "E"

6406531930330. ✓ If $c \geq 8$, then the output is always "D"

6406531930331. ✖ If $c < 7$, then the output generated is always "D"

Question Number : 57 Question Id : 640653578074 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

What will be the output of the code snippet given below?

```

1 | a = 5
2 | b = 5
3 | for x in range(0,a):
4 |     for y in range(b-x,1,-1):
5 |         print(y,end=' ')
6 |     print(1)

```

Options :

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

6406531930344. ✘

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

6406531930345. ✓

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

6406531930346. ✘

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

6406531930347. ✘

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

6406531930348. ✘

Sub-Section Number :	4
Sub-Section Id :	64065382667
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 58 Question Id : 640653578073 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

Select an appropriate code snippet that can shift the given key `zamzamsayzam` by two places along the alphabet and generates the encrypted key `bcobcoucabco`.

Options :

```

1 alphabet = 'abcdefghijklmnopqrstuvwxyz'
2 key = 'zamzamsayzam'
3 encrypt_key = ''
4 for i in key:
5     encrypt_key = encrypt_key + (alphabet[((alphabet.index(i))*2)%26])
6 print(encrypt_key)

```

6406531930340. ✎

```

1 alphabet = 'abcdefghijklmnopqrstuvwxyz'
2 key = 'zamzamsayzam'
3 encrypt_key = ''
4 for i in key:
5     encrypt_key = encrypt_key + (alphabet[((alphabet.index(i))+2)%25])
6 print(encrypt_key)

```

6406531930341. ✎

```

1 alphabet = 'abcdefghijklmnopqrstuvwxyz'
2 key = 'zamzamsayzam'
3 encrypt_key = ''
4 for i in key:
5     encrypt_key = encrypt_key + (alphabet[((alphabet.index(i))+2)//26])
6 print(encrypt_key)

```

6406531930342. ✎

```
1 alphabet = 'abcdefghijklmnopqrstuvwxyz'
2 key = 'zamzamsayzam'
3 encrypt_key = ''
4 for i in key:
5     encrypt_key = encrypt_key + (alphabet[((alphabet.index(i))+2)%26])
6 print(encrypt_key)
```

6406531930343. ✓

Question Number : 59 Question Id : 640653578075 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

Select an appropriate code snippet that calculate the sum of a series up to n terms.

The series defined here for $n = 5$ is given in below example.

```
1 | 1 + 12 + 123 + 1234 + 12345 = 13715
```

Options :

```
1 num_terms = 5
2 start_num = 1
3 sum_of_seq = 0
4 for i in range(1, num_terms+1):
5     start_num = start_num * 10 + (i+1)
6     sum_of_seq += start_num
7 print(sum_of_seq)
```

6406531930349. ✘

```
1 num_terms = 5
2 start_num = 1
3 sum_of_seq = 0
4 for i in range(1, num_terms):
5     start_num = start_num * 10 + (i+1)
6     sum_of_seq += start_num
7 print(sum_of_seq)
```

6406531930350. ✘

```
1 num_terms = 5
2 start_num = 1
3 sum_of_seq = 0
4 for i in range(1, num_terms+1):
5     sum_of_seq += start_num
6     start_num = start_num * 10 + (i+1)
7 print(sum_of_seq)
```

6406531930351. ✓

```
1 num_terms = 5
2 start_num = 1
3 sum_of_seq = 0
4 for i in range(1, num_terms):
5     sum_of_seq += start_num
6     start_num = start_num * 10 + (i+1)
7 print(sum_of_seq)
```

6406531930352. ❌

Question Number : 60 Question Id : 640653578077 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the following Python snippet:

```
1 num = int(input("Enter a number"))
2 r_num = 1
3 while num != 0:
4     digit = num % 10
5     r_num = r_num * 10 + digit
6     num //= 10
7 print(r_num)
```

Assume that 2345 is passed as input to the code. Which of the following option is the correct output for the given input?

Options :

6406531930357. ✶ 5432

6406531930358. ✓ 15432

6406531930359. ✶ 2345

6406531930360. ✶ 12345

Question Number : 61 Question Id : 640653578078 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

Select all the code snippets that prints `Magic Number` if the number `n` leaves remainder `0` when divided by 7 but leaves the remainder 1 when the number is divided by 2, 3, 4, 5, and 6. Otherwise print `Not Magic Number`.

Options :

```
1 n = int(input())
2 flag = 0
3 for i in range(2, 7):
4     if n % i == 1:
5         flag = 1
6         break
7 if flag == 0 and n % 7 == 0:
8     print("Magic Number")
9 else:
10    print("Not Magic Number")
```

6406531930361. ✶

```
1 n = int(input())
2 flag = 0
3 for i in range(2, 7):
4     if n % i != 1:
5         flag = 1
6         break
7 if flag == 0 and n % 7 == 0:
8     print("Magic Number")
9 else:
10    print("Not Magic Number")
```

6406531930362. ✓

```
1 n = int(input())
2 flag = 0
3 for i in range(2, 7):
4     if n % i == 0:
5         flag = 1
6         break
7 if flag == 1 and n % 7 == 0:
8     print("Magic Number")
9 else:
10    print("Not Magic Number")
```

6406531930363. *

```
1 n = int(input())
2 flag = 0
3 for i in range(2, 7):
4     if n % (i+1) == 1:
5         flag = 1
6         break
7 if flag == 1 or n % 7 == 0:
8     print("Magic Number")
9 else:
10    print("Not Magic Number")
```

6406531930364. *

Question Number : 62 Question Id : 640653578081 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?

```
1 L = [-1, 1]
2 for i in range(8):
3     size = len(L)
4     value = (L[size - 2] + L[size - 1])*2
5     L.append(value)
6 print(L)
```

Options :

1 | [-1, 1, 0, 1, 1, 2, 3, 5, 8, 13]

6406531930370. ✘

1 | [-1, 1, 0, 2, 4, 12, 32, 88, 240, 656]

6406531930371. ✓

1 | [-1, 1, 0, -2, -4, -12, -32, -88, -240, -656]

6406531930372. ✘

1 | [-1, 1, 0, -1, -1, -2, -3, -5, -8, -13]

6406531930373. ✘

Sub-Section Number :

5

Sub-Section Id :

64065382668

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 63 Question Id : 640653578076 Question Type : MSQ Is Question**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Select all correct implementations of a program that prints the first 10 prime numbers to the console, as one number on each line. Please note that the first 10 prime numbers are less than 30 and 11th prime number is more than 30. It is a Multiple Select Question .

Options :

6406531930353. ✓

```
1 for i in range(2,30):
2     flag=False
3     for j in range(2,int(i/2)+1):
4         if(i%j==0):
5             flag=True
6             break
7     if(flag==False):
8         print(i)
```

```
1 for i in range(2,30):
2     flag=False
3     for j in range(2,i):
4         if(i%j==0):
5             flag=True
6             break
7     if(flag==False):
8         print(i)
```

6406531930354. ✓

```
1 count = 0
2 i = 2
3 while (count < 10):
4     flag = True
5     for j in range(2, i//2+1):
6         if i % j == 0:
7             flag = False
8             break
9     if flag:
10        print(i)
11        count += 1
12        i += 1
```

6406531930355. ✓

6406531930356. ❌

```

1 count = 0
2 i = 2
3 while (count < 10):
4     flag = True
5     for j in range(2, i//2+1):
6         if i % j != 0:
7             break
8         else:
9             flag = False
10    if flag:
11        print(i)
12        count += 1
13    i += 1

```

Question Number : 64 Question Id : 640653578080 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

```

1 # Look at the options for the value of M
2 n = len(M)
3
4 flag = True
5 for i in range(n):
6     for j in range(n):
7         if (i != j) and (M[i][j] != 0):
8             flag = False
9             break
10        elif (i == j) and M[i][j]!=1:
11            flag = False
12            break
13        if flag == False:
14            break
15 print(flag)

```

Select all matrices (list of lists) `M` for which the above snippet of code prints `True` to the console.

Options :

6406531930366. ✓ `[[1, 0, 0], [0, 1, 0], [0, 0, 1]]`

6406531930367. ✘ `[[0, 1, 0, 0], [1, 0, 0, 0], [0, 0, 1, 0], [0, 0, 0, 1]]`

6406531930368. ✘ `[[1, 1, 1], [1, 1, 1], [1, 1, 1]]`

6406531930369. ✓ `[[1, 0, 0, 0], [0, 1, 0, 0], [0, 0, 1, 0], [0, 0, 0, 1]]`

Sub-Section Number : 6

Sub-Section Id : 64065382669

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 65 Question Id : 640653578082 Question Type : MSQ Is Question

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

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

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:

```
1 sentence = "i know how to code in python"
2 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 :

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

6406531930374. ✓

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

6406531930375. ✘

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

6406531930376. ✘

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

6406531930377. ✓

Sub-Section Number : 7

Sub-Section Id : 64065382670

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 66 Question Id : 640653578079 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

`L` is a non-empty list of distinct positive integers. That is:

- `L` has at least one element
- No two elements of `L` are the same

If the following snippet of code terminates without any error after a finite number of iterations of the while loop, what is the output produced by it?

Hint: `L.remove(x)` removes the leftmost occurrence of `x` in `L`.

```
1 # L is a non-empty list of distinct positive integers
2 # L has already been defined
3 val = 0
4 for x in L:
5     val += x
6
7 while L != []:
8     for y in range(1, 11, 2):
9         if y in L:
10             L.remove(y)
11         else:
12             L.append(y)
13
14 print(val)
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

25

DBMS

Section Id :	64065339085
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory

Number of Questions :	18
Number of Questions to be attempted :	18
Section Marks :	50
Display Number Panel :	Yes
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 :	64065382671
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 67 Question Id : 640653578083 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406531930378. ✓ YES

6406531930379. ✘ NO

Sub-Section Number : 2

Sub-Section Id : 64065382672

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 68 Question Id : 640653578084 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

The lowest level of data abstraction is

Options :

6406531930380. ✓ physical level

6406531930381. ✗ logical level

6406531930382. ✗ view level

6406531930383. ✗ application level

Question Number : 69 Question Id : 640653578085 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 a company wants to determine whether the 'price' of the commodity will be an attribute in the shopping database or not. Which of the following holds good about this?

Options :

6406531930384. ✗ This is a physical-level decision.

6406531930385. ✓ This is a logical level decision.

6406531930386. ✗ This is an application-level decision.

6406531930387. ✗ This is a view-level decision.

Question Number : 70 Question Id : 640653578090 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 scenario:

The Reserve Bank of India (RBI) has issued guidelines declaring that the Rs. 2000 note will no longer be considered legal tender, starting from a specific date. The RBI wants to update its database to reflect this change and ensure that transactions involving the Rs. 2000 note are flagged as invalid.

Which DBMS concept would be most relevant for the RBI to update its database and flag transactions involving the Rs. 2000 note as invalid after the specified date?

Options :

6406531930401. ❌ CASCADE

6406531930402. ❌ Data Definition Language (DDL)

6406531930403. ✓ Triggers

6406531930404. ❌ Indexing

Question Number : 71 Question Id : 640653578094 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 schema given below :

Emp (*eid*, *ename*, *age*, *salary*)

Works (*eid*, *did*, *pct_time*)

Dept (*did*, *budget*, *managerid*)

Identify the correct SQL command to create a view named, EMPLOYEE, by selecting attributes like *eid*, *salary*, and *managerid*. Select those employees whose *salary* is greater than 1,00,000 and are atleast 45 years old.

Options :

```
SELECT E.eid, E.salary, D.managerid  
FROM Emp E, Works W, Dept D  
WHERE E.eid = W.eid AND W.did = D.did  
AND E.salary > 100000 AND E.age > = 45 AS VIEW
```

6406531930411. ❌

```
CREATE TABLE EMPLOYEE (emp_id, salary, managerid)  
ON SELECT E.eid, E.salary, D.managerid  
FROM Emp E, Works W, Dept D  
WHERE E.eid = W.eid AND W.did = D.did
```

6406531930412. ❌

```
AND E.salary > = 100000 AND E.age > 45 AS VIEW
```

```
CREATE VIEW EMPLOYEE (emp_id, salary, managerid)  
ON SELECT E.eid, E.salary, D.managerid  
FROM Emp E, Works W, Dept D  
WHERE E.eid = W.eid AND W.did = D.did  
AND E.salary > 100000 AND E.age > 45
```

6406531930413. ❌

```
CREATE VIEW EMPLOYEE (emp_id, salary, managerid)  
AS SELECT E.eid, E.salary, D.managerid  
FROM Emp E, Works W, Dept D  
WHERE E.eid = W.eid AND W.did = D.did  
AND E.salary > 100000 AND E.age > = 45
```

6406531930414. ✓

Question Number : 72 Question Id : 640653578095 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 instance of the relation **students** is given below.

sid	name	age	gpa
53831	Madayan	11	1.8
53832	Guldu	12	2
53666	Jones	18	3.4
53688	Smith	19	3.2
53650	Smith	19	3.8

Figure 3: Relation students

Which of the following query executed on relation **students** would result in the output given below ?

sid	name	age	gpa
53832	Guldu	12	2
53666	Jones	18	3.4
53831	Madayan	11	1.8
53650	Smith	19	3.8
53688	Smith	19	3.2

Figure 4: Output

Options :

6406531930415. ❌ SELECT * FROM students

6406531930416. ❌ SELECT * FROM students ORDER BY name

6406531930417. ✓ SELECT * FROM students ORDER BY name, sid

6406531930418. ❌ SELECT * FROM students ORDER BY name, sid desc

Sub-Section Number :

3

Sub-Section Id :

64065382673

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 73 Question Id : 640653578086 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 two relations R and S as shown below.

A	B	C
1	2	3
2	4	6
3	7	3
4	3	4

Table 1: R

B	C	D
7	3	4
2	3	5
3	7	6
2	3	7

Table 2: S

The number of tuples in $R \bowtie S$ are : [Note : \bowtie denotes left outer join.]

Options :

640651930388. ✘ 3

640651930389. ✘ 4

640651930390. ✓ 5

640651930391. ✘ 16

Question Number : 74 Question Id : 640653578087 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 schema $\text{company}(name, area, city)$ and $\text{project}(pid, budget, location)$. The domain of attributes $city$ and $location$ is the same i.e. Indian cities. Which of the following relational algebra expression would list all cities that are common in company and project?

Options :

6406531930392. ❌ $\Pi_{city}(\text{company}) \cup \Pi_{location}(\text{project})$

6406531930393. ❌ $\Pi_{city}(\text{company}) - \Pi_{location}(\text{project})$

6406531930394. ❌ $\Pi_{city}(\text{company}) \bowtie \Pi_{location}(\text{project})$

6406531930395. ✓ $\Pi_{city}(\text{company}) - (\Pi_{city}(\text{company}) - \Pi_{location}(\text{project}))$

Sub-Section Number : 4

Sub-Section Id : 64065382674

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 75 Question Id : 640653578100 Question Type : MCQ Is Question

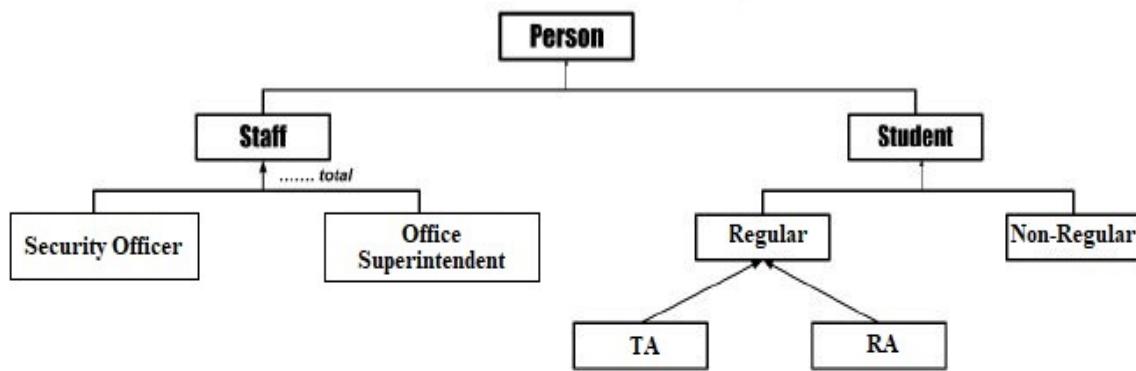
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

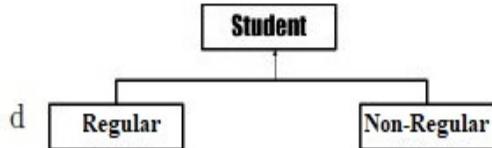
Correct Marks : 4

Question Label : Multiple Choice Question

Consider the ER Diagram given below. Identify the correct statements from the ER diagram.



- a A Student is a person.
- b A TA student can be an RA as well.
- c A staff can either be a Security Officer or Office Superintendent but not both.



is partial and disjoint

Options :

6406531930429. ✘ Only a and b are correct

6406531930430. ✘ Only b, c, and d are correct

6406531930431. ✘ Only a, c and d are correct

6406531930432. ✓ All a, b, c, d are correct

Sub-Section Number : 5

Sub-Section Id : 64065382675

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 76 Question Id : 640653578088 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the relation G20(*country_name, foreign_minister_name, events, date, venue*)

Questions:

1. Find the name of foreign ministers whose names start with 'j' and have at least 5 characters.
2. Find out the number of events taking place in venue 'GIFT City'.
3. Find out the venue name and number of events taking place in each venue

SQL queries:

- a. Select *foreign_minister_name* from G20
where *foreign_minister_name* like 'j____'
- b. Select *foreign_minister_name* from G20
where *foreign_minister_name* like 'j____%'
- c. Select count(*events*) from G20 where *venue* = 'GIFT City'
- d. Select count(*events*) from G20 where *venue* = 'GIFT City'
Group By *venue*
- e. Select *venue*, count(*events*) from G20
Group By *venue*
- f. Select *venue*, count(*events*) from G20

Match the correct SQL queries with the corresponding Questions.

Options :

6406531930396. ✘ 1-a, 2-c, 3-f

6406531930397. ✓ 1-b, 2-c, 3-e

6406531930398. ✘ 1-a, 2-d, 3-f

6406531930399. ✓ 1-b, 2-d, 3-e

Question Number : 77 Question Id : 640653578092 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the relation product (p_id, name, price). Assume that no two product have the same price.

Choose the appropriate query/queries to find the names of three most expensive product.

Options :

```
SELECT name FROM product  
ORDER BY price  
FETCH FIRST 3 ROWS ONLY
```

6406531930406. ❌

```
SELECT name FROM product  
ORDER BY price DESC  
FETCH FIRST 3 ROWS ONLY
```

6406531930407. ✓

```
SELECT name FROM product a  
WHERE  
(SELECT COUNT(price)  
FROM product b  
WHERE b.price>a.price) < 3
```

6406531930408. ✓

```
SELECT name FROM product a  
WHERE  
(SELECT COUNT(price)  
FROM product b  
WHERE b.price>a.price) > 3
```

6406531930409. ❌

Question Number : 78 Question Id : 640653578099 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the schema given below.

Customer (Cid, Cname, Area, Phone)

Orders (Cid, Iid)

Item (Iid, Iname, cuisine)

Which of the following is/are correct TRC to find the names of customers who have ordered an item 'Indian' cuisine ?

Options :

6406531930425. ❌ { $\exists P \mid C \in Customer, O \in Orders, I \in Item(O.Iid = P.Cid \wedge I.Iid = O.Iid \wedge I.cuisine = 'Indian' \wedge P.Cname = C.Cname)$ }

6406531930426. ✓ { $P \mid \exists C \in Customer \exists O \in Orders(O.cid = C.cid \wedge P.Cname = C.Cname \wedge \exists I \in Item(I.Iid = O.Iid \wedge I.cuisine = 'Indian'))$ }

6406531930427. ❌ { $P \mid \exists C \in Customer \exists O \in Orders(O.cid = C.cid \wedge P.Cname = C.Cname) \wedge (\exists I \in Item \wedge I.cuisine = 'Indian')$ }

6406531930428. ✓ { $P \mid \exists C \in Customer \exists O \in Orders \exists I \in Item(O.Cid = C.Cid \wedge I.Iid = O.Iid \wedge I.cuisine = 'Indian' \wedge P.Cname = C.Cname)$ }

Sub-Section Number :

6

Sub-Section Id :

64065382676

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 79 Question Id : 640653578098 Question Type : MSQ Is Question**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 2 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Consider the **student** relation given below. Select the correct query/queries to obtain the *last name* of students whose *age* is more than 25.

Student			
Fname	Lname	Age	Course
David	Sharma	27	DBMS
Aaron	Lilly	17	JAVA
Sahil	Khan	19	Python
Sachin	Rao	20	DBMS
Varun	George	23	JAVA
Simi	Verma	22	JAVA

Options :

6406531930421. ✓ { t.Lname | Student(t) \wedge t.Age > 25}

6406531930422. ✘ $\sigma_{Lname}(\Pi_{Age>25}(\text{Student}))$

6406531930423. ✓ $\Pi_{Lname}(\sigma_{Age>25}(\text{Student}))$

6406531930424. ✓ { t | $\exists s \in \text{Student}(s.Age > 25 \wedge t.Lname = s.Lname)$ }

Sub-Section Number : 7

Sub-Section Id : 64065382677

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 80 Question Id : 640653578089 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 two relations R and S.

A	B	C
0	9	0
2	2	2
1	1	1

A	B	C
0	Cat	0
2	Dog	2
1	Lion	1

Figure 1: R and S

Let 'X' be the number of columns and 'Y' be the number of rows of the (R \bowtie S) relations.

What is the value of (X + Y) ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 81 Question Id : 640653578097 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 relation **student** shown in Table 3

Roll_no	Name	marks
1	Ram	50
2	Rakesh	65
3	Ram	45
4	Pranav	89
5	Rakesh	99
6	Emily	99
7	Grace	100
8	Lily	95

Table 3: student

What is the number of tuples returned by the following relational algebra expression $\prod_{name}(\sigma_{marks>50}(student))$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Sub-Section Number : 8

Sub-Section Id : 64065382678

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 82 Question Id : 640653578091 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 which has four attributes: *A*, *B*, *C*, and *D* where *A* is the primary key and *C* is the foreign key referencing to *A*.

A	B	C	D
1	1	5	6
2	2	5	7
8	4	7	4
3	1	5	8
4	2	4	9
5	2	4	1
6	1	1	2
7	4	1	3

How many tuples will be left in the table if the tuple (1,1,5,6) is deleted and ON DELETE CASCADE construct is applied over the table?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 83 Question Id : 640653578093 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 relational schema given in Figure 2.

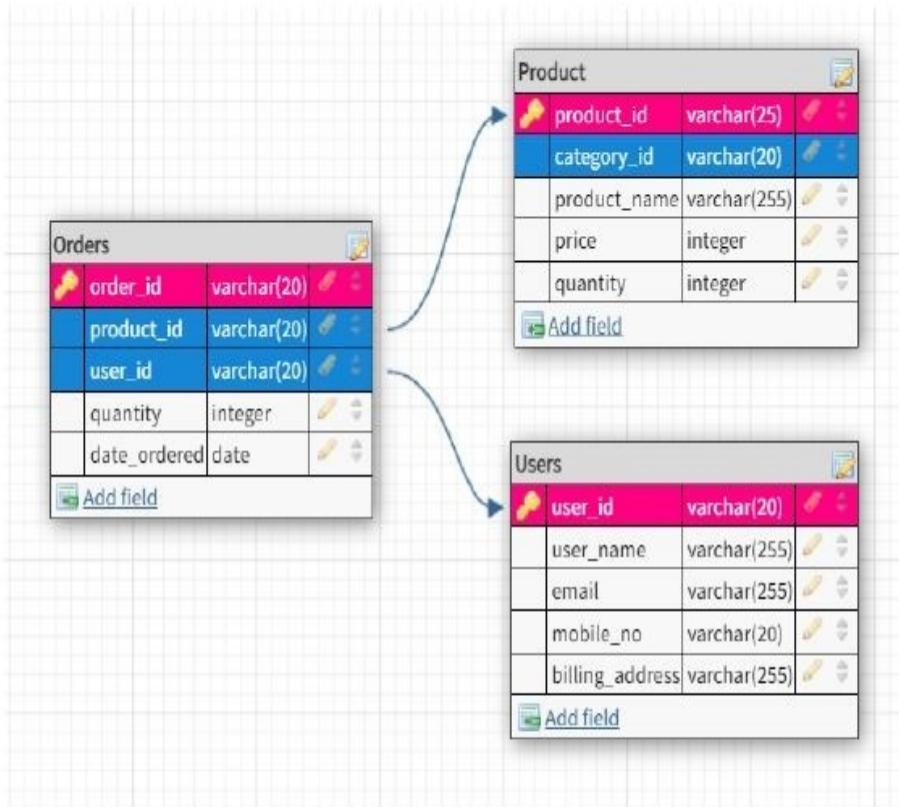


Figure 2: eshop Schema

If the relations Orders , Product and Users have 10, 6, 8 rows respectively, what is the maximum number of rows returned by the following query?

(Note: Consider all the attributes are having NOT NULL constraint.)

```
SELECT * FROM Orders RIGHT OUTER JOIN Users  
ON orders.user_id = Users.user_id;
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

17

Question Number : 84 Question Id : 640653578096 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 E-R diagram in Figure 5.

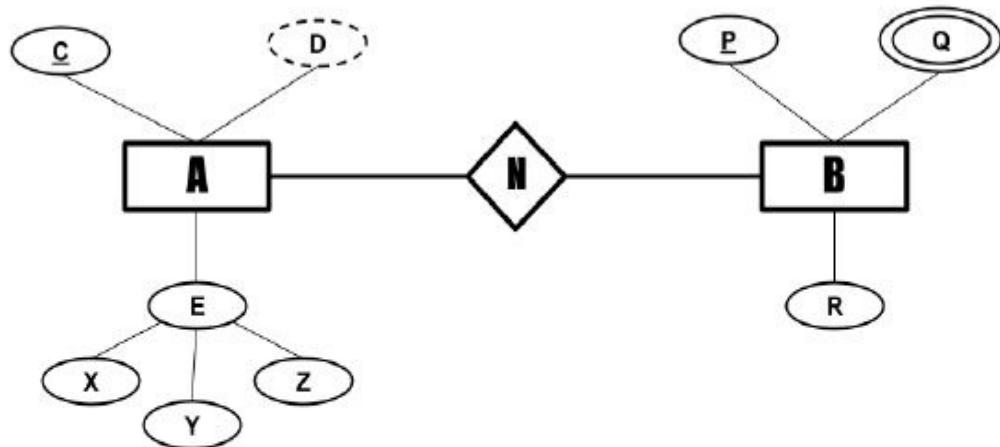


Figure 5: ERD

Consider the following assumptions :

a : denotes the number of attributes in entity set A

b : denotes the minimum number of table(s) required to represent this E-R diagram?

What is the value of $a + b$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

8

PDSA

Section Id : 64065339086

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 :	64065382679
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 85 Question Id : 640653578101 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406531930433. ✓ YES

6406531930434. ✘ NO

Sub-Section Number : 2

Sub-Section Id : 64065382680

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 86 Question Id : 640653578102 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following functions:

- $f(n) = 102n^4 + 26n^3$
- $g(n) = 103n^3 + 20n^2$
- $h(n) = 110n^3 \log n + 36n^2$

Which of the following is/are true?

Options :

6406531930435. ❌ $f(n) = O(g(n))$

6406531930436. ✓ $g(n) = O(h(n))$

6406531930437. ❌ $f(n) = O(h(n))$

6406531930438. ❌ $h(n) = O(g(n))$

6406531930439. ✓ $h(n) = O(f(n))$

Question Number : 87 Question Id : 640653578107 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Unimodal List: A list $L[0 \dots n-1]$ of distinct elements is *unimodal* if it consists of an increasing sequence followed by a decreasing sequence. More precisely, there is an index $m \in 1, 2, \dots, n-2$ such that:

- $L[i] < L[i + 1]$ for all $0 \leq i < m$, and
- $L[i] > L[i + 1]$ for all $m \leq i < n-1$.

Suppose the middle element of a unimodal list is x , and the elements to the left and right of x are p and q , respectively. Which of the following facts must be used to find the maximum element in $O(\log n)$ time?

Options :

6406531930456. ✓ If $p < x > q$, then x is the maximum in the list.

6406531930457. ✗ If $p < x < q$, then the maximum element is in the left half of the list.

6406531930458. ✓ If $p < x < q$, then the maximum element is in the right half of the list.

6406531930459. ✓ If $p > x > q$, then the maximum element is in the left half of the list.

6406531930460. ✗ If $p > x > q$, then the maximum element is in the right half of the list.

Question Number : 88 Question Id : 640653578110 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

```
1 class Node:  
2     def __init__(self,data):  
3         self.data = data  
4         self.next = None
```

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

Which of the following statement(s) is/are **true**? Assume we are using the most efficient algorithms.

Options :

6406531930465. ✓ Finding an item in a sorted linked list of n items takes $O(n)$ time.

6406531930466. ✗ Finding an item in a sorted linked list of n items takes $O(\log n)$ time

6406531930467. ✓ Adding a new item to the end of the linked list of n items takes $O(n)$ time.

6406531930468. ✗ Removing an item from the end of the linked list of n items takes $O(1)$ time.

6406531930469. ✓ Removing duplicate items from the sorted linked list of n items takes $O(n)$ time.

Question Number : 89 Question Id : 640653578112 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Linear probing is an open addressing scheme in computer programming for resolving hash collisions in hash tables. Linear probing takes the original hash index and increments the value by 1 until a free slot is found.

Consider the given hash table with hash function $h(key) = key \bmod 5$ which uses linear probing for solving collisions.

Index	Key
0	45
1	51
2	60
3	18
4	34

Which among the following options corresponds to possible orders of insertion of values in the hash table?

Options :

6406531930474. ✓ 51, 18, 45, 60, 34

6406531930475. ✗ 34, 45, 18, 60, 51

6406531930476. ✗ 18, 45, 34, 60, 51

6406531930477. ✓ 34, 45, 18, 51, 60

6406531930478. ✓ 18, 34, 51, 45, 60

Question Number : 90 Question Id : 640653578115 Question Type : MSQ Is Question

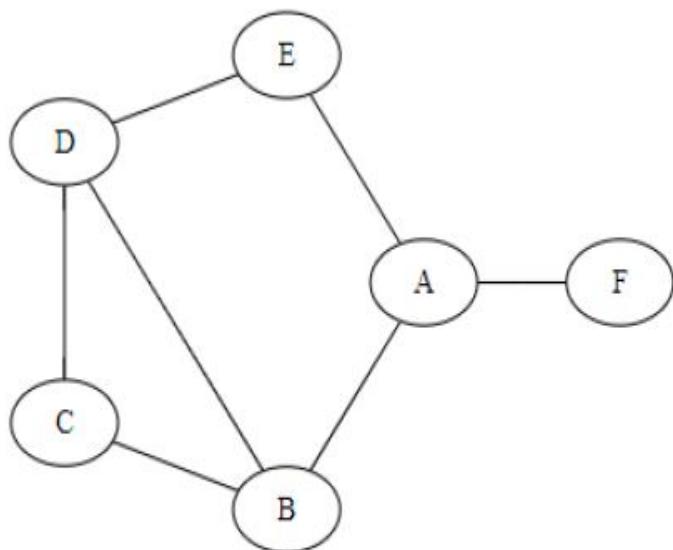
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following graph:



If we run breadth first search(BFS) on the given graph starting at any vertex, which of the following is/are possible order of visiting the nodes?

Note : When a node has multiple neighbours, BFS would visit alphabetically.

Options :

6406531930485. ❌ A B E C D F

6406531930486. ✓ B A C D E F

6406531930487. ✓ C B D A E F

6406531930488. ✓ D B C E A F

6406531930489. ❌ E A B D F C

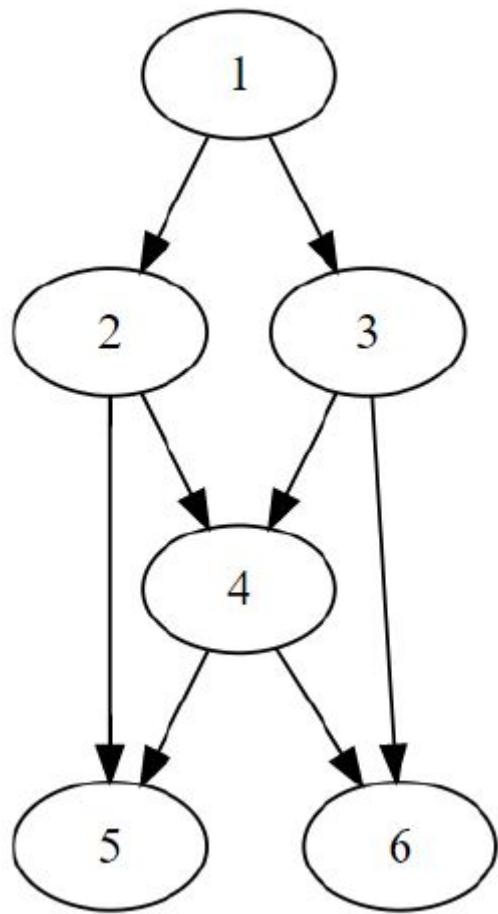
Question Number : 91 Question Id : 640653578117 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following DAG



Which of the following is/are **not a valid** topological orderings for the given DAG?

Options :

6406531930494. ❌ 1 2 3 4 5 6

6406531930495. ✓ 1 3 4 2 5 6

6406531930496. ❌ 1 3 2 4 5 6

6406531930497. ✓ 1 3 2 5 4 6

6406531930498. ✓ 1 2 4 3 5 6

Sub-Section Number : 3

Sub-Section Id : 64065382681

Question Shuffling Allowed : Yes

Is Section Default? :

null

Question Number : 92 Question Id : 640653578103 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

```
1 def fun(n):
2     count = 0
3     for i in range(n):
4         j = 1
5         while j < n:
6             count += 1
7             j *= 2
8     return count
```

What is the time complexity of the function `fun` given above?

Options :

6406531930440. ✘ $O(1)$

6406531930441. ✘ $O(n)$

6406531930442. ✓ $O(n \log n)$

6406531930443. ✘ $O(n^2)$

Question Number : 93 Question Id : 640653578104 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

We have an input list of three-dimensional points `[(7, 8, 1), (3, 7, 5), (6, 8, 1), (6, 7, 5), (0, 5, 2), (9, 9, 0)]`. We sort these in ascending order by the third coordinate. Which of the following corresponds to a stable sort of this input?

Options :

6406531930444. ❌ `[(9, 9, 0), (6, 8, 1), (7, 8, 1), (0, 5, 2), (6, 7, 5), (3, 7, 5)]`

6406531930445. ✓ `[(9, 9, 0), (7, 8, 1), (6, 8, 1), (0, 5, 2), (3, 7, 5), (6, 7, 5)]`

6406531930446. ❌ `[(9, 9, 0), (6, 8, 1), (7, 8, 1), (0, 5, 2), (3, 7, 5), (6, 7, 5)]`

6406531930447. ❌ `[(9, 9, 0), (7, 8, 1), (6, 8, 1), (0, 5, 2), (6, 7, 5), (3, 7, 5)]`

Question Number : 94 Question Id : 640653578105 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 insertion sort

```
1 def insertionsort(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] < L[j-1]):
8             (L[j],L[j-1]) = (L[j-1],L[j])
9             j = j-1
10    return(L)
```

Suppose L is a list of distinct integer elements. Let x, y and z be the largest, second largest, and third largest elements in the list L . Suppose z appears before x in the list. Which of the following is true, with respect to the implementation above?

Options :

6406531930448. ❌ x and z are always compared in a run of insertion sort, regardless of the position of y .

6406531930449. ❌ x and z are compared in a run of insertion sort if and only if y appears before z in the list L.

6406531930450. ✓ x and z are compared in a run of insertion sort if and only if y appears after x in the list L.

6406531930451. ❌ x and z are compared in a run of insertion sort if and only if y appears after z but before x in the list L.

Question Number : 95 Question Id : 640653578106 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

3-way-Merge Sort: Suppose that instead of dividing the input list L in half at each step of Merge Sort, you divide L into three equal parts, sort each parts, and finally combine all of them using an efficient three-way merge (merge three sorted lists instead of two).

What is the overall asymptotic running time of the **3-way-Merge Sort** algorithm?

Options :

6406531930452. ❌ $O(n^2)$

6406531930453. ❌ $O(n^2 \log n)$

6406531930454. ❌ $O(n(\log n)^2)$

6406531930455. ✓ $O(n \log n)$

Question Number : 96 Question Id : 640653578109 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following statements is **not true** about Quicksort?

Options :

For every fixed strategy to choose a pivot for Quicksort, we can construct a worst-case input that
6406531930462. ❌ requires time $O(n^2)$.

6406531930463. ❌ If we could find the median in time $O(n)$, Quicksort would have worst-case complexity $O(n \log n)$

If we randomly choose a pivot element each time, Quicksort will always terminate in time
6406531930464. ✓ $O(n \log n)$.

Question Number : 97 Question Id : 640653578111 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

Assume `s` is a stack and `q` is a queue. `Push` and `Pop` operations are usual stack operations, `Enqueue` and `Dequeue` are usual queue operations, and `isEmpty()` is a method that returns true if either the stack or the queue is empty. Assume that stack `s` and Queue `q` are empty initially.

```
1 for i in range(5):
2     S.Push(i)
3     Q.Enqueue(i)
4
5 while not q.isEmpty():
6     S.Push(Q.Dequeue())
7
8 while not s.isEmpty():
9     Q.Enqueue(s.Pop())
10
11 while not q.isEmpty():
12     print (Q.Dequeue(),end = " ")
```

What is the output of the given code snippet?

Options :

6406531930470. ✘ 0 1 2 3 4 4 3 2 1 0

6406531930471. ✘ 4 3 2 1 0 0 1 2 3 4

6406531930472. ✓ 4 3 2 1 0 4 3 2 1 0

6406531930473. ✘ 0 1 2 3 4 0 1 2 3 4

Question Number : 98 Question Id : 640653578114 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 graph G . Let T be a *BFS* tree of G with root r . Let $d(r, v)$ denote the length of the shortest path between the nodes r and v . If vertex x is visited before vertex y in the breadth first search traversal, which of the following statements is true?

Options :

6406531930480. ❌ $d(r, x) > d(r, y)$

6406531930481. ❌ $d(r, x) = d(r, y)$

6406531930482. ❌ $d(r, x) < d(r, y)$

6406531930483. ✓ $d(r, x) \leq d(r, y)$

6406531930484. ❌ $d(r, x) \geq d(r, y)$

Question Number : 99 Question Id : 640653578116 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 statements:

1. While creating a DFS tree for a directed graph, among non-tree edges, only back edges correspond to cycles.
2. The depth of any DFS tree rooted at a vertex is at least as much as the depth of any BFS tree rooted at the same vertex.

Choose the correct option.

Options :

6406531930490. ❌ Only statement 1 is true

6406531930491. ❌ Only statement 2 is true

6406531930492. ✓ Both statements 1 and 2 are true

6406531930493. ✖ Both statements 1 and 2 are false

Sub-Section Number :	4
Sub-Section Id :	64065382682
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 100 Question Id : 640653578108 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 given list `L = [9, 14, 17, 37, 57, 62, 82, 92, 97]` . After applying the **Quick-sort partition** algorithm once, the list is modified to : `[14, 9, 17, 37, 62, 57, 82, 97, 92]` .

The number of elements that could have been chosen as a pivot in the first round is ___?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 101 Question Id : 640653578113 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 connected, simple, undirected graph G has 1225 edges. The minimum number of vertices in G is

_____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

50

AppDev1

Section Id : 64065339087

Section Number : 7

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

Yes

Clear Response :

Maximum Instruction Time : 0

Sub-Section Number : 1

Sub-Section Id : 64065382683

Question Shuffling Allowed : No

Is Section Default? : null

Question Number : 102 **Question Id :** 640653578118 **Question Type :** MCQ **Is Question**

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

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : MODERN APPLICATION

DEVELOPMENT I (COMPUTER BASED EXAM)"

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

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

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

Options :

6406531930499. ✓ YES

6406531930500. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 64065382684

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 103 Question Id : 640653578119 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following statements is/are true?

Options :

6406531930501. ✗ HTTP headers (for example "Content-Type") are case-sensitive

6406531930502. ✗ The body/payload in an HTTP request is mandatory

6406531930503. ✓ The "Content-Length" header indicates the size of the request body in bytes

6406531930504. ✗ All of these

Question Number : 104 Question Id : 640653578127 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

Consider a square matrix A given below.

$$A = \begin{bmatrix} 12 & 21 & 25 \\ 11 & 8 & 30 \\ 9 & 19 & 17 \end{bmatrix}$$

Matrix B is another matrix whose elements represent the LSBs of binary equivalent of corresponding elements of matrix A. The determinant of matrix B would be _____.

Options :

6406531930529. ✓ 0

6406531930530. ✗ 1

6406531930531. ✗ 2

6406531930532. ✗ 3

Question Number : 105 Question Id : 640653578129 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 image given below.

Email or phone

! Enter a valid email or phone number

[Forgot email?](#)

When a user enters an invalid email or phone number, an error message is displayed which clearly tells him/her about what went wrong. Which usability heuristic principle best describes the above behavior?

Options :

6406531930537. ✗ Aesthetic and minimalist design

6406531930538. ❌ User control and freedom

6406531930539. ✓ User diagnosis and recovery from errors

6406531930540. ❌ Flexibility and ease of use

Question Number : 106 Question Id : 640653578130 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 given URL below.

`https://www.host.com/tutorials/what-is-a-domain-name`

Select the appropriate option that correctly identifies different components of a given URL.

Options :

Protocol: https
Domain: www
Sub-Domain: host.com
Path: /tutorials/what-is-a-domain-name

6406531930541. ❌

Protocol: https
Domain: www
Sub-Domain: host.com/tutorials
Path: /what-is-a-domain-name

6406531930542. ❌

Protocol: https
Domain: host.com
Sub-Domain: www
Path: /tutorials/what-is-a-domain-name

6406531930543. ✓

6406531930544. ❌

Protocol: https
Domain: host.com /tutorials
Sub-Domain: www
Path: /what-is-a-domain-name

Sub-Section Number : 3
Sub-Section Id : 64065382685
Question Shuffling Allowed : Yes
Is Section Default? : null

Question Number : 107 Question Id : 640653578120 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 L = {'a', 'b', 'c', 'd', 'A', 'B', 'C', 'D', '0', '1', ' '} be a complete character set (i.e., only these characters can be used to represent text in the document). If a document that uses fixed encoding for all characters is created using the character set L and has a disk size of 2 Kilobytes, the number of characters in the documents would be _____. [Take 1 Byte = 8 bits, 1 KB = 1000 Bytes, 1 MB = 1000 Kilobytes and so on.]

Options :

6406531930505. ✘ 2000

6406531930506. ✓ 4000

6406531930507. ✘ 8000

6406531930508. ✘ 16000

Question Number : 108 Question Id : 640653578122 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 mobile client starts from and is cruising away continuously at 60 kmph from the network tower whose network range is 40 km and bandwidth is 120 Mbps. How much data (in Gigabytes) will be consumed by the client who is continuously using the entire bandwidth before completely moving out of the network?

[Take 1 Byte = 8 bits, 1 KB = 1000 Bytes, 1 MB = 1000 Kilobytes and so on.]

[Consider the speed of light in air to be 3×10^8 m/sec.]

Options :

6406531930513. ✘ 24

6406531930514. ✘ 28.8

6406531930515. ✓ 36

6406531930516. ✘ 288

Question Number : 109 Question Id : 640653578123 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

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

```
from string import Template

temp = "A student needs to complete $c1 level to get to the {{c2}}
level."

temp = Template(temp)
out = temp.substitute({'c1':'foundation', 'c2':'diploma'})
print(out)
```

Options :

6406531930517. ✘

A student needs to complete \$c1 level to get to the diploma level.

A student needs to complete foundation level to get to the {{c2}} level.
6406531930518. ✓

A student needs to complete foundation level to get to the diploma level.
6406531930519. ✗

6406531930520. ✗ KeyError: 'c2'

Question Number : 110 Question Id : 640653578128 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 `` element and the styling given to it in `<style>` tag using element selector in the HTML file below.

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Span</title>
    <style>
        span{
            color: blue;
            Background-color: lime;
        }
    </style>
</head>
<body>
    <span id="my_span">MAD-I is a Diploma level course.
    </span>
</body>
</html>
```

What will be the final style applied to `` tag if an additional style is added via the ID selector given below?

```
#my_span{
    width: 1200px;
    Background-color: lightpink;
}
```

Options :

6406531930533. ✓
color: blue;
Background-color: lightpink;

6406531930534. ❌
color: blue;
width: 1200px;
Background-color: lime;

6406531930535. ❌
color: blue;
width: 1200px;
Background-color: lightpink;

width: 1200px;
Background-color: lightpink;

6406531930536. ✘

Question Number : 111 Question Id : 640653578132 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 is the correct sequence of working of Client-Server Architecture.

- a. The client asks for the IP address for the particular server from the Domain Name system.
- b. To that IP address, the client sends the request to the particular server with that port number that is specified to the particular application and then server responds
- c. The DNS server responds with the IP address.
- d. The response message is received by the client and based on that port number, the response packet is consumed by the application to which it belongs.

Options :

6406531930549. ✘ c → a → b → d

6406531930550. ✘ a → b → c → d

6406531930551. ✓ a → c → b → d

6406531930552. ✘ None

Question Number : 112 Question Id : 640653578133 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following HTML document.

```

<!DOCTYPE html>
<html lang="en">
<head>
    <meta charset="UTF-8">
    <meta http-equiv="X-UA-Compatible" content="IE=edge">
    <meta name="viewport" content="width=device-width,
initial-scale=1.0">
    <title>Document</title>
    <style>
        p {
            background-color: yellow;
            color: red;
            display: inline-block;
        }
        #id {
            border: 2px solid purple;
            color: blue;
        }
        .class {
            background-color: aqua;
            color: red;
        }
    </style>
</head>
<body>
    <p class="class" id="id">HTML</p>
    <p class="class" >HTML</p>
    <p>HTML</p>
</body>
</html>

```

How will the browser render above HTML file?

Options :

HTML

HTML

HTML

6406531930553. *

6406531930554. *

HTML HTML HTML

6406531930555. ✓

HTML HTML HTML

6406531930556. *

HTML HTML HTML

Question Number : 113 Question Id : 640653578134 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following Python code snippet.

app.py

```
from jinja2 import Template
import sys
input_list = sys.argv
Name, profession = input_list[1], input_list[2]

if input_list[1]=="Meera":
    profession="Data Analyst"
else:
    pass
template = """
<!DOCTYPE html>
<html>
    <div>
        {{Name}}
        {{Profession}}
    </div>
</html>
"""

t = Template(template)
print(t.render(Name = name, Profession = profession))
```

Map the commands in column A with the correct rendered output in the browser in column B.

Column A	Column B
a) python app.py Kartik Doctor	1) Meera Data Analyst
b) python app.py Meera Scientist	2) Ajay Singer
c) python app.py Ajay Singer	3) Kartik Web
d) python app.py Kartik Web Developer	4) Kartik Doctor
	5) Kartik Web Developer

Options :

6406531930557. ✖ a - 4, b - 1, c - 2, d - 5

6406531930558. ✖ a - 3, b - 2, c - 1, d - 4

6406531930559. ✓ a - 4, b - 1, c - 2, d - 3

6406531930560. ✖ a - 5, b - 1, c - 3, d - 2

Sub-Section Number :	4
Sub-Section Id :	64065382686
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 114 Question Id : 640653578121 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following Python code snippet:

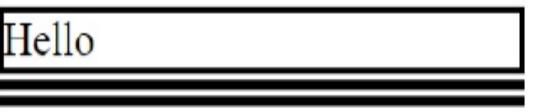
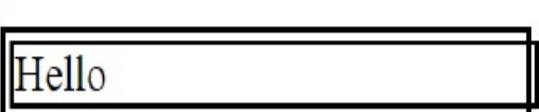
```

from pyhtml import *

code = html(
    head(style('div{border:2px solid black; margin: 2px;
width: 200px;}')),
    body(===== BODY CONTENT =====)
)
print(code.render())

```

If the text “===== BODY CONTENT=====” is replaced by each option in column A and rendered, which of the following mapping between column A and Column B is correct?

Column A	Column B
a) div('Hello'),div(),div()	1) 
b) div(),div(div('Hello'))	2) 
c) div(div(div('Hello')))	3) 
d) div(div('Hello'),div())	4) 

Options :

6406531930509. ✘ a - 1, b - 3, c - 4, d - 2

6406531930510. ✓ a - 2, b - 3, c - 1, d - 4

6406531930511. ✘ a - 3, b - 1, c - 2, d - 4

6406531930512. ✘ a - 4, b - 2, c - 1, d - 3

Question Number : 115 Question Id : 640653578131 Question Type : MCQ Is Question

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

Time : 0

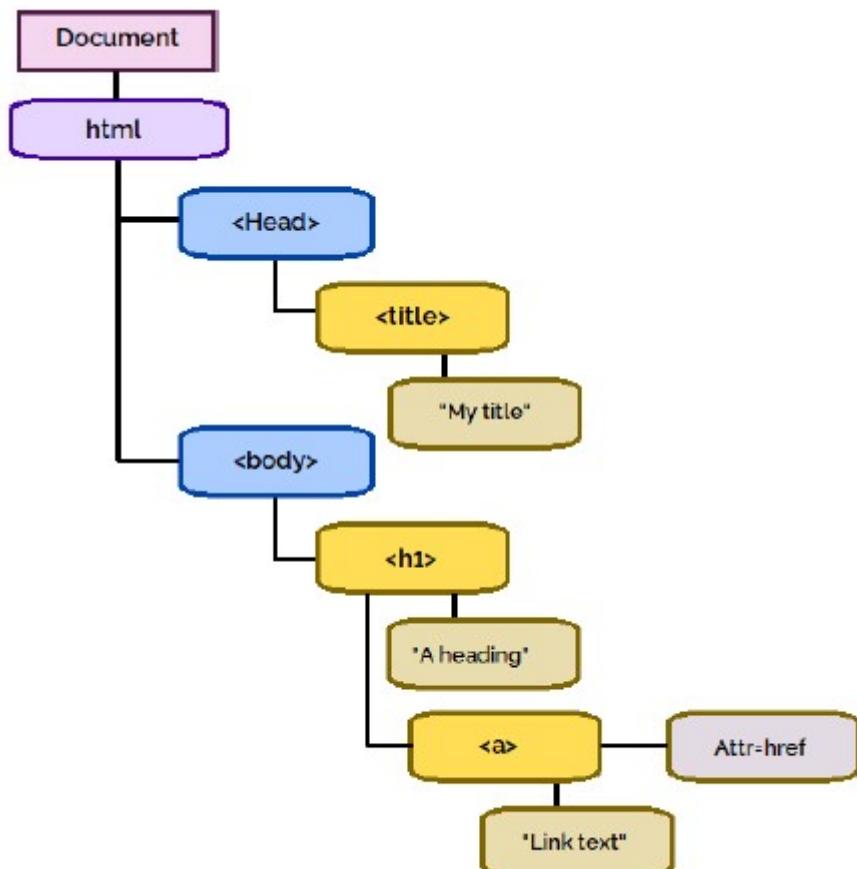
Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following HTML document and select the DOM structure that correctly represents the HTML document.

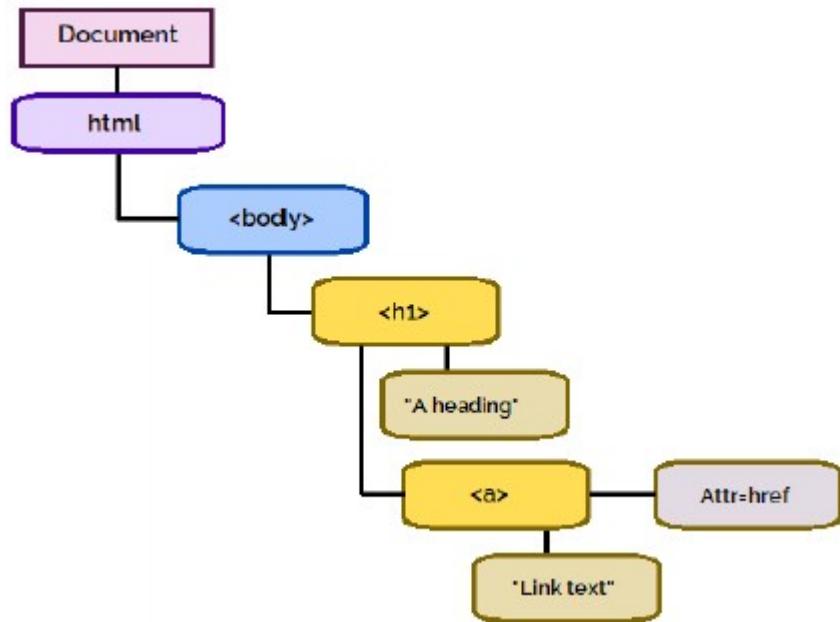
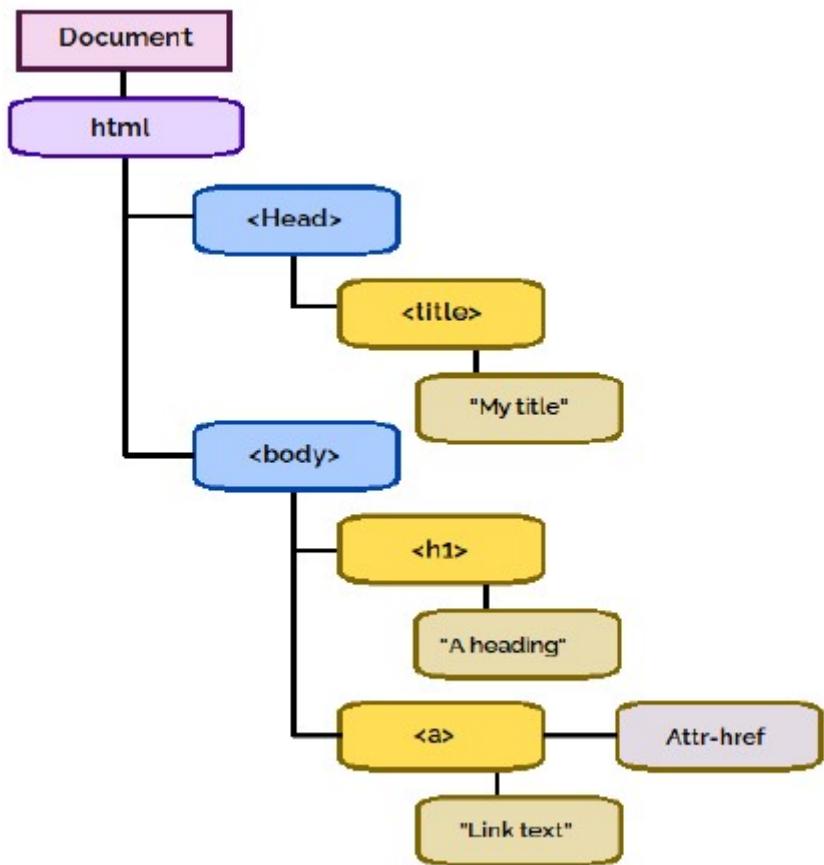
```
<!DOCTYPE html>
<head>
    <title>My title</title>
</head>
<body>
    <h1>A heading</h1>
    <a href="link">Link text</a>
</body>
</html>
```

Options :



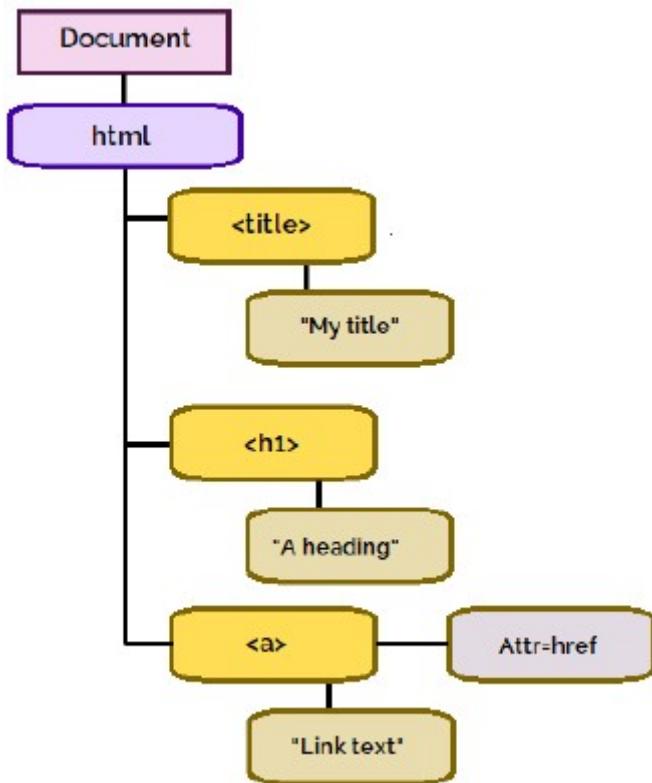
6406531930545. ✘

6406531930546. ✓



6406531930547. *

6406531930548. *



Question Number : 116 Question Id : 640653578135 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following Python code snippet.

```

from jinja2 import Template

temp = """
    {% for vid, members in interfaces|groupby(attribute='lan') %}
        Interfaces in lan {{ vid }}: {{ members|map(attribute='name') |
join(', ') }}
    {% endfor %}
"""

interfaces = [
    {"name": "Ethernet1", "lan": 50},
    {"name": "Ethernet2", "lan": 40},
    {"name": "Ethernet3", "lan": 50},
    {"name": "Ethernet4", "lan": 60}
]
output = Template(temp)
print(output.render(interfaces=interfaces))

```

What will be the output of above python code on the terminal.

Options :

Interfaces in lan 50: Ethernet1
 Interfaces in lan 40: Ethernet2
 Interfaces in lan 50: Ethernet3
 Interfaces in lan 60: Ethernet4

6406531930561. ✘

Interfaces in lan 40: Ethernet1, Ethernet3
 Interfaces in lan 50: Ethernet2
 Interfaces in lan 60: Ethernet4

6406531930562. ✘

Interfaces in lan 40: Ethernet2
 Interfaces in lan 50: Ethernet1, Ethernet4
 Interfaces in lan 60: Ethernet3

6406531930563. ✘

Interfaces in lan 40: Ethernet2
 Interfaces in lan 50: Ethernet1, Ethernet3
 Interfaces in lan 60: Ethernet4

6406531930564. ✓

Sub-Section Id :	64065382687
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653578124 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (117 to 118)

Question Label : Comprehension

A Flask application and its absolute path is given below.

```
C:\home\mad_1>
```

app.py

```
from flask import Flask, url_for
import sys

def create_path():
    if len(sys.argv) < 2:
        return '/static'
    else:
        return f'/{sys.argv[1]}'

app = Flask(__name__, static_url_path = create_path())

@app.route('/home')
def display():
    return f"<h3>static url path: {app.static_url_path}</h3>\\
            <h3>static folder: {app.static_folder}</h3>"

app.run(debug = True)
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 117 Question Id : 640653578125 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 the application is run locally on
<http://127.0.0.1:5000> using the command
python app.py, what will be rendered
by the browser for URL
<http://127.0.0.1:5000/home?>

Options :

6406531930521. ❌ static url path: C:\home\mad_1\static
static folder: /static

6406531930522. ✓ static url path: /static
static folder: C:\home\mad_1\static

6406531930523. ❌ static url path: /stable
static folder: C:\home\mad_1\stable

6406531930524. ❌ static url path: /static
static folder: C:\home\mad_1\stable

Question Number : 118 Question Id : 640653578126 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

If the application is run locally on <http://127.0.0.1:5000> using the command python app.py stable, what will be rendered by the browser for URL <http://127.0.0.1:5000/home>?

Options :

6406531930525. ✘ static url path: /static
static folder: C:\home\mad_1\static

6406531930526. ✘ static url path: /stable
static folder: C:\home\mad_1\stable

6406531930527. ✘ static url path: C:\home\mad_1\stable
static folder: /stable

6406531930528. ✓ static url path: /stable
static folder: C:\home\mad_1\static

MLF

Section Id :	64065339088
Section Number :	8
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 Yes

Clear Response :

Maximum Instruction Time : 0

Sub-Section Number : 1

Sub-Section Id : 64065382688

Question Shuffling Allowed : No

Is Section Default? : null

Question Number : 119 Question Id : 640653578136 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406531930565. ✓ YES

6406531930566. ✘ NO

Sub-Section Number : 2

Sub-Section Id : 64065382689

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 120 Question Id : 640653578137 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements are correct?

Options :

6406531930567. ✓ I($444\%3 = 0$ and $\pi \in \mathbb{R}$) = 1.

6406531930568. ✗ Mean Squared Error (MSE) is a suitable loss function for classification problems.

6406531930569. ✗ The loss obtained after applying encoder and decoder functions to a given data can be negative.

6406531930570. ✓ Gaussian mixture model is a family of distributions for modeling multimodal data.

Question Number : 121 Question Id : 640653578149 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements is/are true?

Options :

6406531930591. ✓ Row space of a matrix is orthogonal to the null space of the matrix.

6406531930592. ✗ Row space of a matrix is orthogonal to the null space of transpose of the matrix.

6406531930593. ✓ Dimension of row space of a matrix is always equal to the dimension of column space of the matrix.

6406531930594. ✗ Dimension of row space of a matrix need not be equal to the dimension of column space of the matrix.

Question Number : 122 Question Id : 640653578151 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following matrices have eigenvectors as $\begin{bmatrix} 2 \\ 1 \\ 2 \end{bmatrix}$, $\begin{bmatrix} 1 \\ -2 \\ 0 \end{bmatrix}$ and $\begin{bmatrix} 1 \\ 0 \\ -1 \end{bmatrix}$?

Options :

$$\begin{bmatrix} 3 & 2 & 4 \\ 2 & 0 & 2 \\ 4 & 2 & 3 \end{bmatrix}$$

6406531930599. ✓

$$\begin{bmatrix} 6 & 4 & 8 \\ 4 & 0 & 4 \\ 8 & 4 & 6 \end{bmatrix}$$

6406531930600. ✓

$$\begin{bmatrix} 2 & 1 & 4 \\ 4 & 0 & 4 \\ 8 & 4 & 6 \end{bmatrix}$$

6406531930601. ✘

$$\begin{bmatrix} 3 & 1 & 0 \\ 2 & 0 & 2 \\ 4 & 2 & 3 \end{bmatrix}$$

6406531930602. ✘

Question Number : 123 Question Id : 640653578152 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let the matrix $A \in \mathbb{R}^{d \times d}$ be diagonalizable, then which of the following statements is/are true for A ?

Options :

6406531930603. ✘ A must be symmetric.

6406531930604. ✓ We can find a basis of eigenvectors for \mathbb{R}^d .

6406531930605. ✘ We can find an orthonormal basis of eigenvectors for \mathbb{R}^d .

A can have some repeated eigenvalues but must have distinct independent eigenvectors.

Sub-Section Number : 3

Sub-Section Id : 64065382690

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 124 Question Id : 640653578144 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let $A, B \in \mathbb{R}^{n \times n}$ be two matrices, then which among the following statements are correct?

Options :

6406531930583. ✓ $x \in \text{Nullspace}(A) \implies x \in \text{Nullspace}(BA)$.

6406531930584. ✓ $x \in \text{Columnspace}(A) \implies x \in \text{Columnspace}(B)$, where $A = BC, C \in \mathbb{R}^{n \times n}$.

6406531930585. ✓ $x \in \text{Nullspace}(AB) \implies Bx \in \text{Nullspace}(A)$.

6406531930586. ✶ $x \in \text{Nullspace}(AB) \implies x \in \text{Nullspace}(B)$.

Question Number : 125 Question Id : 640653578150 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the solution of the linear regression problem ($Ax = b$) using least squares method, where $A = \begin{bmatrix} 1 & 5 & 5 \\ 2 & 3 & 5 \\ 0 & 7 & 1 \end{bmatrix}$ and $b = \begin{bmatrix} 7 \\ 8 \\ 4 \end{bmatrix}$.

Based on this data, which of the following statements is/are true?

Options :

6406531930595. ✓ The error value is zero as we can get an x such that Ax is exactly equal to b .

6406531930596. ✶ The error value is non-zero as we cannot get an x such that Ax is exactly equal to b .

Least squares solution for x is $\begin{bmatrix} 2 \\ 0.5 \\ 0.5 \end{bmatrix}$.

6406531930597. ✓

Least squares solution for x is $\begin{bmatrix} 1 \\ 0.6 \\ 0.4 \end{bmatrix}$.

6406531930598. ✶

Sub-Section Number :

4

Sub-Section Id :

64065382691

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 126 Question Id : 640653578142 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

Find the linear approximation of the function $f(x, y) = ye^{xy}$ in the neighbourhood of $(0,1)$.

Options :

6406531930575. $x + y$

6406531930576. $x + 2y$

6406531930577. $2x + y$

6406531930578. $2x + 3y$

Question Number : 127 Question Id : 640653578143 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Let $f : \mathbb{R}^2 \rightarrow \mathbb{R}$, given by $f(x, y) = x^2 + y^2$. Consider the following algorithm:

$$X_{n+1} = X_n - h \nabla f(X_n), \quad X_i \in \mathbb{R}^2, i : 1, 2, \dots \text{ and } h > 0,$$

where h is the step size and $\nabla f(X_n)$ is the gradient of f evaluated at X_n . Fix $h = 0.25$ and $X_0 = (1, 3)$, which among the following points does the algorithm converge to?

Options :

6406531930579. $(1, 3)$

6406531930580. $(1/2, 1/6)$

6406531930581. $(0, 0)$

6406531930582. ❌ The algorithm does not converge

Sub-Section Number : 5

Sub-Section Id : 64065382692

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 128 Question Id : 640653578138 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 dataset with 5 data points:

X	y
(2, 3)	5
(-1, 1)	2
(4, 2)	7
(0, -2)	1
(-3, 5)	4

We want to fit a linear regression model of the form $f(X) = w^T x$ to this dataset, where $w = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$. Compute the value of the loss function L for this dataset which is defined as $L = \max_i |f(x^i) - y^i|$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Question Number : 129 Question Id : 640653578139 Question Type : SA Calculator : None

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

Correct Marks : 4

Question Label : Short Answer Question

Let $f(x_1, x_2, x_3) = \frac{x_1 + x_2 + x_3}{2}$ be used as an encoder function and $g(u) = [u, u, u]$ be used as a decoder function for dimensionality reduction of the dataset $X_1 = [1, 2, 3]$, $X_2 = [2, 4, 6]$, $X_3 = [3, 6, 9]$, $X_4 = [4, 8, 12]$. Calculate the reconstruction error $\left(R(f, g) = \frac{1}{n} \sum_{i=1}^n \|x_i - g(f(x_i))\|^2 \right)$ for this encoder decoder pair. Enter the answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

37 to 38

Question Number : 130 **Question Id :** 640653578148 **Question Type :** SA **Calculator :** None

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

Correct Marks : 4

Question Label : Short Answer Question

Let P_1 be the projection matrix onto the line spanned by the vector $a = [1, 2, 3]^T$. Let P_2 be the projection matrix that projects vectors onto the plane perpendicular to span of a . Find the determinant of $P_1 + P_2$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Sub-Section Number : 6

Sub-Section Id : 64065382693

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 131 Question Id : 640653578140 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 directional derivative of $f(x, y, z) = x(x^2 - y^2) - z$ at a point D(1, -1, 0) in the direction of vector $\hat{h} = \frac{2}{7}\mathbf{i} - \frac{3}{7}\mathbf{j} + \frac{6}{7}\mathbf{k}$. 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 :

-1.16 to -1.12

Sub-Section Number : 7

Sub-Section Id : 64065382694

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 132 Question Id : 640653578141 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

Let the function $f(x) = \begin{cases} ax - 3, & x < 2 \\ 4, & x = 2 \\ 2x, & x > 2 \end{cases}$

be continuous for all $x \in \mathbb{R}$. Then, find the value of a .

Enter the answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3.5

Sub-Section Number : 8

Sub-Section Id : 64065382695

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653578145 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (133 to 134)

Question Label : Comprehension

Let $A = \begin{pmatrix} 1 & -1 \\ 1 & 1 \\ 1 & 2 \end{pmatrix}$ and $b = \begin{pmatrix} 1 \\ 1 \\ 3 \end{pmatrix}$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 133 Question Id : 640653578146 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

Is the system $Ax = b$ consistent?

Options :

6406531930587. ✘ Yes

6406531930588. ✓ No

Question Number : 134 Question Id : 640653578147 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Using the least square approximation, find the length of the projection vector p of b onto the column space of A . 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 :

3.12 to 3.16

Java

Section Id : 64065339089

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 :	64065382696
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 135 Question Id : 640653578153 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406531930607. ✓ YES

6406531930608. ✘ NO

Sub-Section Number :	2
Sub-Section Id :	64065382697
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 136 Question Id : 640653578154 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which among the following statements is/are **true** about activation records?

Options :

6406531930609. ✘ All the variables on the stack (in any activation record) are in their scope.
6406531930610. ✘ Only the variables present in the topmost activation record of the stack are in their lifetime
6406531930611. ✓ Every activation record has a control link that points to start of previous record.
6406531930612. ✓ Every activation record has a return value link that points to where to store return value.

Question Number : 137 Question Id : 640653578156 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the code given below that checks whether two books are the same. Method `equals` is overridden to compare two `Book` objects as follows. If two books have the same author name and book name, then they are the same. Based on the given information, answer the question that follows.

```
class Book{
    private String bName; // Book name
    private String aName; // Author name

    //Constructor to initialize instance variables

    public String toString() {
        return bName;
    }
    public boolean equals(Object obj) {
        // CODE BLOCK
    }
}

public class Test {
    public static void main(String[] args) {
        Book b1 = new Book("ABC", "XYZ");
        Book b2 = new Book("ABC", "XYZ");
        if(b1.equals(b2))
            System.out.println(b1+" , "+ b2 +" are same");
        else
            System.out.println(b1+" , "+ b2 +" are different");

    }
}
```

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

ABC, ABC are same

Options :

6406531930617. ✘

```
if(obj instanceof Book) {
    if(this.bName.equals(obj.bName) && this.aName.equals(obj.aName))
        return true;
}
return false;
```

6406531930618. ✘

```
if(this.bName.equals(obj.bName) && this.aName.equals(obj.aName))
    return true;
return false
```

```
if(obj instanceof Book) {  
    Book bk = (Book) obj;  
    if(this.bName.equals(bk.bName) && this.aName.equals(bk.aName))  
        return true;  
}  
return false;
```

6406531930619. ✓

```
if(obj instanceof Book) {  
    Book bk = obj;  
    if(this.bName.equals(bk.bName) && this.aName.equals(bk.aName))  
        return true;  
}  
return false;
```

6406531930620. ✘

Question Number : 138 Question Id : 640653578159 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the code given below.

```
class Rectangle{
    private int sides;
    public Rectangle(int s){
        sides = s;
    }
    public final void area(){
        System.out.println("area of rectangle");
    }
}

class Pentagon extends Rectangle {
    public Pentagon(int n){
        super(n);
    }
    public final void area(){ // LINE 1
        System.out.println("area of pentagon");
    }
}

public class Test{
    public static void main(String[] args){
        Rectangle r = new Pentagon(4); // LINE 2
        r.sides = 5; // LINE 3
        r.area();
    }
}
```

Choose the correct option(s).

Options :

LINE 1 generates compilation error because the method `area()` cannot be overridden.
6406531930629. ✓

LINE 2 generates compilation error because a variable of type `Rectangle` cannot refer to an object of type `Pentagon`.
6406531930630. ✗

LINE 3 generates compilation error because instance variable `sides` cannot be accessed in class `Test`.
6406531930631. ✓

6406531930632. ✗

This code generates the output:

area of pentagon

Question Number : 139 Question Id : 640653578165 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the code given below.

```
interface Moveable{
    void move();
}

class Fan implements Moveable{
    public void move() {
        System.out.println("Move and circulate air inside the room");
    }
}

class Cooler{
    public Fan getBlower() {
        return new Blower();
    }

    private class Blower extends Fan implements Moveable{
        public void move() {
            System.out.println("Move and throws air at high pressure");
        }
    }
}

public class PrivateTest {
    public static void main(String[] args) {
        //CODE BLOCK
    }
}
```

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

Move and throws air at high pressure

Options :

6406531930653. ✓

```
Cooler obj1 = new Cooler();
Moveable obj2 = obj1.getBlower();
obj2.move();
```

6406531930654. ❌

```
Cooler obj1 = new Cooler();
Blower obj2 = obj1.getBlower();
obj2.move();
```

6406531930655. ❌

```
Moveable obj1 = new Blower();
obj1.move();
```

6406531930656. ✓

```
Cooler obj1 = new Cooler();
Fan obj2 = obj1.getBlower();
obj2.move();
```

Sub-Section Number : 3

Sub-Section Id : 64065382698

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 140 Question Id : 640653578155 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Match the following terms with their descriptions/properties.

A. Activation Record	1. Compatibility of interfaces
B. Dynamic lookup	2. Restricting modification of data to the methods of the object only
C. Subtyping	3. Reuse of implementations
D. Inheritance	4. Stores the local variables
E. Encapsulation	5. Choice of method implementation determined at run-time
	6. Stores the instance variables

Options :

6406531930613. ✘ A-6, B-5, C-3, D-1, E-2

6406531930614. ✓ A-4, B-5, C-1, D-3, E-2

6406531930615. ✘ A-4, B-2, C-3, D-1, E-5

6406531930616. ✘ A-6, B-2, C-1, D-3, E-5

Question Number : 141 Question Id : 640653578157 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the code given below.

```
class Vehicle{  
    public void move() {  
        System.out.println("Moves");  
    }  
}  
class Bike extends Vehicle{  
    public void seating() {  
        System.out.println("Bike seating");  
    }  
}  
class Car extends Bike{  
    public void seating() {  
        System.out.println("Car Seating");  
    }  
    public void safety() {  
        System.out.println("Offers safety");  
    }  
}  
public class Test{  
    public static void main(String[] args) {  
        Vehicle v = new Bike();  
        Bike b = new Car(); // LINE 1  
        v.move();  
        ((Bike)v).seating(); // LINE 2  
        b.safety(); // LINE 3  
    }  
}
```

Choose the correct option.

Options :

LINE 1 generates compilation error because a variable of type Bike cannot refer to an object of type Car.
6406531930621. ✘

LINE 2 generates compilation error because a variable of type Vehicle cannot be type casted to an object of type Bike.
6406531930622. ✘

LINE 3 generates compilation error because the method safety() is not defined in class Bike.
6406531930623. ✓

This code generates the output:

Moves
Bike seating
Offers safety

6406531930624. *

Question Number : 142 Question Id : 640653578158 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the code given below.

```
class Player{  
    public void play(){  
        System.out.println("Player plays");  
    }  
    public void play(String n){  
        System.out.println("Player is " + n);  
    }  
}  
class Captain extends Player{  
    public void play(String s){  
        System.out.println("Captain is " + s);  
    }  
}  
public class Test{  
    public static void main(String[] args){  
        Player p = new Captain(); // LINE 1  
        p.play();  
        p.play("siva"); // LINE 2  
    }  
}
```

Choose the correct option.

Options :

LINE 1 generates compilation error because a variable of type Player cannot refer to an object of type Captain.
6406531930625. *

This code generates the below output followed by runtime Error at LINE 2 because there is ambiguity in which play() method is being invoked.

Player plays

6406531930626. *

This code generates the output:

Player plays

Player is siva

6406531930627. *

This code generates the output:

Player plays

Captain is siva

6406531930628. ✓

Question Number : 143 Question Id : 640653578160 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 Employee{  
    private String name;  
    private double salary;  
    public Employee(String n, double s) {  
        name = n;  
        salary = s;  
    }  
    public String toString() {  
        return "name = " + name + ", salary = " + salary;  
    }  
}  
class Manager extends Employee{  
    String dateOfPromotion;  
    public Manager(String name, double salary, String dop) {  
        //LINE-1  
        dateOfPromotion = dop;  
    }  
    public String toString() {  
        return super.toString() + ", dateOfPromotion = " + dateOfPromotion;  
    }  
}  
public class Test {  
    public static void main(String[] args) {  
        Employee obj = new Manager("Suyan", 500000.00, "01/06/2021");  
        System.out.println(obj);  
    }  
}
```

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

name = Suyan, salary = 500000.0, dateOfPromotion = 01/06/2021

Options :

6406531930633. ✘ this(name, salary);

6406531930634. ✓ super(name, salary);

6406531930635. ✘ Employee(name, salary);

6406531930636. ✘ super.Employee(name, salary);

Question Number : 144 Question Id : 640653578161 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 show() {  
        for(int i=0;i<3;i++) {  
            switch(i) {  
                case 1:  
                    System.out.print("1 ");  
                case 2:  
                    System.out.print("2 ");  
                case 3:  
                    System.out.print("3 ");  
                default:  
                    System.out.print("Default case");  
                    break;  
            }  
            System.out.println();  
        }  
    }  
    public static void main(String[] args) {  
        show();  
    }  
}
```

What will the output be?

Options :

1 2 3
2 3

6406531930637. *

Default case
1 2 3 Default case
2 3 Default case

6406531930638. ✓

Default case

1

2

6406531930639. ✶

Default case

1 2 3

2 3

6406531930640. ✶

Question Number : 145 Question Id : 640653578162 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the code given below.

```
abstract class Phone{
    abstract void basic_features();
    abstract void additional_features();
}
abstract class KeypadPhone extends Phone{ // LINE 1
    public void basic_features() {
        System.out.println("Calling/Messaging");
    }
}
class SmartPhone extends KeypadPhone{ // LINE 2
    public void additional_features() {
        System.out.println("Touch screen/Camera");
    }
}
public class Test {
    public static void main(String[] args) {
        KeypadPhone obj1 = new SmartPhone();
        Phone obj2 = new SmartPhone();
        obj1.basic_features();
        obj2.additional_features(); // LINE 3
    }
}
```

Choose the correct option.

Options :

This code generates the output:

Calling/Messaging
Touch screen/Camera

6406531930641. ✓

LINE 1 generates compilation error because method `additional_features()` is not overridden in `KeypadPhone` class.

6406531930642. ✘

LINE 2 generates compilation error because method `basic_features()` is not overridden in `SmartPhone` class.

6406531930643. ✘

LINE 3 generates compilation error because object `obj2` should be cast to its child class `SmartPhone`.

6406531930644. ✘

Question Number : 146 Question Id : 640653578163 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the code given below.

```
interface Appraisable{
    public default void isAppraisable() {
        System.out.println("Yes this employee appraisable");
    }
}
class Employee{
    int leaves;
    public Employee(int num) {
        leaves = num;
    }
    public void isAppraisable() {
        if(leaves >= 20)
            System.out.println("This employee not appraisable");
    }
}
class Manager extends Employee implements Appraisable{
    public Manager(int num) {
        super(num);
    }
}
public class InterfaceTest {
    public static void main(String[] args) {
        Appraisable obj1 = new Manager(10);
        obj1.isAppraisable();
        Appraisable obj2 = new Manager(20);
        obj2.isAppraisable();
    }
}
```

Choose the correct option.

Options :

6406531930645. ❌ This program generates no output.

This code generates the output:

This employee not appraisable

6406531930646. ❌ Yes this employee appraisable

This code generates the output:

This employee not appraisable

6406531930647. ✓

This code generates the output:
Yes this employee appraisable
This employee not appraisable

6406531930648. ❌

Question Number : 147 Question Id : 640653578164 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the code given below.

```
class Doctor {  
    private String name = "****";  
    private static String hospital_group = "ABC";  
    public Doctor(){  
        name = "**";  
    }  
    public Doctor(String n){  
        name = n;  
    }  
    public String toString() {  
        return "name = " + name + ", hospital group = " + hospital_group;  
    }  
}  
public class VarTest{  
    public static void main(String[] args) {  
        Doctor obj1 = new Doctor();  
        Doctor obj2 = new Doctor("XYZ");  
        System.out.println(obj1);  
        System.out.println(obj2);  
    }  
}
```

What will the output be?

Options :

6406531930649. ❌
name = null, hospital group = ABC
name = XYZ, hospital group = ABC

name = **, hospital group = null
6406531930650. ✶ name = XYZ, hospital group = ABC

name = ****, hospital group = ABC
6406531930651. ✶ name = XYZ, hospital group = ABC

name = **, hospital group = ABC
name = XYZ, hospital group = ABC
6406531930652. ✓

Question Number : 148 Question Id : 640653578167 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the code given below.

```
class Person{
    private String name, location;
    private int age;
    public void setLocation(String location) {
        this.location = location;
    }
    public Person(String name, int age) {
        this.name = name;
        this.age = age;
    }
    public Person(String name, int age, String location) {
        this.name = name;
        this.age = age;
        this.location = location;
    }
    public Person(Person p) {
        this(p.name, p.age, "Hyderabad");
    }
    public String toString() {
        return name + ", " + age + ", " + location;
    }
}
public class CopyConTest {
    public static void main(String[] args) {
        Person p1 = new Person("ABC", 23);
        Person p2 = new Person(p1);
        p1.setLocation("Mumbai");
        System.out.println(p1);
        System.out.println(p2);
    }
}
```

What will the output be?

Options :

6406531930661. ✘ null, 0, Mumbai
6406531930661. ✘ ABC, 23, Hyderabad

6406531930662. ✘ ABC, 23, Mumbai
6406531930662. ✘ ABC, 23, Mumbai

6406531930663. ✘

ABC, 23, Hyderabad
ABC, 23, Hyderabad

ABC, 23, Mumbai
6406531930664. ✓ ABC, 23, Hyderabad

Question Number : 149 Question Id : 640653578168 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 Animal{
    String name;
    int legs;
    public Animal(String n, int l){
        name = n;
        legs = l;
    }
    *-----*
    * CODE SEGMENT *
    *-----*
}
public class Test{
    public static void main(String[] args){
        Animal a1 = new Animal("Dogs", 4);
        Animal a2 = new Animal("Birds", 2);
        System.out.println(a1 + "\n" + a2);
    }
}
```

Choose the correct option to fill in the CODE SEGMENT so that the output is:

Dogs : 4
Birds : 2

Options :

6406531930665. ✓

```
public String toString(){
    return name + " : " + legs;
}
```

```
        public String toString(Object ob){
            return ob.name + " : " + ob.legs;
    }
```

6406531930666. ❌

6406531930667. ❌ No additional code is required in place of CODE SEGMENT.

This output will not be printed because Java throws an error when an object is tried to be printed using `System.out.println`.

6406531930668. ❌

Sub-Section Number : 4

Sub-Section Id : 64065382699

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 150 **Question Id :** 640653578166 **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 Bookable{
    public void booked();
    public void rejected();
}

class TicketBookingSite{
    public static int maxTickets = 100;
    Bookable obj;
    // Constructor to initialize Bookable obj
    public void startBooking(int tickets) {
        if(tickets <= maxTickets) {
            obj.booked();
            maxTickets -= tickets;
        }
        else
            obj.rejected();
    }
}

class Audience implements Bookable{
    String name;
    int noTickets;
    // Constructor initialize name and noTickets
    public void getTickets() {
        TicketBookingSite site = new TicketBookingSite(this);
        site.startBooking(noTickets);
    }
    public void booked() {
        System.out.println("You got "+this.noTickets+" tickets");
    }
    public void rejected() {
        System.out.println("Tickets sold out");
    }
}

public class CallBack {
    public static void main(String[] args) {
        Audience a1 = new Audience("A", 34);
        Audience a2 = new Audience("B", 67);
        Audience a3 = new Audience("C", 34);
        a1.getTickets();
        a2.getTickets();
        a3.getTickets();
    }
}
```

Choose the correct option.

Options :

6406531930657. ❌ This program generates no output.

This program generates the output:

You got 34 tickets

Tickets sold out

You got 34 tickets

6406531930658. ✓

This program generates the output:

You got 34 tickets

You got 34 tickets

6406531930659. ✖

This program generates the output:

You got 34 tickets

Tickets sold out

6406531930660. ✖

AppDev2

Section Id : 64065339090

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 Yes

Clear Response :

Maximum Instruction Time : 0

Sub-Section Number : 1

Sub-Section Id : 64065382700

Question Shuffling Allowed : No

Is Section Default? :

null

Question Number : 151 Question Id : 640653578169 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406531930669. ✓ YES

6406531930670. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 64065382701

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 152 Question Id : 640653578170 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Suppose you are given the below HTML.

```
<body>
  <p id = "id1" class = "class1">Content A</p>    <!-- Statement 1 -->
  <p id = "id2" class = "class1">Content B</p>    <!-- Statement 2 -->
</body>
```

Which of the following code(s) can be used to access the HTML paragraph element at "Statement 1" using JavaScript?

Options :

6406531930671. ✘ `document.getElementById("id2")`

6406531930672. ✓ `document.getElementById("id1")`

6406531930673. ✘ `document.getElementByClassName("class1")`

6406531930674. ✓ `document.getElementByClassName("class1")[0]`

Question Number : 153 Question Id : 640653578175 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is/are not example(s) of system level state?

Options :

6406531930691. ✓ Gmail Inbox of a given user

6406531930692. ✘ User database of LinkedIn

6406531930693. ✓ YouTube Recommendations after signing in

6406531930694. ✓ Countdown timer in a game

Question Number : 154 Question Id : 640653578178 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements is/are true?

Options :

6406531930703. ✓ Lexical scope describes how the parser resolves the variable name in case of nested functions.

6406531930704. ✓ Inner functions have access to the outer functions variables in JavaScript.

6406531930705. ✗ Inner functions do not have access to the outer functions variables in JavaScript.

6406531930706. ✗ None of these.

Sub-Section Number : 3

Sub-Section Id : 64065382702

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 155 Question Id : 640653578171 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following statements is correct regarding "<noscript>" tag in HTML?

Options :

6406531930675. ✗ This tag is used to insert the JavaScript code to be run when the page opens.

6406531930676. ✓ This tag is used to insert HTML, if the browser doesn't support script or is disabled.

6406531930677. ✗ This tag, if used in a web page, does not let the browser cache the page contents.

6406531930678. ✗ None of these

Sub-Section Number :

4

Sub-Section Id : 64065382703

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 156 Question Id : 640653578173 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.

```
class Person {  
    constructor(name) {  
        this.name = name;  
        this.age = 23;  
    }  
    static fromJson(obj) {  
        let new_obj = new Person(obj.name);  
        new_obj.sound = obj.sound;  
        return new_obj;  
    }  
}  
result = new Person('Abhi');  
console.log(Person.fromJson(JSON.parse(JSON.stringify(result))).constructor  
.name);
```

Options :

6406531930683. ✓ Person

6406531930684. ✗ Abhi

6406531930685. ✗ constructor

6406531930686. ✗ Reference Error

Question Number : 157 Question Id : 640653578174 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.

```
let x = 50;
const obj1 = {
  x : 10,
  func : function () {
    console.log(this.x)
  }
}

const obj2 = {
  x : 20,
  func : () => {
    function abc () {
      console.log(x, "and", this.x)
      obj1.func.call(this)
    }
    abc()
  }
}

obj2.func()
```

Options :

50 and 20
6406531930687. ✘ 10

50 and 20
6406531930688. ✘ undefined

50 and undefined
6406531930689. ✓ undefined

50 and undefined
6406531930690. ✘ 10

Question Number : 158 Question Id : 640653578176 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the below Vue application with markup file “index.html”, and JavaScript file “app.js”.

index.html:

```
<body>
  <div id = "app">
    <ol>
      <li v-for="item in items" :key="item.id">{{ item.name }}</li>
    </ol>
  </div>
</body>
<script src = "app.js"> </script>
```

app.js:

```
const a = new Vue({
  el : '#app',
  data : {
    items: [
      { id: 1, name: 'App Dev I Theory' },
      { id: 2, name: 'App Dev I Project' },
      { id: 3, name: 'App Dev II Theory' },
      { id: 4, name: 'App Dev II Project' }

    ],
  }
})
```

Suppose you open the “index.html” file in a browser, what will be rendered by the browser?

Options :

- App Dev II Project
- App Dev II Theory
- App Dev I Project
- 6406531930695. ❌ App Dev I Theory

- App Dev I Theory
- App Dev I Project

6406531930696. ❌

App Dev II Theory
6406531930697. ❌ App Dev II Project

App Dev I Theory
App Dev I Project
App Dev II Theory
6406531930698. ✓ App Dev II Project

Question Number : 159 Question Id : 640653578177 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the below Vue application with markup file “index.html”, and javaScript file “app.js”.

index.html:

```
<body>
  <div id = "app">
    <ol>
      <li v-for="item in items" :key="item.id">
        <blog-post :post-title = "item.name" :post-content =
"item.message"> </blog-post>
      </li>
    </ol>

  </div>
</body>
<script src = "app.js"> </script>
```

app.js:

```
Vue.component('blog-post', {
  props: {
    'postTitle' : String,
    'postContent' : String
  },
  template: `
    <div>
      <h3>{{ postTitle }}</h3>
      <p>{{ postContent }}</p>
    </div>
  `
})

const a = new Vue({
  el : '#app',
  data : {
    items: [
      { id: 1, name: 'IITM BS', message: "The World's first 4-year BS degree in DS and Applications"}, 
      { id: 2, name: 'IITM ES', message: "Learn Electronic Systems from top-notch IIT Madras faculty"}, 
      { id: 3, name: 'NPTEL', message: "Online Learning Initiatives by IITs and IISc"}
    ]
  },
})
```

Suppose you open the “index.html” file in a browser, what will be rendered by the browser?

Options :

1. IITM BS
2. IITM ES
3. NPTEL

6406531930699. ✘

6406531930700. ✓

1. IITM BS

The World's first 4-year BS degree in DS and Applications

2. IITM ES

Learn Electronic Systems from top-notch IIT Madras faculty

3. NPTEL

Online Learning Initiatives by IITs and IISc

1. The World's first 4-year BS degree in DS and Applications

2. Learn Electronic Systems from top-notch IIT Madras faculty

3. Online Learning Initiatives by IITs and IISc

6406531930701. ✖

A. NPTEL

Online Learning Initiatives by IITs and IISc

B. IITM ES

Learn Electronic Systems from top-notch IIT Madras faculty

C. IITM BS

6406531930702. ✖ The World's first 4-year BS degree in DS and Applications

Question Number : 160 Question Id : 640653578179 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following JavaScript program.

```
function doSomething(n, ...params) {  
    return params  
        .map((x) => {  
            return x ** n  
        })  
        .sort()  
}  
  
console.log(doSomething(2, 5, 10))
```

What will be logged on to console?

Options :

6406531930707. ✘ [5, 10]

6406531930708. ✘ [25, 100]

6406531930709. ✘ [10, 5]

6406531930710. ✓ [100, 25]

Question Number : 161 Question Id : 640653578180 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following JavaScript program.

```
function coolerPlace({ ...obj }) {
  let tmp = 0
  let cty = null
  Object.entries(obj).forEach(([city, temp]) => {
    if (temp > tmp) {
      cty = city
    }
  })
  return cty
}
console.log(coolerPlace({ UP: 37, Delhi: 40 }))
```

What will be logged on to console?

Options :

6406531930711. ✘ UP

6406531930712. ✓ Delhi

6406531930713. ✘ 37

6406531930714. ✘ 40

Question Number : 162 Question Id : 640653578181 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following JavaScript program.

```
const adres1 = {
  state: 'Tamil Nadu',
  city: 'Chennai',
  place: 'IIT Madras',
  getAddress() {
    return `State: ${this.state}, city: ${this.city},
place:${this.place}`
  },
}

const adres3 = {
  place: 'Taramani',
  __proto__: adres1,
}

console.log(adres3.getAddress())
```

What will be logged on to console?

Options :

6406531930715. ✓ State: Tamil Nadu, city: Chennai, place: Taramani

6406531930716. ✗ State: Tamil Nadu, city: Chennai, place: IIT Madras

6406531930717. ✗ State: , city: , place:Taramani

6406531930718. ✗ State: , city: , place:

Question Number : 163 Question Id : 640653578182 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following JavaScript program.

```
let x = 1
let y = 2
{
  let x = 4
  let y = 5
}
function outer() {
  function inner() {
    return x + y
  }
  return inner
}
console.log(outer()())
```

What will be logged on to console?

Options :

6406531930719. ✘ 9

6406531930720. ✓ 3

6406531930721. ✘ NaN

6406531930722. ✘ undefined

Sub-Section Number : 5

Sub-Section Id : 64065382704

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 164 Question Id : 640653578172 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. Also, predict the number of times the while loop will run.

```

function do_something(arr, val){
    var i1 = 0;
    var i2 = arr.length;
    while(i2 > i1){
        var i3 = Math.floor((i1 + i2)/2);
        if(val > arr[i3]){
            i1 = i3 + 1;
        }
        else if(val < arr[i3]){
            i2 = i3;
        }
        else{
            return true;
        }
    }
    return false;
}

result = do_something([3, 6, 34, 39, 48, 56, 78, 87], 40)
console.log(result)

```

Options :

6406531930679. ✖ **true**
The while loop will run 3 times

6406531930680. ✖ **false**
The while loop will run 4 times

6406531930681. ✓ **false**
The while loop will run 3 times

6406531930682. ✖ **true**
The while loop will run 4 times

Question Number : 165 Question Id : 640653578183 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the below Vue application with markup file “index.html”, and JavaScript file “app.js”.

```

app.js
new Vue({
  el: '#app',
  template: `<div> The nearest city to you is: {{minDistance}}</div>`,
  data: {
    userCoordinate: [1, 2],
    allCooridates: [
      { name: 'City1', coodinate: [1, 7] },
      { name: 'City2', coodinate: [2, 4] },
      { name: 'City3', coodinate: [3, 5] },
      { name: 'City4', coodinate: [1, 4] },
    ],
  },
  methods: {
    calculateDistance(x, y) {
      return Math.abs(x[0] - y[0]) + Math.abs(x[1] - y[1])
    },
  },
  computed: {
    minDistance() {
      let minDist = Infinity
      let city = null
      this.allCooridates.forEach((cord) => {
        let d = this.calculateDistance(cord.coodinate,
this.userCoordinate)
        if (d < minDist) {
          minDist = d
          city = cord.name
        }
      })
      return city
    },
  },
})

```

index.html

```

<div id="app"></div>
<script
src="https://cdn.jsdelivr.net/npm/vue@2/dist/vue.js"></script>
<script src=".//app.js"></script>

```

Suppose the application is running on <http://localhost:8080>.

What will be rendered by the browser?

Options :

6406531930723. ✘ The nearest city to you is: City1

6406531930724. ✘ The nearest city to you is: City2

6406531930725. ✘ The nearest city to you is: City3

6406531930726. ✓ The nearest city to you is: City4

Question Number : 166 Question Id : 640653578184 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the below Vue application with markup file “index.html”, and JavaScript file “app.js”.

app.js

```
new Vue({  
  el: '#app',  
  template: `<div>  
    <input type='text' v-model='num'></input>  
    <div id='lon'>Lucky or not? ${lucky?'Lucky':'Not Lucky'}</div>  
  </div>`,  
  data: {  
    num: 1,  
    prev: 0,  
    current: 1,  
    lucky: false,  
  },  
  watch: {  
    num(num1, num2) {  
      if (num1 == '') {  
        return  
      }  
      this.prev = this.current  
      this.current = Number(num1)  
      this.current > this.prev ? (this.lucky = true) : (this.lucky =  
false)  
    },  
  },  
})
```

index.html

```
<div id="app"></div>  
  <script  
  src="https://cdn.jsdelivr.net/npm/vue@2/dist/vue.js"></script>  
  <script src=".//app.js"></script>
```

Suppose the application is running on '<http://localhost:8080>'. Suppose the user inputs 7 and then 5. What will be rendered inside the div with id 'lon'?

Options :

6406531930727. ✘ Lucky or not? Lucky

6406531930728. ✓ Lucky or not? Not Lucky

6406531930729. ✘ Lucky or not?

6406531930730. ✘ None of these

Question Number : 167 Question Id : 640653578185 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the below Vue application with markup file “index.html”, and JavaScript file “app.js”.

```

app.js
const Sender = {
  template: `<div> Message: <input type='text'
v-model='message'></input> </div>`,
  data() {
    return {
      message: null,
    }
  },
  watch: {
    message(msg) {
      this.$emit('newmsg', this.message)
    },
  },
}
const Receiver = {
  template: '<div id="msg"> {{msg}} </div>',
  props: ['msg'],
}
new Vue({
  el: '#app',
  template: `<div>
<Sender @newmsg = 'updateMessage' />
<Receiver :msg='message' />
</div>`,
  data: {
    message: null,
  },
  methods: {
    updateMessage(msg) {
      this.message = msg.split('').reverse().join('').toUpperCase()
    },
  },
  components: {
    Sender,
    Receiver,
  },
})

```

index.html

```

<div id="app"></div>
<script
src="https://cdn.jsdelivr.net/npm/vue@2/dist/vue.js"></script>
<script src=".//app.js"></script>

```

Suppose the application is running on '<http://localhost:8080>'. If the user inputs 'hello' inside the input box, what will be rendered inside the div with ID 'msg'?

Options :

6406531930731. ✘ hello

6406531930732. ✘ HELLO

6406531930733. ✓ OLLEH

6406531930734. ✘ olleh

MLT

Section Id :	64065339091
Section Number :	11
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	13
Number of Questions to be attempted :	13
Section Marks :	50
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065382705
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 168 Question Id : 640653578186 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406531930735. ✓ YES

6406531930736. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 64065382706

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 169 Question Id : 640653578187 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the following kernel function:

$$k : \mathbb{R}^2 \times \mathbb{R}^2 \rightarrow \mathbb{R}$$

$$k([x_1, x_2]^T, [y_1, y_2]^T) = 1 + x_1y_1 + x_2y_2 + x_1^2y_1^2x_2y_2 + x_1y_1x_2^2y_2^2$$

Find the appropriate transformation mapping ϕ for the given kernel.

Options :

6406531930737. ❌ $\phi([x_1, x_2]^T) = [1, x_1x_2, x_1^2x_2^2]$

6406531930738. ❌ $\phi([x_1, x_2]^T) = [1, x_1, x_2, x_1^2x_2^2]$

6406531930739. ✓ $\phi([x_1, x_2]^T) = [1, x_1, x_2, x_1^2x_2, x_1x_2^2]$

6406531930740. ❌ $\phi([x_1, x_2]^T) = [1, x_1, x_2, x_1x_2, x_1^2x_2^2]$

Question Number : 170 Question Id : 640653578188 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the following Hard K-means clustering problem with four points:

$P(1,1), Q(2,1), R(4,3)$, and $S(5,4)$. Consider the number of clusters to be $k = 2$ and the initial centroids to be $C_1 = (0,0)$ and $C_2 = (4,4)$. After how many iterations will the algorithm terminate and what will be the final centroids? use euclidean distance metric to calculate distance.

Options :

6406531930741. ❌ 2, (1, 1), (4, 4)

6406531930742. ❌ 3, (1, 1), (4, 4)

6406531930743. ✓ 2, (1.5, 1), (4.5, 3.5)

6406531930744. ❌ 4, (1.5, 1), (4.5, 3.5)

Sub-Section Id : 64065382707

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 171 Question Id : 640653578189 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Select all true statements regarding standard PCA applied on a centered dataset.

Options :

6406531930745. ✓ The variance of the dataset along the first principal component is maximum.

6406531930746. ✗ The variance of the dataset along the first principal component is minimum.

6406531930747. ✓ The first principal component is the unit norm eigenvector corresponding to the largest eigenvalue of the covariance matrix.

6406531930748. ✗ The first principal component is the unit norm eigenvector corresponding to the smallest eigenvalue of the covariance matrix.

Question Number : 172 Question Id : 640653578190 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a dataset of 2000 points all of which lie in \mathbb{R}^{30} . If all these points lie in four dimensional low subspace then after applying the PCA algorithm which of the following statements is/are true?

Options :

6406531930749. ✗ The covariance matrix corresponding to this dataset has 30 non-zero eigenvalues.

6406531930750. ✓ The covariance matrix corresponding to this dataset has only four non-zero eigenvalues.

6406531930751. ✓ The residues will become zero after four rounds

6406531930752. ✓ By utilizing four principal component vectors and their corresponding coefficients, we have the ability to reconstruct the complete dataset using representatives.

Sub-Section Number : 4

Sub-Section Id : 64065382708

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 173 Question Id : 640653578191 Question Type : MSQ Is Question

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

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements about kernel PCA is/are always true?

Options :

6406531930753. ✗ The number of principal components corresponding to nonzero eigenvalues obtained using kernel PCA on d dimensional dataset cannot be more than d .

6406531930754. ✓ For every transformation mapping $\phi : \mathbb{R}^d \rightarrow \mathbb{R}^D$, there exists a valid kernel function.

6406531930755. ✓ For two valid kernels $k_1, k_2 : \mathbb{R}^d \times \mathbb{R}^d \rightarrow \mathbb{R}$, $ak_1 + bk_2$ is a valid kernel function. Here both a and b are positive real numbers.

6406531930756. ✗ The output of a valid kernel function can never be a negative real number.

Question Number : 174 Question Id : 640653578193 Question Type : MSQ Is Question

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

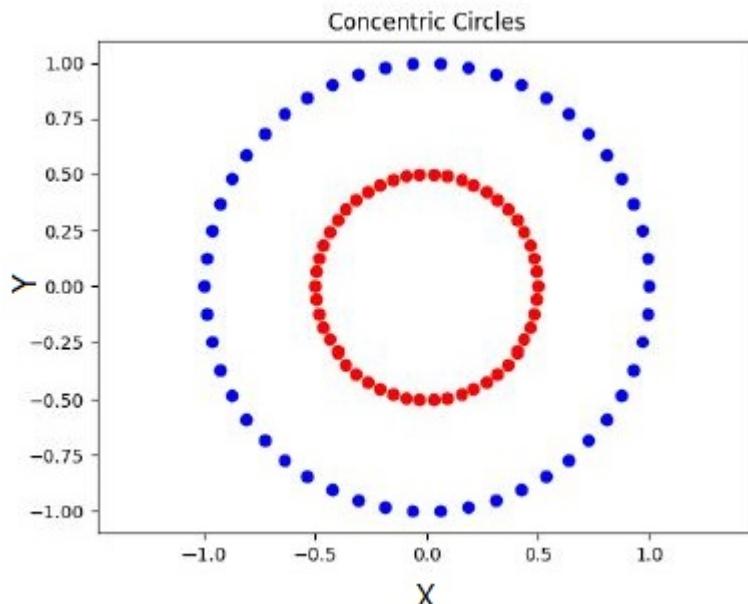
Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

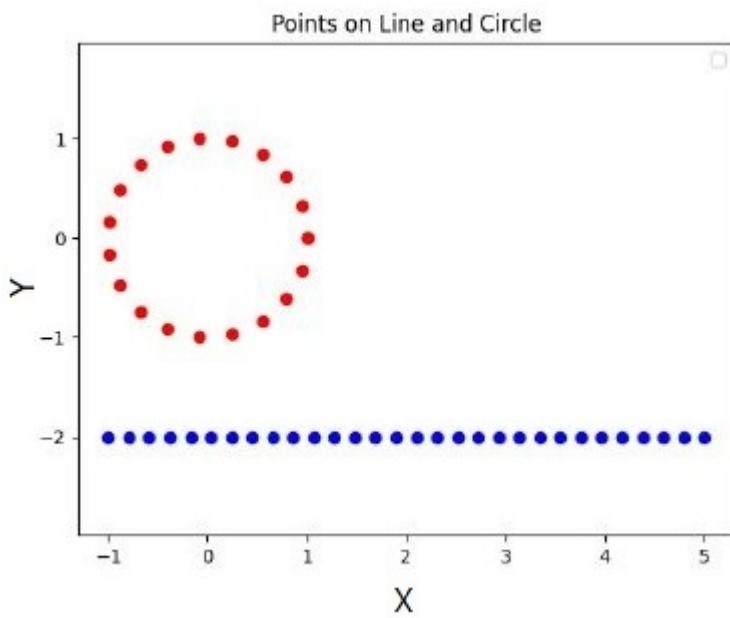
Which of the following clusters cannot be obtained as final clusters using Lloyd's algorithm?

Assume that Lloyd's algorithm was run on these datasets with $k = 2$.

Options :

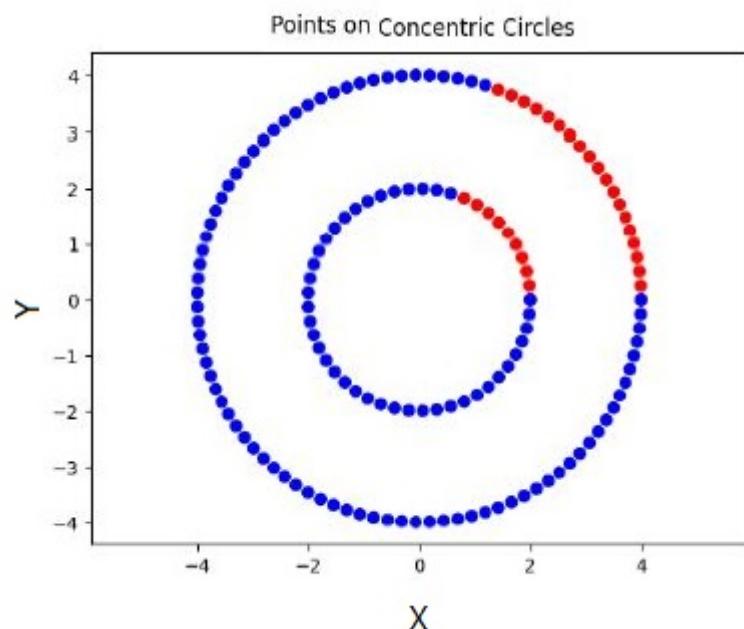
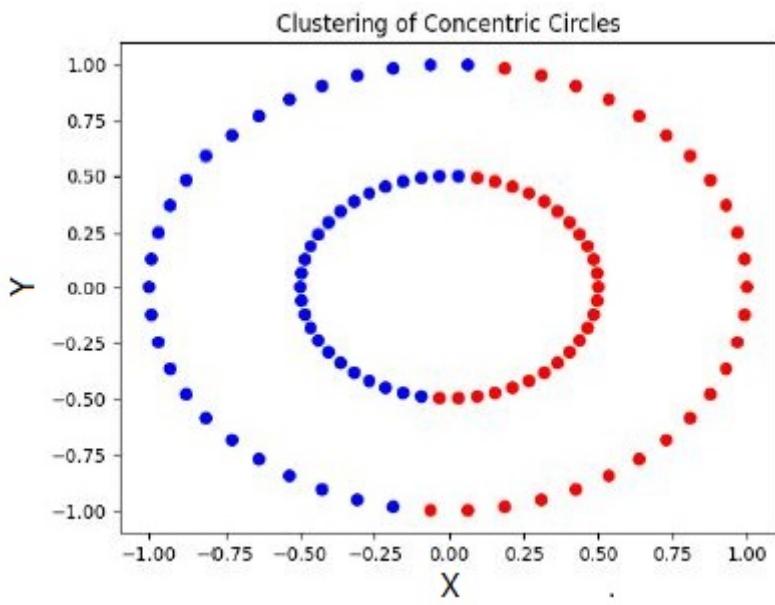


6406531930761. ✓



6406531930762. ✓

6406531930763. ❌



6406531930764. ✓

Sub-Section Number : 5

Sub-Section Id : 64065382709

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 175 Question Id : 640653578192 Question Type : MSQ Is Question

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

Correct Marks : 3.5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements is/are true?

Options :

6406531930757. ✓ $k : \mathbb{R}^2 \times \mathbb{R}^2 \rightarrow \mathbb{R}, k(x_1, x_2) = (x_1^T x_2)^3$ is a valid kernel.

6406531930758. ✗ $k : \mathbb{R}^2 \times \mathbb{R}^2 \rightarrow \mathbb{R}, k(x_1, x_2) = -(x_1^T x_2)^3$ is a valid kernel.

6406531930759. ✓ nonzero Eigenvalues of XX^T and $X^T X$ are the same.

6406531930760. ✗ Eigenvectors of XX^T are same as eigenvectors of $X^T X$.

Sub-Section Number : 6

Sub-Section Id : 64065382710

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 176 **Question Id :** 640653578194 **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 dataset in \mathbb{R} :

$$\{-3, -1, 0, 1, 4, 299, 300, 301\}$$

Lloyd's algorithm ($K = 2$) is run on this dataset with the points -10 and 310 as the initial cluster centers. Let a, b be the final cluster centers on convergence, what is the value of the product ab ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

60

Question Number : 177 **Question Id :** 640653578195 **Question Type :** SA **Calculator :** None

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

Correct Marks : 4

Question Label : Short Answer Question

Consider a dataset that has 100 data-points, each of which is either a zero or one. The Bernoulli distribution is used to model this data. If the MLE estimate for the parameter p of the Bernoulli distribution is 0.3, how many zeros does the dataset have?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

70

Question Number : 178 **Question Id :** 640653578197 **Question Type :** SA **Calculator :** None

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

Correct Marks : 4

Question Label : Short Answer Question

Consider a dataset with 60 points in which all points are either 0 or 1. We use a Bernoulli distribution with the parameter p to model this problem. The prior and posterior distributions for the parameter p are Beta(10,5) and Beta(30,45) respectively. How many data points have the value 0 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 :

40

Sub-Section Number :	7
Sub-Section Id :	64065382711
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 179 Question Id : 640653578196 Question Type : SA Calculator : None**Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 4.5**

Question Label : Short Answer Question

Consider a GMM with two components:

$$\pi_1 = 0.3, \quad \pi_2 = 0.7$$

$$\mu_1 = 0, \quad \sigma_1^2 = 1$$

$$\mu_2 = 1, \quad \sigma_2^2 = 2$$

What is the probability that the point $x = 1.2$ comes from the first component? Use the following table for your reference. Here, $\mathcal{N}(x, \mu, \sigma^2)$ is the density of the Gaussian with mean μ and variance σ^2 evaluated at x .

μ	σ^2	$\mathcal{N}(1.2, \mu, \sigma^2)$
0	1	0.194
0	2	0.197
1	1	0.391
1	2	0.279

Enter your 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 :

0.15 to 0.35

Sub-Section Number : 8

Sub-Section Id : 64065382712

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653578198 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (180 to 181)

Question Label : Comprehension

Standard PCA has been performed on a centered dataset in \mathbb{R}^3 .

The first two principal components are given below:

$$\mathbf{w}_1 = \frac{1}{\sqrt{5}} \cdot \begin{bmatrix} 1 \\ 0 \\ 2 \end{bmatrix}, \quad \mathbf{w}_2 = \frac{1}{\sqrt{6}} \cdot \begin{bmatrix} -2 \\ 1 \\ 1 \end{bmatrix}$$

Consider the following data-point in the dataset:

$[1 \ 2 \ 1]^T$. (a, b) is the representation of this point in the coordinate system formed by the two principal components given above. The first and second coordinates correspond to PC-1 and PC-2 respectively.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 180 Question Id : 640653578199 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 value of a ? Enter your 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 :

1.25 to 1.5

Question Number : 181 **Question Id :** 640653578200 **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 value of b ? Enter your answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.25 to 0.55

MLP

Section Id : 64065339092

Section Number : 12

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 25

Number of Questions to be attempted : 25

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 :	64065382713
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 182 Question Id : 640653578201 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406531930771. ✓ YES

6406531930772. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	64065382714
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 183 Question Id : 640653578202 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following things can be observed from a Histogram ?

Options :

6406531930773. ✓ The range of scale of a numerical feature in the data

6406531930774. ✓ The distribution of a numerical feature in the data

6406531930775. ✗ The null values present in a feature of the data

6406531930776. ✗ The correlation between features and labels in the data

Question Number : 184 Question Id : 640653578210 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following are use cases of ColumnTransformer?

Options :

6406531930810. ✓ Data has some numerical and some categorical features.

6406531930811. ✗ Data has only categorical features and all of them are nominal.

6406531930812. ✓ Data has only categorical features, however, some features are ordinal and some are nominal.

6406531930813. ✗ Data has only numerical features, and all of them are uniformly distributed in range of 0 and 1 (both inclusive).

Question Number : 185 Question Id : 640653578211 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a regression dataset, the features are "Temperature" and "Humidity", and the label is "Precipitation" (i.e. rain fall in centimeter), both the features are numerical and there are no missing values in the dataset. Following code snippet trains a simple model on this dataset, assume necessary imports:

```
data = pd.read_csv('dataset.csv')
X = data[data.columns[:-1]]
y = data[data.columns[-1]]
X_train, X_test, y_train, y_test = train_test_split(X, y,
                                                    test_size = 0.8)
mms = MinMaxScaler()
X_train['Temperature'] = mms.fit_transform(X_train['Temperature'])
X_train['Humidity'] = mms.fit_transform(X_train['Humidity'])

X_test['Temperature'] = mms.fit_transform(X_test['Temperature'])
X_test['Humidity'] = mms.fit_transform(X_test['Humidity'])

lr = LinearRegression().fit(X_train,y_train)
```

Choose the correct statements from the options:

Options :

6406531930814. ❌ The training set will have 20% of the data, which is a good practice.

6406531930815. ✓ The training set size is smaller than test set size.

6406531930816. ✓ The train and test samples are not scaled appropriately.

6406531930817. ✓ One of the fundamental assumption of Machine Learning, which is, training and test data belong to same distribution, is not upheld.

Question Number : 186 Question Id : 640653578213 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following options is/are correct?

Options :

6406531930822. ✓ If the data contains many outliers, scaling using the mean and variance of the data is likely to not work very well.

6406531930823. ✓ RFE first removes a few features which are not important and then fits and removes again and fits. It repeats this iteration until it reaches a suitable number of features.

6406531930824. ✗ A pipeline cannot have any feature selection steps.

6406531930825. ✓ If you will execute model.fit() for a second time, it will start training again using passed data and will remove the existing results.

Question Number : 187 Question Id : 640653578223 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Choose the correct option(s) for the below code

```
import numpy as np
import pandas as pd
from sklearn.datasets import fetch_california_housing
house = fetch_california_housing(as_frame=True)
```

Options :

6406531930867. ✗ house.data.shape will give the count of number of rows and columns for features(attributes) and labels(target) both

6406531930868. ✓ house.target_names will show the name of the target column

6406531930869. ✗ house.data.tail() will show first 5 rows of the data

6406531930870. ✓ house.feature_names will give a list of names of the columns of the feature matrix

Sub-Section Number :	3
Sub-Section Id :	64065382715
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 188 Question Id : 640653578203 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 the below code which option will provide the samples(rows) containing outliers according to the standard Boxplot in the weight feature ?

```
dataset = {
    "height" : [100,103,102,102,176,150,143,133,122,200,230,222,143],
    "weight" : [30,32,33,34,33,33,37,48,44,51,100,123,111]
}
data = pd.DataFrame(dataset, columns=['height','weight'])
q1 = data['weight'].quantile(0.25)
q3 = data['weight'].quantile(0.75)
iqr = q3-q1
```

Options :

6406531930777. ❌ data(data('weight') > (1.5*iqr + q3))

6406531930778. ❌ data[['weight']] > (1.5*iqr + q3)]

6406531930779. ✓ data[data['weight'] > (1.5*iqr + q3)]

6406531930780. ❌ None of these

Question Number : 189 Question Id : 640653578204 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 snippet ?

```
import pandas as pd
import numpy as np
from sklearn.preprocessing import OneHotEncoder

data = {"fruits": ['apple','orange', 'banana', 'orange', 'apple'],
        "price": [10,20,5,20,10]}

df = pd.DataFrame(data)

ohe = OneHotEncoder()
print(ohe.fit_transform(df[['fruits']]).toarray())
```

Options :

6406531930781. ✘ [0 1 2 1 2]

6406531930782. ✘ [[0. 0. 0.],[1. 1. 1.],[2. 2. 2.],[1. 1. 1.],[2. 2. 2.]]

6406531930783. ✓ [[1. 0. 0.],[0. 0. 1.],[0. 1. 0.],[0. 0. 1.],[1. 0. 0.]]

6406531930784. ✘ This code snippet will throw an error

Question Number : 190 Question Id : 640653578205 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 ?

```
import pandas as pd
import numpy as np
from sklearn.preprocessing import OneHotEncoder, StandardScaler
from sklearn.compose import ColumnTransformer

data = {"fruits": ['apple', 'orange', 'banana', 'orange', 'apple'],
        "price": [10, 20, 5, 20, 10],
        "color": ['red', 'orange', 'yellow', 'orange', 'red']}
df = pd.DataFrame(data)

transformers = [
    ('Ohe', OneHotEncoder(), [0,2]),
    ('scaler', StandardScaler(), [1])
]
ct = ColumnTransformer(transformers = transformers)

transformed_df = ct.fit_transform(df)
print(transformed_df.shape)
```

Options :

6406531930785. ✘ (7,5)

6406531930786. ✘ (3,5)

6406531930787. ✘ (5,3)

6406531930788. ✓ (5,7)

Question Number : 191 Question Id : 640653578206 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(are) true statements?

Statement 1: A dataset is splitted into the train set and the test set to obtain the better performance for the unseen data

statement 2 : We should not use the learning, observations and information gained from the test set while training the model

Options :

6406531930789. ✘ Statement 1 is True and statement 2 is False

6406531930790. ✘ Statement 1 is False and statement 2 is True

6406531930791. ✓ Statement 1 and statement 2 both are True

6406531930792. ✘ Both the statements are False

Question Number : 192 Question Id : 640653578209 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 following code snippet, assume necessary imports:

```
pipe = Pipeline([('reduce_dim', PCA()), ('clf', SVC())])
```

Which of the following represents correct method to tune hyper parameters with above pipeline object:

Options :

```
param_grid = dict(reduce_dim__n_components=[2, 5, 10],  
                  clf__C=[0.1, 10, 100])
```

6406531930806. ✓ grid_search = GridSearchCV(pipe, param_grid=param_grid)

```
param_grid = dict(n_components__reduce_dim=[2, 5, 10],  
                  C__clf=[0.1, 10, 100])
```

6406531930807. ✘ grid_search = GridSearchCV(pipe, param_grid=param_grid)

```
param_grid = dict(n_components=[2, 5, 10],  
                  C=[0.1, 10, 100])
```

6406531930808. ✘ grid_search = GridSearchCV(pipe, param_grid=param_grid)

```
param_grid = dict(reduce_dim['n_components']=[2, 5, 10],  
                  clf['C']=[0.1, 10, 100])
```

6406531930809. ✘ grid_search = GridSearchCV(pipe, param_grid=param_grid)

Question Number : 193 Question Id : 640653578215 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:

```
from sklearn.datasets import make_regression
from sklearn.datasets import make_classification
from sklearn.linear_model import LinearRegression
from sklearn.linear_model import LogisticRegression

X_r, y_r = make_regression()
lr = LinearRegression()
lr.fit(X_r, y_r)
score1 = lr.score(X_r, y_r)

X_c, y_c = make_classification()
logr = LogisticRegression()
logr.fit(X_c, y_c)
score2 = logr.score(X_c, y_c)

print(score1)
print(score2)
```

Which metrics will be contained in score1 and score2 respectively?

Options :

6406531930832. ✘ Accuracy, Accuracy

6406531930833. ✘ R2 score, R2 score

6406531930834. ✘ Accuracy, R2 score

6406531930835. ✓ R2 score, Accuracy

6406531930836. ✘ F1 score, Precision

6406531930837. ✘ Precision, Recall

6406531930838. ✘ MAE, MSE

6406531930839. ✘ The code will result in an error

Question Number : 194 Question Id : 640653578218 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 you have a trained stochastic gradient regressor model by enabling warm start parameter. What happens if you call the fit method again with the same model instance and different training data?

```
from sklearn.linear_model import SGDRegressor  
  
model = SGDRegressor(warm_start=True)  
  
X_train = [[0, 0], [1, 1]]  
y_train = [0, 1]  
model.fit(X_train, y_train)  
  
# Call fit() again with different training data  
X_train_new = [[2, 2], [3, 3]]  
y_train_new = [2, 3]  
model.fit(X_train_new, y_train_new)
```

Options :

6406531930847. ❌ The new training data is ignored, and the model continues training from the previously learned weights.

6406531930848. ✓ The new training data is used to update the model weights, but the previous weights are discarded.

6406531930849. ❌ An error is raised, indicating that the model has already been trained.

6406531930850. ❌ The model weights are reset, and the model begins training again from scratch.

Question Number : 195 Question Id : 640653578219 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

What is the purpose of the *tol* parameter in the fit method of the stochastic regressor?

```
from sklearn.linear_model import SGDRegressor
from sklearn.model_selection import train_test_split
from sklearn.metrics import mean_squared_error

model = SGDRegressor()

X_train, X_val, y_train, y_val = train_test_split(X, y, test_size=0.2,
→ random_state=42)

model.fit(X_train, y_train, early_stopping=True, validation_data=(X_val,
→ y_val), validation_fraction=0.2, tol=0.001, n_iter_no_change=5)

y_pred = model.predict(X_test)

mse = mean_squared_error(y_test, y_pred)
```

Options :

6406531930851. ✓ It specifies the tolerance level for early stopping based on the change in the validation error.

6406531930852. ✗ It controls the learning rate of the stochastic regressor during training.

6406531930853. ✗ It determines the maximum number of iterations for the training process.

6406531930854. ✗ It defines the fraction of the validation set used for early stopping.

Question Number : 196 Question Id : 640653578220 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 make_regression
X, y = make_regression(n_samples = 8, n_features = 3)
from sklearn.preprocessing import PolynomialFeatures
poly_transform = PolynomialFeatures(degree=3, interaction_only=True)
X_trans = poly_transform.fit_transform(X,y)
print(X_trans.shape)
```

Options :

6406531930855. ✘ (8,4)

6406531930856. ✘ (8,5)

6406531930857. ✓ (8,8)

6406531930858. ✘ (8,10)

Question Number : 197 Question Id : 640653578221 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

How many models with different combinations of parameter values will get trained in the following code?

```
from sklearn.model_selection import GridSearchCV
from sklearn.linear_model import SGDRegressor

params = [
    {'alpha': [0.001,0.01,0.1,1], 'learning_rate': ['constant','optimal']},
    {'warm_start':[True], 'alpha':
        [0.0001,0.001], 'learning_rate':['constant','invscaling']}]

grid= GridSearchCV(estimator= SGDRegressor(),
                    param_grid = params,
                    cv= 2,
                    scoring = 'neg_mean_squared_error',
                    return_train_score=True
                    )

grid.fit(X_train,y_train)
```

Options :

6406531930859. ✘ 10

6406531930860. ✓ 12

6406531930861. ✘ 14

6406531930862. ✘ 16

Question Number : 198 Question Id : 640653578222 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 will be the correct option for the below code to control the regularization rate ?

```
from sklearn.linear_model import Ridge
import numpy as np
model = Ridge(_____ = 0.001)
model.fit(X_train,y_train)
```

Options :

6406531930863. ✘ max_iter

6406531930864. ✘ lambda

6406531930865. ✓ alpha

6406531930866. ✘ solver

Question Number : 199 Question Id : 640653578224 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

To see the distribution of the data along each numerical feature which of the following codes will show all the histograms?

- Variable name **df** contains all the data as pandas.core.frame.DataFrame type
- Assume all the necessary imports are made

Options :

6406531930871. ✓ df.hist()

6406531930872. ✗ df.histplot()

6406531930873. ✗ pandas.hist(df)

6406531930874. ✗ seaborn.histogram(df)

Question Number : 200 Question Id : 640653578225 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 can affect performance of the Simple linear Regression while training the model?

Options :

6406531930875. ✓ Scaling

6406531930876. ✗ Kernel

6406531930877. ✗ Range of the target column

6406531930878. ✗ r2_score

Sub-Section Id : 64065382716

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 201 Question Id : 640653578207 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

which of the following methods come under sklearn's model_selection module ?

Options :

6406531930793. ✓ train_test_split

6406531930794. ✗ ColumnTransformer

6406531930795. ✓ GridSearchCV

6406531930796. ✗ Pipeline

6406531930797. ✓ StratifiedShuffleSplit

6406531930798. ✓ KFold

6406531930799. ✗ mean_absolute_error

6406531930800. ✓ cross_val_score

6406531930801. ✗ trees

Question Number : 202 Question Id : 640653578214 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following code block:

```
from sklearn.linear_model import linear_regression
from sklearn.model_selection import cross_val_score
from sklearn.model_selection import ShuffleSplit
lin_reg = linear_regression()
shuffle_split = ShuffleSplit(n_splits=5, test_size=0.2, random_state=42)
score = cross_val_score(lin_reg, X, y, cv=shuffle_split,
scoring='-----')
```

Which of the following may be appropriate to be filled in the blank space?

Options :

6406531930826. ✘ mean_squared_error

6406531930827. ✓ neg_mean_squared_error

6406531930828. ✓ r2

6406531930829. ✘ neg_r2

6406531930830. ✘ accuracy

6406531930831. ✘ neg_accuracy

Sub-Section Number :

5

Sub-Section Id :

64065382717

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 203 Question Id : 640653578208 Question Type : MSQ Is Question

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

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following are correct statements?

Options :

6406531930802. ✓ Data with missing values can not be used to train a logistic or linear regression model.

6406531930803. ✗ KNN model is agnostic to scale of numerical features.

6406531930804. ✓ Like KNN imputer, other models e.g. decision tree, can also be used for imputation.

6406531930805. ✗ Filling 0 (zero) in place of missing values, is always the best approach for imputation.

Sub-Section Number : 6

Sub-Section Id : 64065382718

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 204 Question Id : 640653578212 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

What will be the output of the following code:

```
from sklearn.feature_extraction import DictVectorizer

X = [{'feature_1': 3, 'feature_2': 1}, {'feature_1': 2, 'feature_3': 3}]
transformer = DictVectorizer(sparse= False)
print(transformer.fit_transform(X))
```

Options :

6406531930818. ✘ [[3. 1.]
[2. 3.]]

6406531930819. ✘ [[3. 1.]
[3. 0.]]

6406531930820. ✓ [[3. 1. 0.]
[2. 0. 3.]]

6406531930821. ✘ [[3. 1. 0.]
[2. 3. 0.]]

Sub-Section Number : 7

Sub-Section Id : 64065382719

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 205 Question Id : 640653578216 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:

```
import numpy as np
from sklearn.model_selection import ShuffleSplit
X = np.array([[1, 2], [3, 4], [5, 6], [7, 8], [1, 3], [2, 3], [3, 3], [4, 3]])
y = np.array([0, 1, 0, 1, 1, 0, 1, 0])
rs = ShuffleSplit(n_splits=5, test_size=.25, random_state=0)
for each in rs.split(X):
    print(each[0], each[1])
```

Which of the following may be the correct output of the above code?:

Options :

- [1 7 3 0 5 4] [6 2]
- [3 7 0 4 2 5] [1 6]
- [3 4 7 0 6 1] [5 2]
- [6 7 3 4 1 0] [2 5]

6406531930840. ✓ [1 6 3 2 0 7] [4 5]

- [1 7 3 0 5] [4 6 2]
- [3 7 0 4 2] [5 1 6]
- [3 4 7 0 6] [1 5 2]
- [6 7 3 4 1] [0 2 5]

6406531930841. ✘ [1 6 3 2 0] [7 4 5]

- [1 7 3 0] [5 4 6 2]
- [3 7 0 4] [2 5 1 6]
- [3 4 7 0] [6 1 5 2]
- [6 7 3 4] [1 0 2 5]

6406531930842. ✘ [1 6 3 2] [0 7 4 5]

- [1 7 3 0 5] [5 6 2]
- [3 7 0 4 2] [4 1 6]
- [3 4 7 0 6] [7 5 2]
- [6 7 3 4 1] [6 2 5]

6406531930843. ✘ [1 6 3 2 0] [1 4 5]

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:

```
import numpy as np
from sklearn.linear_model import LinearRegression
X = np.array([[1, 1], [1, 2], [2, 2], [2, 3], [2, 1], [3, 3]])
#  $y = 1 * x_0 + 2 * x_1 + 3$ 
y = np.dot(X, np.array([1, 2])) + 3

reg1 = LinearRegression(fit_intercept = False).fit(X, y)
s1 = reg1.score(X, y)

reg2 = LinearRegression(fit_intercept = True).fit(X, y)
s2 = reg2.score(X, y)
```

Which of the following is more likely to be true?

Options :

6406531930844. ✘ $s1 = s2$

6406531930845. ✓ $s1 < s2$

6406531930846. ✘ $s1 > s2$

BDM

Section Id :	64065339093
Section Number :	13
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	11
Number of Questions to be attempted :	11
Section Marks :	16
Display Number Panel :	Yes
Group All Questions :	No

Enable Mark as Answered Mark for Review and

Yes

Clear Response :

Maximum Instruction Time :

0

Sub-Section Number :

1

Sub-Section Id :

64065382720

Question Shuffling Allowed :

No

Is Section Default? :

null

Question Number : 207 Question Id : 640653578226 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406531930879. ✓ YES

6406531930880. ✘ NO

Sub-Section Number :

2

Sub-Section Id :

64065382721

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 208 Question Id : 640653578227 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:

i. Total utility	a. Satisfaction gained from consuming one additional unit of good or service
ii. Marginal utility	b. Aggregate satisfaction gained from consuming a specific quantity of good or service.
iii. Average utility	c. Satisfaction gained from per unit of good or service consumed.
----	d. Satisfaction gained from consuming one additional unit of good or service after the satisfaction levels match average utility threshold.

Options :

6406531930881. ✘ i-b, ii-d, iii-a

6406531930882. ✘ i-d, ii-c, iii-b

6406531930883. ✘ i-b, ii-a, iii-d

6406531930884. ✘ i-c, ii-a, iii-d

6406531930885. ✓ i-b, ii-a, iii-c

6406531930886. ✘ i-c, ii-d, iii-a

Question Number : 209 Question Id : 640653578228 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

Theoretically, a customer will keep buying an item as long as _____ of the item is _____ the per unit price of the item.

Options :

6406531930887. ✘ total utility; lesser than

6406531930888. ✘ variable cost; greater than

6406531930889. ✓ marginal utility; greater than

6406531930890. ✘ variable cost; lesser than

6406531930891. ✘ marginal utility; lesser than

Sub-Section Number : 3

Sub-Section Id : 64065382722

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 210 Question Id : 640653578229 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following is the single best differentiator between luxury and normal goods?

Options :

6406531930892. ✘ Supply

6406531930893. ✘ Demand

6406531930894. ✘ Production costs

6406531930895. ✘ Capital expense

6406531930896. ✓ Price elasticity of demand

Question Number : 211 Question Id : 640653578230 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

A soap manufacturing unit produces 5000 boxes of soap at a total cost of Rs. 250,000. The variable cost per box of soap is Rs. 20. What is the average cost per box of soap?

Options :

6406531930897. ✘ Rs. 250

6406531930898. ✓ Rs. 50

6406531930899. ✘ Rs. 12500

6406531930900. ✘ Rs. 5

Question Number : 212 Question Id : 640653578231 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

When a consumer reaches the point of satiation or overconsumption, the customer's:

Options :

6406531930901. ✘ total utility of the good is zero.

6406531930902. ✘ total utility of the good is at its maximum.

6406531930903. ✓ marginal utility becomes zero

6406531930904. ✘ total utility of the good is greater than twice the price of the good

Question Number : 213 Question Id : 640653578232 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

_____ is a measure of a company's liquidity and short-term solvency.

Options :

6406531930905. ✓ current ratio

6406531930906. ✘ quick ratio

6406531930907. ✘ cash ratio

6406531930908. ✘ inventory ratio

Question Number : 214 Question Id : 640653578235 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 is maximum when:

Options :

6406531930917. ✘ marginal utility is negative

6406531930918. ✓ marginal utility is zero

6406531930919. ✘ marginal utility is increasing

6406531930920. ✘ marginal utility is decreasing

Question Number : 215 Question Id : 640653578236 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 _____ at (a / an) _____ rate when marginal utility is decreasing but positive.

Options :

6406531930921. ✘ decreases, increasing

6406531930922. ✘ decreases, decreasing

6406531930923. ✘ increases, increasing

6406531930924. ✓ increases, decreasing

Sub-Section Number :	4
Sub-Section Id :	64065382723
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 216 Question Id : 640653578233 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

A Company has the following information for the fiscal year ending December 31, 2022:

- Current Assets: \$800,000
- Current Liabilities: \$400,000
- Inventory: \$200,000

Calculate the current ratio for the company.

Options :

6406531930909. ✘ 1.50

6406531930910. ✘ 2

6406531930911. ✘ 3

6406531930912. ✓ 2.50

Question Number : 217 Question Id : 640653578234 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

Quick ratio of a company with current liabilities of Rs. 1 crore is 0.6. If the company liquidates some long-term assets and receives 25 lakhs in cash, then its quick ratio will become _____.

Options :

6406531930913. ✘ 0.50

6406531930914. ✓ 0.85

6406531930915. ✘ 0.35

6406531930916. ✘ 0.55

Business Analytics

Section Id :	64065339094
Section Number :	14
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	11
Number of Questions to be attempted :	11
Section Marks :	20
Display Number Panel :	Yes
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	64065382724
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 218 Question Id : 640653578237 Question Type : MCQ Is Question**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 0**

Question Label : Multiple Choice Question

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(COMPUTER BASED EXAM)"**

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

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

Options :

6406531930925. ✓ YES

6406531930926. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 64065382725

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 219 Question Id : 640653578238 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

When is a "Table" the best visualisation option for presenting data?

Options :

6406531930927. ✗ When the outliers in the data need to be shown

6406531930928. ✗ When trends in the data need to be shown

6406531930929. ✗ When proportions in the data need to be shown

6406531930930. ✓ None of these

Question Number : 220 Question Id : 640653578249 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 table below provides the summary statistic for a random variable. Then what distribution could be a good fit for this random variable?

Summary Statistic	Value
Number of observations	300
Mean	20
Median	22
Mode	20
Std. Deviation	3
Minimum	2
Maximum	50

Options :

6406531930948. ✘ Poisson distribution

6406531930949. ✓ Normal distribution

6406531930950. ✘ Uniform distribution

6406531930951. ✘ Standard normal distribution

Question Number : 221 Question Id : 640653578256 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 linear demand response curve, the satiating price is __

Options :

6406531930967. ✘ The price at which the profits are maximum

6406531930968. ✓ The price at which demand is zero

6406531930969. ✘ The price beyond which the consumer surplus exists

6406531930970. ✳ The price beyond which latent demand exists

Sub-Section Number :	3
Sub-Section Id :	64065382726
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 222 Question Id : 640653578239 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following distributions is/are not symmetric in nature (select all that are applicable)?

Options :

6406531930931. ✳ Standard Normal distribution

6406531930932. ✳ Standard Binomial distribution

6406531930933. ✳ Uniform distribution between [-1 to +1]

6406531930934. ✓ Poisson distribution

Question Number : 223 Question Id : 640653578250 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

A distribution is left tailed if (select all that is applicable)

Options :

6406531930952. ✳ Coefficient of variation is positive

6406531930953. ✳ Skewness is positive

6406531930954. ✓ Skewness is negative

6406531930955. ❌ Cannot say without the histogram

Question Number : 224 Question Id : 640653578254 Question Type : MSQ Is Question

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

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

For a demand response curve which has constant elasticity, which of the following statements are true (choose all that are applicable)

Options :

6406531930962. ❌ If the curve is for an inelastic product, the revenue is increased only by setting price close to zero

6406531930963. ✓ If the curve is for an inelastic product, the revenue is increased by simply increasing the prices

6406531930964. ❌ If the curve is for an elastic product, the revenue is increased by simply increasing the prices

6406531930965. ✓ If the curve is for an elastic product, the revenue is increased only by setting price close to zero

Sub-Section Number : 4

Sub-Section Id : 64065382727

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 225 Question Id : 640653578255 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

Suppose a factory manufactures products on three machines A, B and C. Suppose 65% of total output comes from machine A, 30% of total output comes from machine B and 5% of total output comes from machine C. From the past data, it is known that 1% of products by machine A are

defectives, 2% of products by machine B are defectives and 10% of products by machine C are defectives. What is the probability that the product has come from machine B, given that it is defective?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.32 to 0.36

Sub-Section Number : 5

Sub-Section Id : 64065382728

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653578240 **Question Type :** COMPREHENSION **Sub Question Shuffling Allowed :** No **Group Comprehension Questions :** No **Question Pattern Type :** NonMatrix

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

Question Numbers : (226 to 230)

Question Label : Comprehension

Say, Table-1 specifies the win results for the teams that batted first during the PARADOX Cricket Games. You are now interested to generate more data on win margins for Teams that bat first during future PARADOX games, which will be used as part of your business proposal to improve the pitch. Accordingly, you are told that the win margins are uniformly distributed between 1 and 10 runs U[1,10] for any given game in the future. Then answer the given subquestions.

Game	Result for Team Batting First
Game-1	Won by 5 Runs
Game-2	Won by 4 Runs
Game-3	Won by 6 Runs
Game-4	Won by 3 Runs
Game-5	Won by 7 Runs

Table-1

Sub questions

Question Number : 226 Question Id : 640653578241 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 expected number of runs by which a team batting first will win a game?

Note: Round your answer to one decimal point. Example, if your answer is "1.245", enter the answer as "1.2"

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5.5

Question Number : 227 Question Id : 640653578242 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 value of the computed test statistic?

Note: Round your answer to one decimal point. Example, if your answer is "1.245", enter the answer as "1.2"

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

2 to 2.2

Question Number : 228 Question Id : 640653578243 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 number of degrees of freedom for the test?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 229 Question Id : 640653578244 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 p-value of the chi-square goodness of fit test represents __

Options :

6406531930938. ✘ The chance of observing the sample when the null hypothesis is false

6406531930939. ✘ The chance of observing the sample when the alternative hypothesis is true

6406531930940. ✘ The chance of observing the sample at the specified level of significance

6406531930941. ✓ None of these

Question Number : 230 Question Id : 640653578245 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

If the p-value for the test is 0.75, then what should be the *minimum level of significance* needed if we need to conclude that the sample indeed comes from a U[1,10]

Note: Round your answer to one decimal point. Example, if your answer is "1.245", enter the answer as "1.2"

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.75 to 0.76

Sub-Section Number : 6

Sub-Section Id : 64065382729

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653578246 Question Type : COMPREHENSION Sub Question Shuffling

Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

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

Question Numbers : (231 to 232)

Question Label : Comprehension

Say Table-2, provides the data on the number of enrolments in the three BSc courses for "Male"and "Female" gender students. Given this information, answer the given subquestions.

	<i>Diploma in Data Science</i>	<i>Diploma in Programming</i>	<i>BS in Electronic Systems</i>
<i>Male</i>	30	40	30
<i>Female</i>	55	20	25

Table-2

Sub questions

Question Number : 231 Question Id : 640653578247 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 value for the computed test statistic? (*Note-1: round your final answer to two decimal places. Example: If your answer is "1.2345" enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

14.00 to 15.00

Question Number : 232 Question Id : 640653578248 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

If a 20% confidence interval is considered, then which of the following statements is/are true (choose all that is applicable)

Options :

6406531930944. ✓ If the p-value for the test is 0.35, conclude that the course enrolments are independent of gender

6406531930945. ✖ If the p-value for the test is 0.35, conclude that the course enrolments are not independent of gender

6406531930946. ✖ If the computed test statistic is less than the chi-square tabulated, then conclude that the course enrolments are not independent of gender

6406531930947. ✖ If the computed test statistic is greater than the chi-square tabulated, then conclude that the course enrolments are independent of gender

Sub-Section Number : 7

Sub-Section Id : 64065382730

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653578251 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (233 to 234)

Question Label : Comprehension

Your local grosser has observed that the demand for Butter Milk follows a linear demand response curve. Hence, he has decided to raise the "Butter Milk" price by Rs. 5 rupees per bottle to Rs. 15 per bottle. If the demand was 100 units per day before the rise and is now 80 units per day after the rise, then answer the given subquestions.

Sub questions

Question Number : 233 Question Id : 640653578252 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 elasticity of demand?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.4 to 0.42

Question Number : 234 Question Id : 640653578253 Question Type : MSQ Is Question

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

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

Given the computed elasticity, what can you say about the "Butter Milk" demand? (choose all that are applicable)

Options :

6406531930957. ✘ It is elastic

6406531930958. ✓ It is inelastic

6406531930959. ✘ It is a luxury

6406531930960. ✘ It is a necessity

6406531930961. ✘ Cannot say, insufficient information

System Commands

Section Id : 64065339095

Section Number : 15

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 :	64065382731
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 235 Question Id : 640653578257 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "[DIPLOMA LEVEL : SYSTEM COMMANDS \(COMPUTER BASED EXAM\)](#)"

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

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

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

Options :

6406531930971. ✓ YES

6406531930972. ✘ NO

Sub-Section Number :	2
Sub-Section Id :	64065382732
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 236 Question Id : 640653578258 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

```
mkdir mydir
touch mydir/file1.txt;touch mydir/file2.txt
mkdir mydir/subdir;touch mydir/subdir/file3.txt
rmdir mydir/subdir
```

Select the output of the above script.

Options :

6406531930973. ✘ remove directory subdir

6406531930974. ✘ remove directory dir and subdir

6406531930975. ✘ remove files from subdir

6406531930976. ✓ exit with exit code (not 0)

Sub-Section Number : 3

Sub-Section Id : 64065382733

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 237 Question Id : 640653578259 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

```
#!/bin/bash
export MY_VAR="Sunset"
my_var="Sunrise"
echo "Var11 is: $MY_VAR"
echo "Var12 is: $my_var"
(
    my_var="Sun_rise"
    MY_VAR_var="Sun_set"
    echo "Var21 is: $MY_VAR"
    echo "Var22 is: $my_var"
    (
        MY_VAR="Sun@rise"
        my_var="Sun@set"
        echo "Var31 is: $MY_VAR"
        echo "Var32 is:${my_var}"
    ) & disown
)
wait
echo "Var41 is: $MY_VAR"
echo "var42 is: $my_var"
```

What will be the value of Var42 at the end of execution?

Use the following information if needed.

```
disown: disown [-h] [-ar] [jobspec ... | pid ...]
  Remove jobs from current shell.

  Removes each JOBSPEC argument from the table of active
  jobs. Without
    any JOBSPECs, the shell uses its notion of the current
  job.
```

Options:

```
-a      remove all jobs if JOBSPEC is not supplied
-h      mark each JOBSPEC so that SIGHUP is not
sent to the job if the
          shell receives a SIGHUP
-r      remove only running jobs
```

Exit Status:

```
Returns success unless an invalid option or JOBSPEC is
given.
```

```
wait: wait [-n] [id ...]
  Wait for job completion and return exit status.
```

```
Waits for each process identified by an ID, which may
be a process ID or a
          job specification, and reports its termination status.
If ID is not
  given, waits for all currently active child processes,
and the return
  status is zero. If ID is a job specification, waits
for all processes
  in that job's pipeline.
```

```
If the -n option is supplied, waits for the next job
to terminate and
  returns its exit status.
```

Exit Status:

```
Returns the status of the last ID; fails if ID is
invalid or an invalid
  option is given.
```

Options :

6406531930977. ✓ Sunrise

6406531930978. ✖ Sun_rise

6406531930979. ✖ Sun@rise

6406531930980. ✖ Sun@set

Question Number : 238 Question Id : 640653578260 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

Identify the correct pair for the output of each command.

```
$ date
Mon Jun 12 12:28:02 IST 2023
$ date_disp=($(date)) # creates an array. each space
separated fields becomes an element.
$ echo $date_disp
$ echo ${date_disp[5]}
$ echo ${date_disp[5]}
$ echo ${date_disp:1:8}the
```

Sr.No	command	option	output
1	echo \$date_disp	a	onthe
2	echo \${date_disp[5]}	b	mon[5]
3	echo \${date_disp[5]}	c	2023
4	echo \${date_disp:1:8}the	d	Mon

Options :

6406531930981. ✖ 1->b,2->a,3->c,4->d

6406531930982. ✖ 1->d, 2->b, 3 ->c, 4->a

6406531930983. ✓ 1->d, 2->c, 3->b, 4->a

6406531930984. ✖ none of these

Question Number : 239 Question Id : 640653578267 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 6

Question Label : Multiple Choice Question

Following lines are a part of a shell script for job submission to a server. Assume that the PBS_JOBID stores 123456.pbs value and \$HOME stores /user value. What would be the value of tempdir variable.

```
tpdir=`echo $PBS_JOBID | cut -f 1 -d .`  
tempdir=$HOME/scratch/job$tpdir  
mkdir -p $tempdir  
cd $tempdir
```

Options :

6406531931006. ✘ /user/scratch/jobpbs

6406531931007. ✘ job123456

6406531931008. ✓ /user/scratch/job123456

6406531931009. ✘ /scratch/jobpbs

Question Number : 240 Question Id : 640653578269 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 most appropriate regex to match an email address. The regex is provided in Extended Regular Expression Engine (ERE).

Options :

6406531931011. ✘ [A-Za-z0-9._%+-]+@[A-Za-z0-9.-]+.[A-Za-z]{2,}

6406531931012.

✓ \b[A-Za-z0-9._%+-]+@[A-Za-z0-9.-]+\.[A-Za-z]{2,}\b

6406531931013. ✘ [A-Za-z0-9._%+-]+@[A-Za-z0-9.-]+\.[A-Za-z]{2,}

6406531931014. ✘ \b[A-Za-z0-9._%+-]*@[A-Za-z0-9.-]*\.[A-Za-z]{2,}\b

Question Number : 241 Question Id : 640653578270 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

```
$ tr --help
```

Usage: tr [OPTION]... SET1 [SET2]

Translate, squeeze, and/or delete characters from standard input,

writing to standard output.

-c, -C, --complement use the complement of SET1

-d, --delete delete characters in SET1, do not translate

-s, --squeeze-repeats replace each sequence of a repeated character

that is listed in the last

specified SET,

with a single occurrence of

that character

-t, --truncate-set1 first truncate SET1 to length of SET2

--help display this help and exit

--version output version information and exit

SETs are specified as strings of characters. Most represent themselves.

Interpreted sequences are:

\NNN	character with octal value NNN (1 to 3 octal digits)
\\"	backslash
\a	audible BEL
\b	backspace
\f	form feed
\n	new line
\r	return
\t	horizontal tab
\v	vertical tab
CHAR1-CHAR2	all characters from CHAR1 to CHAR2 in ascending order
[CHAR*]	in SET2, copies of CHAR until length of SET1
[CHAR*REPEAT]	REPEAT copies of CHAR, REPEAT octal if starting with 0
[:alnum:]	all letters and digits
[:alpha:]	all letters
[:blank:]	all horizontal whitespace
[:cntrl:]	all control characters
[:digit:]	all digits
[:graph:]	all printable characters, not including space
[:lower:]	all lower case letters
[:print:]	all printable characters, including space
[:punct:]	all punctuation characters
[:space:]	all horizontal or vertical whitespace
[:upper:]	all upper case letters
[:xdigit:]	all hexadecimal digits
[=CHAR=]	all characters which are equivalent to

CHAR

Translation occurs if -d is not given and both SET1 and SET2 appear.

-t may be used only when translating. SET2 is extended to length of

SET1 by repeating its last character as necessary. Excess characters

of SET2 are ignored. Only [:lower:] and [:upper:] are guaranteed to

expand in ascending order; used in SET2 while translating, they may

only be used in pairs to specify case conversion. -s uses the last

specified SET, and occurs after translation or deletion.

GNU coreutils online help:

<<https://www.gnu.org/software/coreutils/>>

Full documentation

<<https://www.gnu.org/software/coreutils/tr>>

or available locally via: info '(coreutils) tr invocation'

Using the above context, choose the command that deletes all occurrences of a .

Options :

cat myfile.txt | tr 'a' '' # there is space between
6406531931015. ✘ single quotes

cat myfile.txt | tr ' ' 'a' # there is space between
6406531931016. ✘ single quotes

6406531931017. ✓ cat myfile.txt | tr -d 'a'

6406531931018. ✘ cat myfile.txt | tr -d '\a'

Sub-Section Number :	4
Sub-Section Id :	64065382734
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 242 Question Id : 640653578261 Question Type : MCQ Is Question

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

Correct Marks : 7

Question Label : Multiple Choice Question

The following script takes list of file names as input and finds if the file is executable and counts and lists out executable files. Identify the missing code block from the following options.

```
#!/bin/bash

files="$@"
executable_files=()

*****
***Missing Code***
*****


echo "Number of executable files: ${#executable_files[@]}"
echo "Executable files:"
for file in "${executable_files[@]}"
do
    echo "$file"
done
```

Options :

6406531930985. ✓

```
for file in "${files[@]}"
do
    if [ -x "$file" ]
    then
        executable_files+="$file"
    fi
done
```

```
for file in "${files[@]}"
do
    if [ -x "$file" ]
    then
        executable_files+="$file"
    fi
done
```

6406531930986. ✎

```
for file in "${files[@]}"
do
    if [ -x "$file" ]
    then
        executable_files+="$file"
    fi
done
```

6406531930987. ✎

```
for file in "${files[@]}"
do
    if [ -f "$file" ]
    then
        executable_files+="$file"
    fi
done
```

6406531930988. ✎

Question Number : 243 Question Id : 640653578264 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

Which of the following command will generate output for both test.out and test.err files. Assume that the ech is not a command and will generate an error message.

Options :

6406531930997. ❌ (echo "test" && ech) > test.err 2>&1 | tee -a test.out

6406531930998. ✓ (echo "test" && ech) 2> test.err | tee >test.out

6406531930999. ❌ (echo "test" && ech) > test.err 2>&1 | tee >test.out

6406531931000. ❌ \$(echo "test" && ech) > test.err 2>&1 | tee >test.out

Sub-Section Number : 5

Sub-Section Id : 64065382735

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 244 Question Id : 640653578262 Question Type : MSQ Is Question

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

Correct Marks : 8 Max. Selectable Options : 0

Question Label : Multiple Select Question

Select the regex to extract only the value of "email" from the below JSON file names as test.json.

```
[  
 {  
   "name": "Chadwick Cummings",  
   "email": "nulla.dignissim.maecenas@hotmail.org",  
   "address": "326-2072 Sagittis Road",  
   "numberrange": 9,  
   "alphanumeric": "ESM17JCJ7NR"  
,  
 {  
   "name": "Isaac Whitaker",  
   "email": "vitae.semper.egestas@icloud.ca",  
   "address": "589-9277 Vivamus St.",  
   "numberrange": 3,  
   "alphanumeric": "CTI05YDP7BX"  
,  
 {  
   "name": "Bethany Potter",  
   "email": "enim.gravida@protonmail.com",  
   "address": "P.O. Box 807, 2790 Ut, Ave",  
   "numberrange": 7,  
   "alphanumeric": "VOE77ZLE0OJ"  
 }  
 ]
```

Hint: -o option in grep prints only the matched regular expression.

```
grep -o "name" test.json  
name  
name  
name
```

Options :

6406531930989. ✓ grep "email" test.json | cut -d '"' -f 4

6406531930990. ✓ grep -o -E '"email": "[^"]+"' test.json | cut -d '"' -f 4

6406531930991. ✘ grep '"email":' test.json | cut -d ' ' -f 2

6406531930992. ✘ grep 'email: ' test.json | cut -d '"' -f 4

Question Number : 245 Question Id : 640653578263 Question Type : MSQ Is Question

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

Correct Marks : 8 Max. Selectable Options : 0

Question Label : Multiple Select Question

Following file contains the information on the websites visited on certain server. From the options identify the correct regular expression (ERE) which can capture the website domain names (<https://www.something.something> or <http://www.something.something>).

Website	IP Address	Hits	Server Location
https://www.bechtelar.com/alias-similique-ratione-voluptates-aliquam-delectus-qui-cumque-aut	204.83.121.207	0	CK
http://www.okeefe.info/quis-repudianda-nobis-repellendus-omnis-dolor	78.86.32.75	6	SE
http://macejkovic.com/aut-qui-nostrum-numquam.html	74.58.20.242	1	MU
http://www.cummings.net/magnam-excepturi-eos-rerum-dolores	82.204.55.211	8	PH
http://www.barton.biz/iure-iusto-explicabo-est-soluta-recusandae	252.194.135.149	1	SO
http://www.haag.com/et-exercitationem-id-sunt-sed-laboriosam	1.118.48.149	4	PW
http://www.beer.com/voluptatem-quod-nesciunt-aut.html	71.88.92.193	9	SJ
http://www.mann.org/omnis-ex-in-est-et.html	249.210.50.146	9	BZ
http://towne.com/	58.17.4.75	9	WF
http://www.feeney.net/enim-animi-sapiente-porro-aut-velit-dicta	201.58.189.12	3	ML
http://heaney.com/aliquid-et-rerum-porro-nesciunt-voluptate-quo-sint	9.24.3.149	7	KM
http://bode.com/sint-ut-et-possimus-odit-debitis.html	210.73.162.76	6	BQ

Options :

6406531930993. ✖ [https://\[a-zA-Z\]+\.+\[a-zA-Z\]{2,}](https://[a-zA-Z]+\.+[a-zA-Z]{2,})

6406531930994. ✓ [http.*//\[^/\]+](http.*//[^/]+)

6406531930995. ✓ [https://\[^/\]+](https://[^/]+)

Question Number : 246 Question Id : 640653578266 Question Type : MSQ Is Question

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

Correct Marks : 8 Max. Selectable Options : 0

Question Label : Multiple Select Question

Given the following input identify which of the statements present in options are TRUE.

```
$ ls -li

23 -rwxr-xr-x 3 root root 35K Jul 4 2019 bunzip2
31611 -rwxr-xr-x 1 root root 2.0M Nov 25 2021 busybox
23 -rwxr-xr-x 3 root root 35K Jul 4 2019 bzcat
25 lrwxrwxrwx 1 root root 6 Jul 4 2019 bzcmp ->
bzdiff
26 -rwxr-xr-x 1 root root 2.1K Jul 4 2019 bzdiff
27 lrwxrwxrwx 1 root root 6 Jul 4 2019 bzegr ->
bzgr
28 -rwxr-xr-x 1 root root 4.8K Jul 4 2019 bzexe
29 lrwxrwxrwx 1 root root 6 Jul 4 2019 bzfg ->
bzgr
30 -rwxr-xr-x 1 root root 3.6K Jul 4 2019 bzgrep
23 -rwxr-xr-x 3 root root 35K Jul 4 2019 bzip2
31 -rwxr-xr-x 1 root root 14K Jul 4 2019
bzip2recover
32 lrwxrwxrwx 1 root root 6 Jul 4 2019 bzl -> bz
33 -rwxr-xr-x 1 root root 1.3K Jul 4 2019 bzmore
```

Options :

6406531931002. ✶ files bzegr and bzfg are hard links

6406531931003. ✓ files bzegr and bzfg are soft links

6406531931004. ❌ files bz1 and bz2 are hard links

6406531931005. ✅ files bzcat and bzip2 are hard links

Question Number : 247 Question Id : 640653578272 Question Type : MSQ Is Question

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

Correct Marks : 8 Max. Selectable Options : 0

Question Label : Multiple Select Question

```
#!/bin/bash

directory="mydirectory"
zip_dest="myarchive.zip"
read password
zip -r -P $password $zip_dest $directory
```

Hint:

```
$ man zip
ZIP(1)                               General Commands Manual
ZIP(1)
```

NAME

zip - package and compress (archive) files

SYNOPSIS

```
zip  [-aABcdDeEfFghjkllmoqrRSTuvVwXyz!@$] [--
longoption ...] [-b path]
      [-n suffixes] [-t date] [-tt date] [zipfile [file
...]]  [-xi list]
```

...

DESCRIPTION

zip is a compression and file packaging utility for Unix, VMS, MSDOS,

OS/2, Windows 9x/NT/XP, Minix, Atari, Macintosh, Amiga, and Acorn RISC

OS. It is analogous to a combination of the Unix commands tar(1) and

compress(1) and is compatible with PKZIP (Phil Katz's ZIP for MSDOS systems).

...
-P password
--password password
 Use password to encrypt zipfile entries (if
any). THIS IS INSE-

 CURE! Many multi-user operating systems
provide ways for any
 user to see the current command line of any
other user; even on

 stand-alone systems there is always the
threat of over-the-

 shoulder peeking. Storing the plaintext
password as part of a

 command line in an automated script is
even worse. Whenever

 possible, use the non-echoing, interactive
prompt to enter pass-

 words. (And where security is truly
important, use strong en-

 cryption such as Pretty Good Privacy
instead of the relatively

 weak standard encryption provided by zipfile
utilities.)

...

-r
--recurse-paths
Travel the directory structure recursively;

for example:

zip -r foo.zip foo

or more concisely

zip -r foo foo

In this case, all the files and directories in foo are saved in

a zip archive named foo.zip, including files with names starting

with ".", since the recursion does not use the shell's file-name

substitution mechanism. If you wish to include only a specific

subset of the files in directory foo and its subdirectories, use

the -i option to specify the pattern of files to be included.

You should not use -r with the name ".*", since that matches

".." which will attempt to zip up the parent directory (probably not what was intended).

Multiple source directories are allowed as

in

```
zip -r foo foo1 foo2
```

which first zips up foo1 and then foo2,
going down each directory.

Note that while wildcards to -r are
typically resolved while re-

cursing down directories in the file
system, any -R, -x, and -i

wildcards are applied to internal archive
pathnames once the di-

rectories are scanned. To have wildcards
apply to files in sub-

directories when recursing on Unix and
similar systems where the

shell does wildcard substitution, either
escape all wildcards or

put all arguments with wildcards in quotes.

This lets zip see

the wildcards and match files in
subdirectories using them as it
recurses.

...

For the script run.sh, identify the true statement(s) from the following options.

Options :

6406531931020. ✓ The Bash interpreter used to run the run.sh file

6406531931021. ✗ A new directory is created at the end of the execution

6406531931022. ✓ The zip file is password protected

6406531931023. ✗ The password for the zip is "password"

6406531931024. ✓ The password for the zip cannot be obtained from the given script because it is read from the standard input

6406531931025. ✓ A new file, myarchive.zip is created at the end of the execution

6406531931026. ✗ If zip_dest="myarchive.zip" is replaced by read zip_dest then output file name is obtained from the second line of standard input

Sub-Section Number : 6

Sub-Section Id : 64065382736

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 248 Question Id : 640653578265 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

man cut partial output

CUT(1)

User

Commands

CUT(1)

NAME

cut - remove sections from each line of files

SYNOPSIS

cut OPTION... [FILE]...

DESCRIPTION

Print selected parts of lines from each FILE to standard output.

With no FILE, or when FILE is -, read standard input.

Mandatory arguments to long options are mandatory for short options too.

-b, --bytes=LIST

select only these bytes

-c, --characters=LIST

select only these characters

-d, --delimiter=DELIM

use DELIM instead of TAB for field delimiter

-f, --fields=LIST

select only these fields; also print any line that contains no delimiter character, unless the **-s**

option is specified

man sort command partial output

SORT(1)

User

Commands

SORT(1)

NAME

sort - sort lines of text files

SYNOPSIS

sort [OPTION]... [FILE]...

sort [OPTION]... --files0-from=F

DESCRIPTION

Write sorted concatenation of all FILE(s) to standard output.

With no FILE, or when FILE is -, read standard input.

Mandatory arguments to long options are mandatory for short options too. Ordering options:

-b, --ignore-leading-blanks
ignore leading blanks

-d, --dictionary-order
consider only blanks and alphanumeric characters

```
-f, --ignore-case
    fold lower case to upper case characters

-g, --general-numeric-sort
    compare according to general numerical value
-i, --ignore-nonprinting
    consider only printable characters

-M, --month-sort
    compare (unknown) < 'JAN' < ... < 'DEC'

-h, --human-numeric-sort
    compare human readable numbers (e.g., 2K 1G)

-n, --numeric-sort
    compare according to string numerical value

-R, --random-sort
    shuffle, but group identical keys. See
shuf(1)

--random-source=FILE
    get random bytes from FILE

-r, --reverse
    reverse the result of comparisons

--sort=WORD
    sort according to WORD: general-numeric -g,
human-numeric -h, month -M, numeric -n, random -R, version
-V

-V, --version-sort
    natural sort of (version) numbers within
text
```

The following are the contents of a `passwd` file. What will be the first line of the output of the command?

```
cat /etc/passwd|cut -d: -f3|sort -rn
```

```
root:x:0:0:root:/bin/bash
daemon:x:1:1:daemon:/usr/sbin:/usr/sbin/nologin
bin:x:2:2:bin:/bin:/usr/sbin/nologin
sys:x:3:3:sys:/dev:/usr/sbin/nologin
sync:x:4:65534:sync:/bin:/sync
games:x:5:60:games:/usr/games:/usr/sbin/nologin
man:x:6:12:man:/var/cache/man:/usr/sbin/nologin
lp:x:7:7:lp:/var/spool/lpd:/usr/sbin/nologin
mail:x:8:8:mail:/var/mail:/usr/sbin/nologin
news:x:9:9:news:/var/spool/news:/usr/sbin/nologin
uucp:x:10:10:uucp:/var/spool/uucp:/usr/sbin/nologin
proxy:x:13:13:proxy:/bin:/usr/sbin/nologin
www-data:x:33:33:www-data:/var/www:/usr/sbin/nologin
backup:x:34:34:backup:/var/backups:/usr/sbin/nologin
nobody:x:65534:65534:nobody:/nonexistent:/usr/sbin/nologin
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

65534

Question Number : 249 Question Id : 640653578268 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

How many background processes are running after the end of execution of the following script?

```
for i in {1..11}; do
    sleep 10 &
done

for i in {1..11..2}; do
    kill % # kill the last background process created
done
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Sub-Section Number : 7

Sub-Section Id : 64065382737

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 250 **Question Id :** 640653578271 **Question Type :** SA **Calculator :** None

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

Correct Marks : 6

Question Label : Short Answer Question

What will be the output of the following script?

```
read -n 4 line < <(echo abcdef)
echo $line$line
```

Hint:

```
$ cat < <(echo 123456) # send the stdout from echo command  
to cat as stdin  
123456
```

```
$ help read  
read: read [-ers] [-a array] [-d delim] [-i text] [-n  
nchars] [-N nchars] [-p prompt] [-t timeout] [-u fd] [name  
...]
```

Read a line from the standard input and split it into fields.

Reads a single line from the standard input, or from file descriptor FD

if the -u option is supplied. The line is split into fields as with word

splitting, and the first word is assigned to the first NAME, the second

word to the second NAME, and so on, with any leftover words assigned to

the last NAME. Only the characters found in \$IFS are recognized as word

delimiters.

If no NAMES are supplied, the line read is stored in the REPLY variable.

Options:

-a array assign the words read to sequential indices of the array

variable ARRAY, starting at zero

-d delim continue until the first character of DELIM is read, rather

than newline

-e use Readline to obtain the line

-i text use TEXT as the initial text for Readline

-n nchars return after reading NCHARS characters rather than waiting

for a newline, but honor a delimiter if

fewer than

NCHARS characters are read before the delimiter

-N nchars return only after reading exactly NCHARS characters, unless

EOF is encountered or read times out, ignoring any

delimiter

-p prompt output the string PROMPT without a trailing newline before

attempting to read

-r do not allow backslashes to escape any characters

-s do not echo input coming from a terminal

-t timeout time out and return failure if a

complete line of
 input is not read within TIMEOUT seconds.

The value of the
 TMOUT variable is the default timeout.

TIMEOUT may be a
 fractional number. If TIMEOUT is 0, read

returns
 immediately, without trying to read any
data, returning

 success only if input is available on the
specified

 file descriptor. The exit status is
greater than 128

 if the timeout is exceeded

-u fd read from file descriptor FD instead of
the standard input

Exit Status:

The return code is zero, unless end-of-file is
encountered, read times out

(in which case it's greater than 128), a variable
assignment error occurs,

or an invalid file descriptor is supplied as the
argument to -u.

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : Yes

Text Areas : PlainText

Possible Answers :

abcdabcd