

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

Notations :

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

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

Question Paper Name :	IIT M DIPLOMA AN EXAM ADD4 24 Dec 2023
Subject Name :	2023 Dec24: IIT M AN EXAM ADD4
Creation Date :	2023-12-20 18:49:49
Duration :	180
Total Marks :	1145
Display Marks:	Yes
Share Answer Key With Delivery Engine :	Yes
Actual Answer Key :	Yes
Calculator :	Scientific
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No

Show Reports : No

Show Progress Bar : No

Group I

Group Number : 1

Group Id : 64065316263

Group Maximum Duration : 0

Group Minimum Duration : 90

Show Attended Group? : No

Edit Attended Group? : No

Break time : 0

Group Marks : 1145

Is this Group for Examiner? : No

Examiner permission : Cant View

Show Progress Bar? : No

Revisit allowed for group Instructions? : Yes

Maximum Instruction Time : 0

Minimum Instruction Time : 0

Group Time In : Minutes

Navigate To Group Summary From Last Question? : No

Disable Submit Button During Assessment? : No

Section Selection Time? : 0

No of Optional sections to be attempted : 0

DBMS

Section Id : 64065349275

Section Number : 1

Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	20
Number of Questions to be attempted :	20
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103357
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 1 Question Id : 640653697990 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 :

6406532331112. ✓ YES

6406532331113. ✘ NO

Sub-Section Number :	2
Sub-Section Id :	640653103358
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 2 Question Id : 640653697991 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 relation CustomerLogs(*Name, Items, Restaurant, Date*) with the following data values.

Name	Items	Restaurant	Date
Zury	Coffee	Your's cafe	19-10-21
Zury	D	Our's cafe	21-10-21
B	Tea	C	E
Zury	A	Our's cafe	19-10-21

If multivalued dependency ($Name \rightarrow\!\!> \{Restaurant\}$) exists in the above Customer-Logs relation, then what are the values of A, B, C, D, E?

Options :

6406532331114. ✘ A = Tea, B = Zury, C = Our's cafe, D = Tea, E = 19-10-21

6406532331115. ✘ A = Coffee, B = Zury, C = Our's cafe, D = Coffee, E = 19-10-21

6406532331116. ✘ A = Tea, B = Zury, C = Your's cafe, D = Coffee, E = 21-10-21

6406532331117. ✓ A = Coffee, B = Zury, C = Your's cafe, D = Tea , E = 21-10-21

Question Number : 3 Question Id : 640653697992 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 $R(A, B, C, D, E, G)$ with the following sets of functional dependencies

$$\mathcal{F} = \{AB \rightarrow C, AC \rightarrow B, AD \rightarrow E, B \rightarrow D, BC \rightarrow A, E \rightarrow G, B \rightarrow C\}$$

Let the R is decomposed in two ways:

$$D1 = R1(AB), R2(BC), R3(ABDE), R4(EG)$$

$$D2 = R1(ABC), R2(ACDE), R3(ADG)$$

Which among the following statements is correct?

Options :

6406532331118. ✘ $D1$ is a lossless decomposition and $D2$ is a lossy decomposition.

6406532331119. ✘ $D1$ is a lossy decomposition and $D2$ is a lossless decomposition.

6406532331120. ✓ $D1$ and $D2$ both are lossless decompositions.

6406532331121. ✘ $D1$ and $D2$ both are lossy decompositions.

Question Number : 4 Question Id : 640653698000 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:

Items(item_name, item_type, brand, price)

There is at least one item each in the 'Food' and 'Beverage' item type categories. What will the following relational algebra expression imply?

$$\begin{aligned} & \Pi_{item_name}(\sigma_{(item_type='Beverage' \wedge brand='Keventer')}(Items)) - \\ & \Pi_{item_name}(Items \times_{(item_type='Beverage' \wedge brand='Keventer' \wedge q='Food' \wedge price>=s \wedge r='Amul')} \rho_{(p,q,r,s)}(Items)) \end{aligned}$$

Options :

6406532331143. ✓ Names of all beverage items from the brand Keventer that have lower prices than all food items from the brand Amul

6406532331144.

* Names of all food items from the brand Keventer that have lower prices than all beverage items from the brand Amul

6406532331145. * Names of all food items from the brand Keventer that have higher prices than all food and beverage items from the brand Amul

6406532331146. * Names of all beverage items from the brand Amul that have a lower price than all food and beverage items from the brand Keventer

Question Number : 5 Question Id : 640653698003 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 key values are inserted into a B^+ tree of order 3 in the given sequence.
The tree is initially empty.

25, 16, 9, 37, 12, 3, 44

How many node splits are required to perform these insertions?

Options :

6406532331155. ✓ 5

6406532331156. * 4

6406532331157. * 6

6406532331158. * 3

Question Number : 6 Question Id : 640653698006 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the given log records at an instance of time:

< T_0 start >
< $T_0, A, 700, 500$ >
< T_1 start >
< $T_1, B, 450, 900$ >
< $T_0, C, 1100, 1000$ >
< T_2 start >
< $T_2, D, 320, 460$ >
< Commit T_2 >
< Checkpoint L >
< $T_1, D, 460, 560$ >
< Commit T_1 >
< $T_0, B, 900, 600$ >

Table 6: Log records

Suppose there is a system crash after the last log record. What would be the values of A, B, C and D stored on disk at that point?

Options :

6406532331167. ✘ A = 700,B = 450,C = 1000,D = 460

6406532331168. ✘ A = 500,B = 450,C = 1100,D = 560

6406532331169. ✓ A = 700,B = 900,C = 1100,D = 560

6406532331170. ✘ A = 500,B = 900,C = 1000,D = 560

Sub-Section Number : 3

Sub-Section Id : 640653103359

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 7 Question Id : 640653697993 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

Consider a CourseSection relation having the attributes (*Course*, *Section*, *Instructor*, *RoomNo*, *Time*) with the following set of FDs:

$$\mathcal{F} = \{ \text{Course}, \text{Section}, \text{Time} \rightarrow \text{RoomNo}, \text{Instructor} \\ \text{Course}, \text{Section}, \text{Instructor} \rightarrow \text{RoomNo}, \text{Time} \}$$

Which among the following is/are the prime attributes for the relation CourseSection

Options :

6406532331122. ✓ *Course*

6406532331123. ✗ *RoomNo*

6406532331124. ✓ *Instructor*

6406532331125. ✗ None of these

Sub-Section Number : 4

Sub-Section Id : 640653103360

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653697994 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Question Numbers : (8 to 9)

Question Label : Comprehension

Consider the following table 1 which gives information about the runs scored by Virat Kohli in the world cup 2023 and answer the given subquestions.

Runs	Mins	BF	4s	6s	SR	Dismissal	opposition	Venue	Date
85	171	116	6	0	73.27	Caught	Australia	Chennai	8 Oct 2023
55	64	56	6	0	98.21	Not out	Afghanistan	Delhi	11 Oct 2023
16	31	18	3	0	88.88	Caught	Pakistan	Ahmedabad	14 Oct 2023
103	113	97	6	4	106.18	Not out	Bangladesh	Pune	19 Oct 2023
95	154	104	8	2	91.34	Caught	New Zealand	Dharamsala	22 Oct 2023
0	12	9	0	0	0.00	Caught	England	Lucknow	29 Oct 2023
88	139	94	11	0	93.61	Caught	Sri Lanka	Wankhede	2 Nov 2023
101	195	121	10	0	83.47	Not out	South Africa	Eden Gardens	5 Nov 2023
51	69	56	5	1	91.07	Bowled	Netherlands	Bengaluru	12 Nov 2023
117	149	113	9	2	103.53	Caught	New Zealand	Wankhede	15 Nov 2023
54	99	63	4	0	85.71	Bowled	Australia	Ahmedabad	19 Nov 2023

Table 1: Cricket.stats

Sub questions

Question Number : 8 Question Id : 640653697995 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Choose the correct SQL queries to find the average runs scored and the number of matches played against each opposition, such that the following conditions must be satisfied:

- The average runs scored against the opposition is more than 50 runs.
- And hit more number of 4s against opposition than the total number of 6s hit by Virat against 'New Zealand' in the World Cup 2023.

Options :

```
SELECT opposition, AVG(runs) AS average_runs, COUNT(*) AS matches_played
FROM cricket_stats
WHERE 4s > (select sum(6s) from cricket_stats
where opposition = 'New Zealand') and
(select avg(runs) from cricket_stats) > 50
GROUP BY opposition
```

6406532331126. ✓

6406532331127. ❌

```
SELECT opposition, AVG(runs) AS average_runs, COUNT(*) AS matches_played
FROM cricket_stats
WHERE AVG(runs) > 50 and
4s > (select sum(6s) from cricket_stats where opposition = 'New Zealand')
GROUP BY opposition
```

```
SELECT opposition, AVG(runs) AS average_runs, COUNT(*) AS matches_played
FROM cricket_stats
WHERE 4s > (select sum(6s) from cricket_stats ) and
6406532331128. ✘ AVG(runs) > 50 and opposition = 'New Zealand'
```

```
SELECT opposition, AVG(runs) AS average_runs, COUNT(*) AS matches_played
FROM cricket_stats
WHERE 4s > (select sum(6s) from cricket_stats group by opposition)
and opposition = 'New Zealand'
GROUP BY opposition
6406532331129. ✘ HAVING AVG(runs) > 50
```

Question Number : 9 Question Id : 640653697996 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 scenario where India won the World Cup final match played on 19 Nov 2023 and Virat scored 154 and faced 100 balls before getting 'Caught' out. Which of the following SQL queries is used to update the runs scored, ball faced (BF), and dismissal to 'Caught' against Australia on 19 Nov 2023?

Options :

```
Update cricket_stats
set runs = 154, dismissal = 'Caught', BF = 100
6406532331130. ✓ where date = '19 Nov 2023'
```

```
Update cricket_stats
set runs = 154 and dismissal = 'Caught' and BF = 100
6406532331131. ✘ where date = '19 Nov 2023'
```

```
Update cricket_stats  
set runs = 154, dismissal = 'Caught', BF = 100
```

6406532331132. ✘ where opponent = 'Australia'

```
Update cricket_stats  
set runs = 154  
set dismissal = 'Not out'  
set BF = 100
```

6406532331133. ✘ where opponent = 'Australia'

Sub-Section Number : 5

Sub-Section Id : 640653103361

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 10 Question Id : 640653697997 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

Construct a binary search tree by inserting the following elements in the given order 30,20, 27, 86, 103, 25, 60, 90, 10, 15. Find out the elements present in the non-leaf nodes (including root node) of the constructed binary search tree.

Choose the correct option.

Options :

6406532331134. ✘ 15, 25, 60,90

6406532331135. ✘ 10,27,103, 20,86

6406532331136. ✓ 10,27,103, 20,86, 30

6406532331137. ✘ 10,27,103

Question Number : 11 Question Id : 640653697999 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 relation Students and the following query:

Students(Roll, Name, Age)

```
Select Name  
From Students as S  
Where (Select count(*)  
       From Students as T  
       Where T.Age>S.Age)<3
```

If the Students table contains data of 10 students such that no two students have the same age, then what will be the result of the above query?

Options :

6406532331139. ✘ Names of the 3 youngest students

6406532331140. ✓ Names of the 3 oldest students

6406532331141. ✘ Names of the 4 oldest students

6406532331142. ✘ Names of the 4 youngest students

Question Number : 12 Question Id : 640653698002 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 Employee table given below:

EID	name	gender	pay_level
001	Percy	Male	L1
002	Jason	Male	L2
003	Hazel	Female	L1
004	Leo	Male	L3
005	Rayna	Female	L2
006	Annabeth	Female	L1
007	Frank	Male	L3
008	Piper	Female	L3

Table 5: Employee

Let us create two different bitmap indices, one on the *gender* attribute and the other on the *pay_level* attribute. Which of the following options will give the correct result if we want to find all males with income level 'L3'?

Note: Options are of the form gender (operation) pay_level

Options :

6406532331151. ✓ 11010010 AND 00010011

6406532331152. ✗ 11010010 OR 10100100

6406532331153. ✗ 11010010 AND 01001000

6406532331154. ✗ 00101101 OR 10100100

Question Number : 13 Question Id : 640653698005 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 monthly backup schedule used by a company:

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
1/ Full	2/ Incremental	3/ Incremental	4/ Incremental	5/ Incremental	6/ Incremental	7/ Differential
8/ Incremental	9/ Incremental	10/ Incremental	11/ Incremental	12/ Incremental	13/ Differential	14/ Incremental
15/ Incremental	16/ Incremental	17/ Incremental	18/ Incremental	19/ Differential	20/ Incremental	21/ Incremental
22/ Incremental	23/ Incremental	24/ Incremental	25/ Differential	26/ Incremental	27/ Incremental	28/ Incremental
29/ Incremental	30/ Incremental					

If a failure occurs on the 16th day of the month after the backup has been completed, how many backup sets have to be loaded for a full recovery?

Options :

6406532331163. ✓ 5

6406532331164. ✗ 4

6406532331165. ✗ 7

6406532331166. ✗ 6

Question Number : 14 Question Id : 640653698009 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 relational algebra expression given below:

$$\prod_{s_id}(\prod_{s_id, name}(\prod_{s_id, name, dob}(student)))$$

Choose the equivalent relational algebra expression.

Options :

6406532331173. ✗ $\prod_{dob}(\prod_{s_id}(\prod_{name}(student)))$

6406532331174. ❌ $\prod_{s_id, name} (\prod_{name, dob, s_id} (student))$

6406532331175. ✓ $\prod_{s_id} (student)$

6406532331176. ❌ $\prod_{dob} (student)$

Sub-Section Number : 6

Sub-Section Id : 640653103362

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 15 Question Id : 640653697998 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 tables **Students**, **Departments** and **Courses_Taken** given below:

SID	name	dept_ID
001	Harry	C001
002	Louis	C002
003	Liam	C003
004	Niall	C001.
005	Zayn	C003
006	Luke	C004
007	Ashton	C002
008	Bradley	C005
009	Connor	C006
010	Alex	C005

Table 2: Students

dept_ID	dept_name
C001	Comp. Sci.
C002	Maths
C003	History
C004	Geography
C005	Music
C006	Biology

Table 3: Departments

SID	course_name
001	DBMS
002	Calculus
003	Modern History
001	Operating Systems
002	Algebra
004	DBMS
005	Modern History
006	Oceanography
007	Algebra
006	Climatology
008	Classical
009	Zoology
010	Post Rock

Table 4: Courses_Taken

Consider *dept_ID* to be the foreign key in table **Students** that references *dept_ID* in table **Departments** with on-delete cascade and *SID* be the foreign key in table **Courses_Taken** that references *SID* in table **Students** with on-delete cascade. If tuples (C003, History) and (C005, Music) are deleted from table **Departments** then how many tuples will be deleted in turn from table **Courses_Taken**?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 16 Question Id : 640653698008 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Consider a Block nested loop join for the two relations, instructor and department. Assuming the worst-case memory availability and **instructor** as the outer relation, the provided details are as follows:

- Total number of block transfers: 30500
- Total number of seeks required: 1000
- Number of block in the outer relation: 500

What is the number of blocks in the inner relations?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

60

Question Number : 17 Question Id : 640653698010 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Consider the following schedule S with four transactions T1, T2, T3, T4, T5:

S: R1(A); W3(A); W3(B); R1(C); W4(C); W4(D), W3(D)

Where, Ri(A) denotes a read operation by transaction Ti on a data item A, Wi(A) denotes a write operation by transaction Ti on a data item A.

What is the possible number of conflict serializable schedules of the above schedule S.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number : 7

Sub-Section Id : 640653103363

Question Shuffling Allowed : Yes

Is Section Default? : null

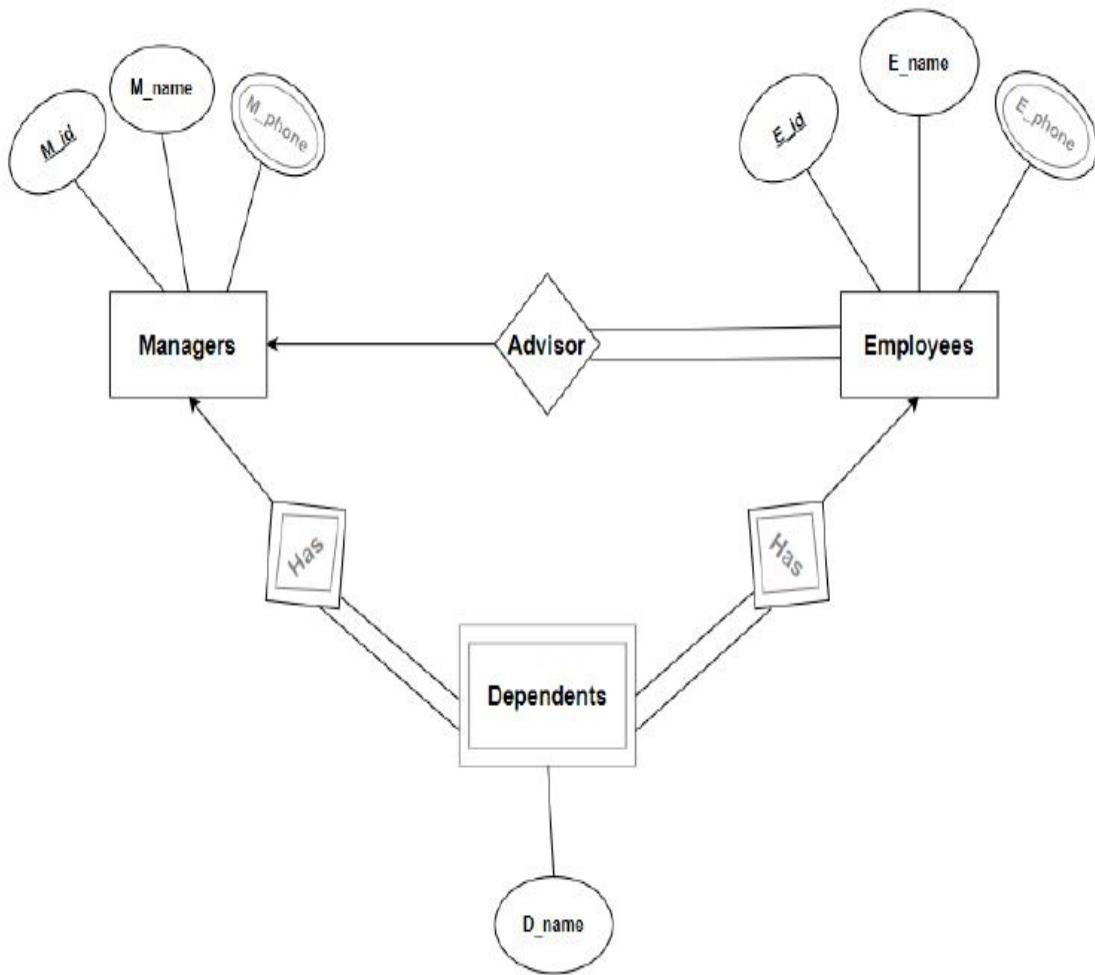
Question Number : 18 Question Id : 640653698001 Question Type : MSQ Is Question

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 ER Diagram given below:



Choose the statement(s) that are incorrect.

Options :

6406532331147. ❌ Minimum 5 tables are required to convert the given ER diagram into the relational model

6406532331148. ✓ Every manager has at least one dependent

6406532331149. ✓ Every manager is appointed as an advisor for some employee

6406532331150. ❌ A dependent can be related to at most one manager

Question Number : 19 Question Id : 640653698011 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the schedule **S** is as given below:

S:W3(A), W1(A), W1(C), R2(A), W2(A), W3(B), W1(B)

Which of the following options is/are correct?

Options :

6406532331178. ✓ Schedule **S** is conflict serializable.

6406532331179. ✗ Schedule **S** can be two-phase lockable.

6406532331180. ✗ Schedule **S** is not conflict serializable.

6406532331181. ✓ Schedule **S** can not be two-phase lockable.

Sub-Section Number : 8

Sub-Section Id : 640653103364

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 20 Question Id : 640653698004 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Consider the following statements:

S1: In case of bit-interleaved parity, a single parity bit is enough for error correction.

S2: In case of block level striping with N disks, block i of a file goes to disk $(i \bmod N)$.

S3: Block-interleaved parity involves keeping an entire parity block on a separate disk.

Choose the correct option.

Options :

6406532331159. ✓ S1 and S3 are true, S2 is false

6406532331160. ✗ S1 is true, S2 and S3 are false

6406532331161. ✗ S2 is true, S1 and S3 are false

6406532331162. * S1 and S2 are true, S3 is false

Sub-Section Number :	9
Sub-Section Id :	640653103365
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 21 Question Id : 640653698007 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 table `instructor` in the university database as shown in Table 7.

<code>id</code>	<code>name</code>	<code>dept_name</code>	<code>salary</code>
10101	Srinivasan	Comp. Sci.	65000
12121	Wu	Finance	90000
15151	Mozart	Music	40000
32343	El Said	History	60000
33456	Gold	Physics	87000
76766	Crick	Biology	72000
98345	Kim	Elec. Eng.	80000

Table 7: `instructor`

Based on the given `instructor` table, what will be the output of the Python code given below?

```
import psycopg2
def connectDb(dbname, username, pwd, address, portnum):
    try:
        connection = psycopg2.connect(database = dbname,
                                      user = username,
                                      password = pwd,
                                      host = address,
                                      port = portnum)
        cursor = connection.cursor()
        query = '''select salary from instructor
                   where dept_name like '%c%' order by salary DESC;'''
        cursor.execute(query)
        result = cursor.fetchmany(1)
        for row in result:
            sal=row[0]
            print(sal)

        cursor.close()

    except (Exception, psycopg2.DatabaseError) as error:
        print(error)
    finally:
        connection.close()
connectDb("university", "postgres", "root", "127.0.0.1", "5432")
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

PDSA

Section Id :	64065349276
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	26
Number of Questions to be attempted :	26
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103366
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 22 Question Id : 640653698012 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 :

6406532331182. ✓ YES

6406532331183. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653103367

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 23 Question Id : 640653698013 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the following code.

```
1 | def fun(n):
2 |     total = 0
3 |     for i in range(n):
4 |         for j in range(n):
5 |             for k in range(j, n):
6 |                 total = total + 1
7 |     return total
```

What is the time complexity of the function `fun` in terms of `n`?

Options :

6406532331184. ✗ $O(n^2)$

6406532331185. ✗ $O(n^2 \log n)$

6406532331186. ✘ $O(n \log n)$

6406532331187. ✓ $O(n^3)$

Question Number : 24 Question Id : 640653698014 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

If the input list of n elements is already sorted in ascending order, what is the time complexity of applying the **Selection Sort** algorithm to sort the list in ascending order?

Options :

6406532331188. ✓ $O(n^2)$

6406532331189. ✘ $O(n \log n)$

6406532331190. ✘ $O(\log n)$

6406532331191. ✘ $O(n)$

Question Number : 25 Question Id : 640653698015 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 **Insertion sort** algorithm:

```
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]) # swap operation
9             j = j-1
10    return(L)
```

To sort the input list `L = [6, 3, 4, 1, 2, 5]`, How many swap operation will be performed by the given algorithm?

Options :

6406532331192. ✘ 4

6406532331193. ✘ 6

6406532331194. ✓ 9

6406532331195. ✘ 10

Question Number : 26 Question Id : 640653698016 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 that **Quick sort** is applied to a list of `n` distinct elements that is already sorted in the required sorting order. What will be the Worst case time complexity of Quick sort if the pivot is taken to be

I) First element II) Last element

Choose the correct option corresponding to the correct pair of complexities for both pivots.

Options :

6406532331196. ✓ I : $O(n^2)$ and II : $O(n^2)$

6406532331197. ✳ I : $O(n^2)$ and II : $O(n)$

6406532331198. ✳ I : $O(n \log n)$ and II : $O(n \log n)$

6406532331199. ✳ I : $O(n \log n)$ and II : $O(n^2)$

Question Number : 27 Question Id : 640653698017 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the following code.

```
1 L = ['A', 'B', 'C', 'D', 'E']
2 for i in range(5):
3     S.Push( L[i] )
4 for i in range(4):
5     v = S.Pop()
6     Q.Enqueue(v)
7 for i in range(2):
8     v = Q.Dequeue()
9     S.Push(v)
10 x = S.Pop()
11 print(x)
```

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.

What would be the output of the given code?

Options :

6406532331200. ✳ A

6406532331201. ✳ B

6406532331202. ✳ C

6406532331203. ✓ D

Question Number : 28 Question Id : 640653698018 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

Linear probing is an open addressing scheme in computer programming for resolving hash collisions in hash tables. Linear probing operates by taking the original hash index and adding successive values linearly until a free slot is found.

A hash table of size **10** (indexed from 0 to 9) initialized with `None`, uses linear probing to resolve collisions. The key values are integers and the hash function used is `key mod 10`. Values **23, 36, 72, 12, 54, and 83** are stored in the given order in the hash table.

What is the sequence of elements (from index 0 to 9) in the hash table?

Options :

6406532331204.  `None, None, 72, 23, 12, 54, 36, 83, None, None`

6406532331205.  `None, None, 12, 83, 72, 54, 36, 23, None, None`

6406532331206.  `None, None, 72, 12, 23, 54, 36, 83, None, None`

6406532331207.  `None, None, 72, 23, 54, 12, 36, 83, None, None`

Question Number : 29 Question Id : 640653698020 Question Type : MCQ Is Question

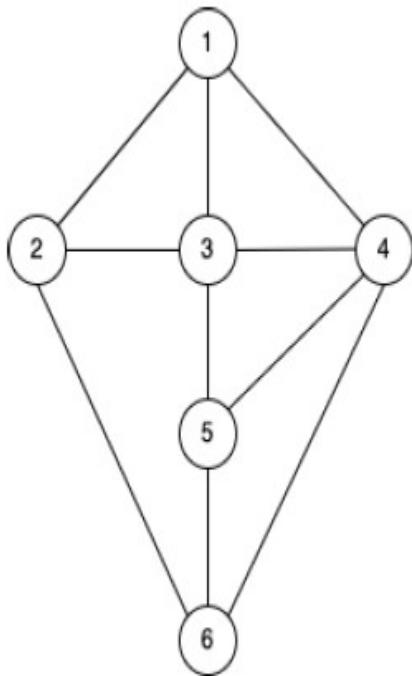
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the below Graph.



If we run **Depth First Search(DFS)** on the given graph starting from vertex 1, which of the following is the possible order of visiting the nodes?

Options :

6406532331209. ❌ 1, 4, 3, 6, 5, 2

6406532331210. ❌ 1, 4, 5, 6, 3, 2

6406532331211. ✓ 1, 4, 6, 5, 3, 2

6406532331212. ❌ 1, 4, 6, 3, 5, 2

Question Number : 30 Question Id : 640653698022 Question Type : MCQ Is Question

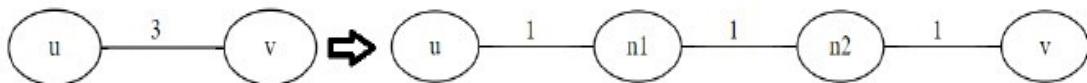
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

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

Replace each edge in the graph with weight w by w edges of weight 1 connected by new $w-1$ intermediate nodes. For example:



Run **BFS(s)** on the modified graph to find the shortest path to each of the original vertices in the graph.

Which of the following statements is true?

Options :

6406532331218. ❌ This strategy will not solve the problem correctly.

6406532331219. ❌ This strategy will only work if the graph is acyclic.

6406532331220. ❌ This strategy will solve the problem correctly and is as efficient as Dijkstra's algorithm.

6406532331221. ✓ This strategy will solve the problem correctly, but is not as efficient as Dijkstra's algorithm.

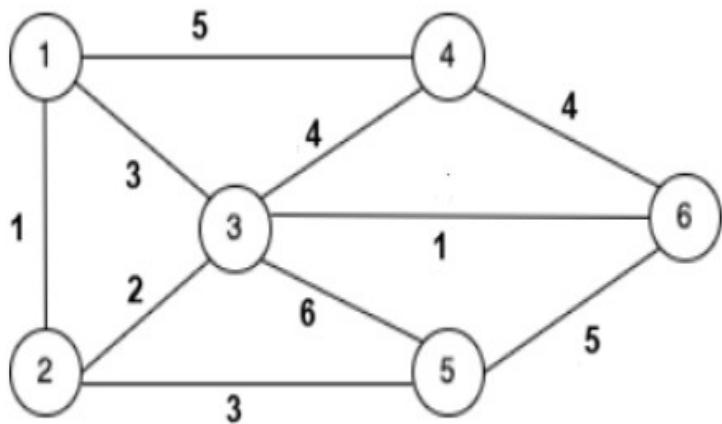
Question Number : 31 Question Id : 640653698024 Question Type : MCQ Is Question

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 graph



Which of the following is the correct sequence of edges added to the minimum spanning tree when **prim's algorithm** is applied on this graph with 1 as the source vertex?

Options :

6406532331226. ❌ (1, 2), (3, 6), (2, 3), (2, 5), (3, 4)

6406532331227. ✓ (1, 2), (2, 3), (3, 6), (2, 5), (3, 4)

6406532331228. ❌ (1, 2), (3, 6), (2, 3), (3, 4), (2, 5)

6406532331229. ❌ (1, 2), (2, 3), (3, 6), (3, 4), (2, 5)

Question Number : 32 Question Id : 640653698026 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's consider a max heap [30, 20, 25, 5, 15, 23, 10, 3, 2]. What would be the final max heap after performing the following operations on a given max heap?

Note:- Each operation generates the max heap after inserting or deleting an element, and the next operation is performed on the updated max heap by the previous operation.

```
1 delete_max()  
2 delete_max()  
3 insert(40)
```

Options :

6406532331231. ✘ [40, 20, 5, 15, 23, 10, 3, 2]

6406532331232. ✘ [40, 23, 10, 15, 20, 2, 3, 5]

6406532331233. ✘ [40, 23, 20, 15, 10, 2, 3, 5]

6406532331234. ✓ [40, 23, 10, 20, 15, 2, 3, 5]

Question Number : 33 Question Id : 640653698030 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 implementation for Median of Medians(MoM).

```
1 def MoM(L): # Median of medians  
2     if len(L) <= 5:  
3         L.sort()  
4         return(L[len(L)//2])  
5     # Construct list of block medians  
6     M = []  
7     for i in range(0,len(L),5):  
8         X = L[i:i+5]  
9         X.sort()  
10        M.append(X[len(X)//2])  
11    return(MoM(M))
```

Let $L = [8, 19, 5, 14, 1, 3, 6, 1, 10, 7, 16, 6, 15, 22, 7, 21, 5, 16, 32, 2]$. What is the returned value of $\text{MoM}(L)$ using the list L ?

Options :

6406532331242.

* 19

6406532331243. ✓ 15

6406532331244. * 16

6406532331245. * 21

**Question Number : 34 Question Id : 640653698031 Question Type : MCQ Is Question
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction
Time : 0**

Correct Marks : 4

Question Label : Multiple Choice Question

In a list L , two elements $L[i]$ and $L[j]$ form a significant inversion if $L[i] > 2 * L[j]$ and $i < j$. The total number of significant inversions for $L = [1, 11, 6, 3, 5, 2]$ is__.

Options :

6406532331246. * 4

6406532331247. ✓ 5

6406532331248. * 6

6406532331249. * 7

**Question Number : 35 Question Id : 640653698032 Question Type : MCQ Is Question
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction
Time : 0**

Correct Marks : 4

Question Label : Multiple Choice Question

A **subsequence** is a sequence that can be derived from the given sequence by deleting zero or more elements without changing the order of the remaining elements.

Suppose you are given two strings S_1 and S_2 :

$$S_1 = a_0, a_1, \dots, a_{n-1}$$

$$S_2 = b_0, b_1, \dots, b_{m-1}$$

Your task is to find out the length of the longest common subsequence in S_1 and S_2

Consider the following initialization of a two-dimensional array DP of size $n + 1, m + 1$.

DP	0	1	2	..	j	..	$n - 1$	n
0								0
1								0
2								0
..								0
i								0
..								0
$m - 1$								0
m	0	0	0	0	0	0	0	0

Consider that we start at the bottom right ($DP[n - 1][m - 1]$) and fill DP array row by row or column by column and want to get the length of the longest common subsequence for string S_1 and S_2 at ($DP[0][0]$).

Which of the following inductive structures is correct to fill array DP ?

Options :

6406532331250. ❌
$$DP[i, j] = \begin{cases} DP[i + 1, j + 1], & \text{if } a_i = b_j \\ 1 + \min(DP[i + 1, j], DP[i, j + 1]), & \text{if } a_i \neq b_j \end{cases}$$

6406532331251. ❌
$$DP[i, j] = \begin{cases} DP[i + 1, j + 1], & \text{if } a_i = b_j \\ 1 + \max(DP[i + 1, j], DP[i, j + 1]), & \text{if } a_i \neq b_j \end{cases}$$

6406532331252. ❌
$$DP[i, j] = \begin{cases} 1 + DP[i + 1, j + 1], & \text{if } a_i = b_j \\ 1 + \min(DP[i + 1, j], DP[i, j + 1]), & \text{if } a_i \neq b_j \end{cases}$$

6406532331253. ✓

$$DP[i, j] = \begin{cases} 1 + DP[i + 1, j + 1], & \text{if } a_i = b_j \\ \max(DP[i + 1, j], DP[i, j + 1]), & \text{if } a_i \neq b_j \end{cases}$$

Question Number : 36 Question Id : 640653698034 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

```

1 def kmp_fail(p):
2     m = len(p)
3     fail = [0 for i in range(m)]
4     j, k = 1, 0
5     while j < m:
6         if p[j] == p[k]:
7             fail[j] = k + 1
8             j, k = j + 1, k + 1
9         elif k > 0:
10            k = fail[k - 1]
11        else:
12            j = j + 1
13    return(fail)
```

Which of the following options represents the fail function (or prefix function) for pattern $P = \text{aabaaabaab}$ returned by the given `kmp_fail(p)` function?

Options :

6406532331255. ❌ [0, 1, 2, 1, 2, 3, 4, 5, 6]

6406532331256. ✓ [0, 1, 0, 1, 2, 3, 4, 5, 6]

6406532331257. ❌ [0, 1, 1, 1, 1, 2, 3, 4, 5]

6406532331258. ❌ [0, 1, 2, 1, 1, 2, 3, 4, 5]

Question Number : 37 Question Id : 640653698035 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Which of the following combination of input text T and pattern P will exhibit the worst case running time behavior for **Boyer-Moore skipping heuristic?**

Options :

6406532331259. ❌ T = `baabaabaabaabaa` and P = `abb`

6406532331260. ❌ T = `aaaaaaaaaaaaaaaaaa` and P = `abb`

6406532331261. ✓ T = `aaaaaaaaaaaaaaaaaa` and P = `baa`

6406532331262. ❌ T = `aaaaaaaaaaaaaaaaaa` and P = `bbb`

Question Number : 38 Question Id : 640653698036 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

First kind of cake requires 200g of flour and 25g of fat, and second kind of cake requires 100g of flour and 50g of fat. Formulate this problem as a linear programming problem to find the maximum number of cakes that can be made from 5 kg of flour and 1 kg of fat, assuming that there is no shortage of the other ingredients used in making the cakes.

The above problem is to be formulated as a linear programming problem. Let x and y be the number of cake of kind first and second, respectively. Objective function to maximize the number of cakes
$$z = x + y.$$

Which of the following is **not a valid** constraint for the given problem?

Options :

6406532331263. ✘ $2x + y \leq 50$

6406532331264. ✓ $x + 2y \leq 50$

6406532331265. ✘ $x \geq 0, y \geq 0$

6406532331266. ✘ $x + 2y \leq 40$

Question Number : 39 Question Id : 640653698037 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

In a school, there are n teachers and $2n$ subjects. Each subject taught by only one teacher and each teacher is required to teach exactly 2 subjects. However, teachers have their preferences for subjects they would like to teach, and the school wants to maximize overall satisfaction by assigning subjects to teachers based on their preferences.

The preferences of teachers are modeled as a directed graph G , where there exists an edge from a teacher node T_i to a subject node S_j in G if teacher T_i prefers teaching subject S_j . How can this problem be modelled as a network flow problem?

Options :

6406532331267. ✘ It can be modelled as a network flow problem, where the source node is connected to every teacher node in G with capacity of n , and every subject node in G is connected to the sink node with capacity of $2n$.

6406532331268. ✘ It can be modelled as a network flow problem, where the source node is connected to every teacher node in G , and every subject node in G is connected to the sink node. All edges in the network flow graph have equal capacity.

6406532331269. ✓ It can be modelled as a network flow problem, where the source node is connected to every teacher node in G with capacity of 2, and every subject node in G is connected to the sink node with capacity of 1.

6406532331270. ✘ It can be modelled as a network flow problem, where the source node is connected to every teacher node in G with capacity of 1, and every subject node in G is connected

to the sink node with capacity of 2.

Sub-Section Number :

3

Sub-Section Id :

640653103368

Question Shuffling Allowed :

Yes

Is Section Default? :

null

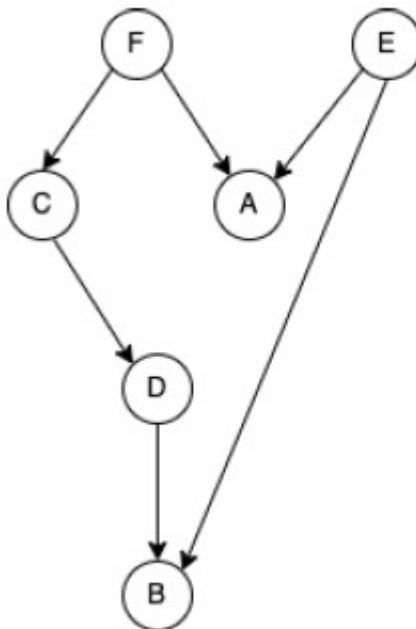
Question Number : 40 Question Id : 640653698021 Question Type : MSQ Is Question

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 below Graph.



Which of the following is/are **valid** topological orderings of the given graph?

Options :

6406532331213. ✓ E - F - C - D - B - A

6406532331214. ✓ F - E - A - C - D - B

6406532331215. ✗ F - E - A - D - C - B

6406532331216. ✓ E - F - C - D - A - B

6406532331217. ✗ F - C - D - A - E - B

Question Number : 41 Question Id : 640653698023 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is/are **true** about the **Floyd-Warshall algorithm**?

Options :

6406532331222. ✓ It can detect negative weight cycles in the graph.

6406532331223. ✓ Time complexity of Floyd-Warshall is $O(V^3)$, where V is the number of vertices in the graph.

6406532331224. ✗ It works if the graph has negative edge weight cycles.

The formula to compute the shortest path from vertex i to j in Floyd-Warshall algorithm is:-

6406532331225. ✓ $SP^k[i, j] = \min[SP^{k-1}[i, j], SP^{k-1}[i, k] + SP^{k-1}[k, j]]$

Question Number : 42 Question Id : 640653698028 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is/are **true** about **AVL Tree**? Assume that the height of the empty tree is 0.

Options :

Let $s(h)$ denote the minimum number of nodes in an AVL tree of height h then

6406532331236. ✓ $s(h) = s(h-1) + s(h-2) + 1$, where $s(0) = 0$ and $s(1) = 1$.

In AVL tree, the absolute difference between the height of the left subtree and the height of the

6406532331237. ✓ right subtree of any node can't be more than 1.

6406532331238. ✳ The complexity of searching element in an AVL tree is $O(n)$.

6406532331239. ✳ If the height of an AVL tree is h , the maximum number of nodes will be $2^h + 1$.

6406532331240. ✳ The complexity of both insertion and deletion in AVL tree is $O(n)$.

Sub-Section Number : 4

Sub-Section Id : 640653103369

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 43 Question Id : 640653698019 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 simple undirected connected graph G with **65** edges with the least number of vertices possible. What will be the number of vertices in graph G ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

12

Question Number : 44 Question Id : 640653698025 Question Type : SA Calculator : None

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

Correct Marks : 4

Question Label : Short Answer Question

In a binary tree T of **25** nodes, if the number of nodes with two children is **6**, then the number of nodes with one child is ____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

12

Question Number : 45 **Question Id :** 640653698027 **Question Type :** SA **Calculator :** None

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

Correct Marks : 4

Question Label : Short Answer Question

The **pre-order traversal** of a binary search tree is:

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

What would be the sum of elements stored in the leaf nodes of a binary search tree?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

16

Question Number : 46 **Question Id :** 640653698029 **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

You are given the following list of 8 meeting requests with start time, and end time.

Meeting Id	Start Time	End Time
1	1	4
2	1	2
3	5	8
4	7	10
5	6	8
6	11	16
7	15	20
8	14	17

Each meeting requires its own conference room. Your goal is to schedule all meetings in the minimum number of conference rooms. Assume that if any meeting ends at time t , then another meeting can start at time t or afterwards in the same room.

The minimum number of conference rooms required to schedule all meetings is___.

Response Type : Numeric**Evaluation Required For SA :** Yes**Show Word Count :** Yes**Answers Type :** Equal**Text Areas :** PlainText**Possible Answers :**

3

Question Number : 47 Question Id : 640653698033 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

There are N stones, numbered $0, 1, 2, \dots, N - 1$. For each i ($0 \leq i \leq N - 1$), the height of Stone i is h_i .

There is a frog who is initially on Stone 0. He will repeat the following action some number of times to reach Stone N .

If the frog is currently on stone i , can jump to Stone $i + 1$ or Stone $i + 2$. Here, a cost of $|h_i - h_j|$ is incurred, where j is the stone to land on.

Find the minimum possible total cost to reach stone 5 from stone 0 for the following sequence of heights for 6 stones.

10, 15, 30, 20, 28, 36

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

26

AppDev1

Section Id : 64065349277

Section Number : 3

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 31

Number of Questions to be attempted : 31

Section Marks : 100

Display Number Panel : Yes

Section Negative Marks : 0

Group All Questions : No

Enable Mark as Answered Mark for Review and Yes

Clear Response :

Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103370
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 48 Question Id : 640653698038 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 :

6406532331271. ✓ YES

6406532331272. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653103371
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 49 Question Id : 640653698039 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the given URL below.

https://seek.study.iitm.ac.in/courses/ns_23t3_cs2003?type=lesson&tab=course

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

Options :

Protocol: https
Domain: seek
Sub-Domain: study.iitm.ac.in
Path: /courses/ns_23t3_cs2003
Parameters: ?type=lesson&tab=courses

6406532331273. ❌

Protocol: https
Domain: seek
Sub-Domain: study.iitm.ac.in/courses
Path: /ns_23t3
Parameters: cs2003?type=lesson&tab=courses

6406532331274. ❌

Protocol: https
Domain: study.iitm.ac.in/courses
Sub-Domain: seek
Path: /ns_23t3
Parameters: cs2003?type=lesson&tab=courses

6406532331275. ❌

Protocol: https
Domain: study.iitm.ac.in
Sub-Domain: seek
Path: /courses/ns_23t3_cs2003
Parameters: ?type=lesson&tab=courses

6406532331276. ✓

Question Number : 50 Question Id : 640653698044 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

How will the browser render the following HTML document?

```
<!DOCTYPE html>
<html>
<head>
    <title>Document</title>
    <style>
        div{
            border: 1px solid black;
            color:pink;
        }
        span{
            border: 1px solid pink;
            display: block;
        }
        div,span{
            width:8%;
            margin: 2px;
        }
    </style>
</head>
<body>
    <div>Div 1</div>
    <div>Div 2</div>
    <span>Span 1</span>
    <span>Span 2</span>
</body>
</html>
```

Options :

Div 1
Div 2
Span 1
Span 2

6406532331289. ✓

6406532331290. ❌

Div 1 Div 2

Span 1

Span 2

Div 1 Div 2 Span 1 Span 2

6406532331291. ✘

Div 1
Div 2

Span 1 Span 2

6406532331292. ✘

Question Number : 51 Question Id : 640653698052 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 statements given below and choose the correct option.

Statement 1: 100% statement coverage automatically implies 100% branch coverage.

Statement 2: 100% statement coverage automatically implies 100% condition coverage.

Options :

6406532331317. ✘ Both statement 1 and 2 are correct.

6406532331318. ✓ Both statement 1 and 2 are incorrect.

6406532331319. ✘ Statement 1 is correct but, statement 2 is incorrect.

6406532331320. ✘ Statement 2 is correct but, statement 1 is incorrect.

Question Number : 52 Question Id : 640653698058 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 simple web server using command prompt.

Filename - Hello.sh

```
#!/bin/bash
while true; do
echo -e "Current date and time is \n\t $(date)"
| nc -l localhost 4100;
done
```

If this program creates a server in a terminal, the correct way to make a request to this server is _____.

Options :

Type curl http://localhost:5000 in the same terminal where the server is 6406532331341. ✘ running.

Type curl http://localhost:4100 in the same terminal where the server is 6406532331342. ✘ running.

6406532331343. ✘ Open a new terminal and type curl http://localhost:5000

6406532331344. ✓ Open a new terminal and type curl http://localhost:4100

Question Number : 53 Question Id : 640653698061 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following flask application.

Python file: app.py

```
from flask import Flask, render_template, request

app = Flask(__name__)

emp = {'admin':'manoj', 'user':'sumit'}

@app.route('/profile/<user>')
def profile(user):
    access = request.args.get('access')
    if emp[access] != user:
        return render_template("profile.html", user = user,
                               access = access, error = True)
    return render_template("profile.html", user = user,
                           access = access, error = False)

app.run()
```

Template file: profile.html

```
<body>
    <div>
        {% if error %}
            <h3>Hi {{user}}, {{access}} access denied</h3>
        {% else %}
            <h3>Hi {{user}}, you are logged in as {{access}}.</h3>
        {% endif %}
    </div>
</body>
```

If the application is running locally on <http://127.0.0.1:5000>, then what will be rendered by the browser for URL,
<http://127.0.0.1:5000/profile/sumit?access=admin> ?

Options :

6406532331353. ✖ **Hi sumit, you are logged in as admin.**

6406532331354. ✖ **Hi sumit, you are logged in as user.**

6406532331355. ✓ Hi sumit, admin access denied.

6406532331356. ✖ Hi sumit, user access denied.

Question Number : 54 Question Id : 640653698062 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following function to be tested and test functions given in the Python code snippet below.

test_file.py

```
import pytest

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

@pytest.mark.marker1
def testcase_1():
    assert square(13) == 144

@pytest.mark.marker2
def testcase_2():
    assert square(6) == 6

@pytest.mark.marker3
def testcase_3():
    assert square(3) == 9
```

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

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

What command will result into the outcome given above?

Options :

6406532331357. ✘ pytest test_file.py -k marker1

6406532331358. ✘ pytest test_file.py -m marker1

6406532331359. ✘ pytest test_file.py -m marker3

6406532331360. ✓ pytest test_file.py -m marker2

Question Number : 55 Question Id : 640653698063 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

The hexadecimal equivalent of the IPv4 address 171.216.21.100 would be

_____.

Options :

6406532331361. ✘ ABD8 6415

6406532331362. ✘ D8AB 6415

6406532331363. ✓ ABD8 1564

6406532331364. ✘ D8AB 1564

Question Number : 56 Question Id : 640653698064 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following models Creator and Song corresponding to tables creator and song in SQLite database.

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

class Song(db.Model):
    id = db.Column(db.Integer(), primary_key = True)
    s_title = db.Column(db.String(), unique = True)
    singer = db.Column(db.Integer(), db.ForeignKey("creator.id"))
```

Based on the model schemas, what relationship do the table creator and song share?

Options :

6406532331365. ✘ Many-to-Many

6406532331366. ✓ One-to-Many

6406532331367. ✗ One-to-One

6406532331368. ✗ The tables are not at all related

Question Number : 57 Question Id : 640653698070 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 curl option is used to set the request method in an HTTP request?

Options :

6406532331389. ✗ -H

6406532331390. ✓ -X

6406532331391. ✗ -d

6406532331392. ✗ -r

Sub-Section Number : 3

Sub-Section Id : 640653103372

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 58 Question Id : 640653698040 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

Read the statements given below carefully and select the correct option.

Statement 1: If an element is styled externally using both the class and the ID, then for the same

attribute, it will acquire styling from the ID.

Statement 2: If an element is styled internally using ID and class selector as well as using inline styling for the same style attribute, then it will always acquire inline styling.

Options :

6406532331277. ✓ Both statements 1 and 2 are correct

6406532331278. ✗ Both statements 1 and 2 are incorrect

6406532331279. ✗ Statement 1 is correct but statement 2 is incorrect

6406532331280. ✗ Statement 2 is correct but statement 1 is incorrect

Question Number : 59 Question Id : 640653698045 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 two python files, one.py and two.py with following code snippets.

File1: one.py

```
import sys
import two
print(f'{sys.argv[1]} {sys.argv[3]}'')
```

File2: two.py

```
import sys
print(f'{sys.argv[2]} {sys.argv[0]}'')
```

What is the output of the following command “python one.py two.py two.py one.py”?

Options :

one.py two.py

6406532331293. ✗ one.py two.py

two.py one.py
6406532331294. ❌ one.py two.py

two.py one.py
6406532331295. ✓ two.py one.py

one.py two.py
6406532331296. ❌ two.py one.py

Question Number : 60 Question Id : 640653698056 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 not a web component?

Options :

6406532331333. ❌ Custom Elements

6406532331334. ❌ Shadow DOM

6406532331335. ❌ HTML Templates

6406532331336. ✓ Web Assembly

Question Number : 61 Question Id : 640653698057 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the following statements and select the correct option.

Statement 1: The command, `git del <filename>` deletes the file from the staging area as well as from the working tree.

Statement 2: The command, `git rm --cached <filename>` deletes the file from the staging area but keeps it in the working tree.

Options :

6406532331337. ❌ Statement 1 is correct, but statement 2 is incorrect.

6406532331338. ✓ Statement 1 is incorrect, but statement 2 is correct.

6406532331339. ❌ Both statements 1 and 2 are correct.

6406532331340. ❌ Both statements 1 and 2 are incorrect.

Question Number : 62 Question Id : 640653698071 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 Emscripten in the context of WebAssembly?

Options :

6406532331393. ❌ A WebAssembly specification

6406532331394. ❌ A JavaScript framework

6406532331395. ✓ A toolchain for compiling C/C++ code to WebAssembly

6406532331396. ❌ An HTML and CSS editor

Question Number : 63 Question Id : 640653698072 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 ORM(Object-Relational Mapping) sqlalchemy is used for?

Options :

6406532331397. ✘ Running SQL queries directly on the database

6406532331398. ✘ Defining the structure of HTML templates

6406532331399. ✓ Mapping Python objects to database tables and records

6406532331400. ✘ Creating Web Routes in a Flask app

Sub-Section Number : 4

Sub-Section Id : 640653103373

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 64 Question Id : 640653698047 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.

arg.py

```
from jinja2 import Template
import sys
input_list = sys.argv
num1, num2, input_list[3] = int(input_list[1]), int(input_list[2]),
int(input_list[3])

if input_list[3]== 1:
    num3= (num1**num2)
elif input_list[3]== 2:
    num3= (num1-num2)
elif input_list[3]== 3:
    num3= (num1+num2)
else:
    num3= (num1%num2)
template = """
    <!DOCTYPE html>
    <html>
        <div>
            Number 1: {{num1}},
            Number 2: {{num2}},
            Output : {{num3}}
        </div>
    </html>
"""

t = Template(template)
print(t.render(num1=num1, num2=num2, num3=num3))
```

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

Column A	Column B
a) python arg.py 2 2 1	1) Number 1: 4, Number 2: 2, Output : 0
b) python arg.py 2 2 3	2) Number 1: 2, Number 2: 2, Output : 4
c) python arg.py 4 2 2	3) Number 1: 2, Number 2: 2, Output : 4
d) python arg.py 4 2 4	4) Number 1: 4, Number 2: 2, Output : 2

Options :

6406532331301. ✘ a - 3, b - 2, c - 1, d - 4

6406532331302. ✘ a - 2, b - 1, c - 4, d - 3

6406532331303. ✘ a - 3, b - 1, c - 2, d - 4

6406532331304. ✓ a - 2, b - 3, c - 4, d - 1

Question Number : 65 Question Id : 640653698048 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

Given a Python code snippet, code.py is run on the terminal with an appropriate temp.html document.

code.py

```
from jinja2 import Template
Products = [
    {'product_id': '101', 'prod_name': 'Legion', 'producer': 'Lenovo'},
    {'product_id': '102', 'prod_name': 'S21pro', 'producer': 'Samsung'},
    {'product_id': '103', 'prod_name': 'TabA7', 'producer': 'Samsung'},
    {'product_id': '104', 'prod_name': 'Ideapad', 'producer': 'Lenovo'},
]
File = open ('temp.html', 'r')
temp = File.read()
File.close()
made_temp = Template(temp)
print(made_temp.render(Products=Products))
```

What should be the content of temp.html file if the browser renders the output of the above code, as shown below;

Lenovo

Product ID	Name
101	Legion
104	Ideapad

Samsung

Product ID	Name
102	S21pro
103	TabA7

Options :

6406532331305. ✘

```
{% for product in Products| groupby('producer') %}  
  <p> {{product.grouper}} </p>  
  <table border="1">  
    <tr>  
      <th>Product ID</th>  
      <th> Name </th>  
    </tr>  
    <tr>  
      <td> {{ product.product_id}}</td>  
      <td>{{product.prod_name}}</td>  
    </tr>  
  </table>  
{% endfor %}
```

```
{% for product in Products| groupby('producer') %}  
  <p> {{product.grouper}} </p>  
  <table border="1">  
    <tr>  
      <th>Product ID</th>  
      <th> Name </th>  
    </tr>  
    {% for item in product.list %}  
      <tr>  
        <td> {{ item.product_id}}</td>  
        <td>{{item.prod_name}}</td>  
      </tr>  
    {% endfor %}  
  </table>  
{% endfor %}
```

6406532331306. ✓

6406532331307. ✘

```
{% for product in Products| groupby('prod_name') %}  
  <p> {{product.grouper}} </p>  
  <table border="1">  
    <tr>  
      <th>Product ID</th>  
      <th> Name </th>  
    </tr>  
    {% for item in product.list %}  
      <tr>  
        <td> {{ item.product_id}}</td>  
        <td>{{item.prod_name}}</td>  
      </tr>  
    {% endfor %}  
  </table>  
{% endfor %}
```

```
{% for product in Products| groupby('prod_name') %}  
  <p> {{product.grouper}} </p>  
  <table border="1">  
    <tr>  
      <th>Product ID</th>  
      <th>Name</th>  
    </tr>  
    <tr>  
      <td>{{item.product_id}}</td>  
      <td>{{item.prod_name}}</td>  
    </tr>  
  </table>  
{% endfor %}
```

6406532331308. *

Question Number : 66 Question Id : 640653698065 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 function to be tested and test functions given in the Python code snippet below.

test_file.py

```
powers = []

for i in range(1,5):
    def powers_of_x(x):
        return x**i
    powers.append(powers_of_x)

powers_of_3 = [x(3) for x in powers]

def testcase_1():
    assert 9 in powers_of_3

def testcase_2():
    assert 27 in powers_of_3

def testcase_3():
    assert 64 in powers_of_3
```

For the command `pytest test_file.py`, what will be the output on the terminal?

Options :

6406532331369. *

===== 1 failed, 2 passed in 0.02s =====

6406532331370. *

===== 3 passed in 0.02s =====

6406532331371. ✓

===== 3 failed in 0.02s =====

6406532331372. *

===== 2 failed, 1 passed in 0.02s =====

Question Number : 67 Question Id : 640653698066 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 rendered using a browser.

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <title>Document</title>
    <style>
      input:valid {
        background: green;
      }
      input:invalid {
        background: red;
      }
    </style>
  </head>
  <body>
    <form>
      <label for="uname">Enter a valid e-mail:</label>
      <input type="text" name="uname" minlength="5"
             maxlength="8" value="a">
    </form>
  </body>
</html>
```

If a user starts typing "madcourse" letter by letter, how will the background colour of the `<input>` tag change?

Options :

6406532331373. ❌ Red for first five letters, turns green till 8th letter and turns red back again after next letter.

6406532331374. ✓ Red for first five letters, and remain green after that.

6406532331375. ❌ Green for first five letters, turns red till 8th letter and turns green back again after next letter.

6406532331376. ❌ Green for first five letters, and remain red after that.

Question Number : 68 Question Id : 640653698069 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

A flask application shown below is running locally on <http://127.0.0.1:5000>

```
from flask import Flask, request, session, abort

app = Flask(__name__)
app.config['SECRET_KEY'] = "yekterces"

@app.route('/login')
def log_in():
    user = request.args['user']
    role = request.args['role'] if 'role' in request.args else
    'general'
    session['user'], session['role'] = user, role
    return "Logged in successfully!"

@app.route('/home')
def land():
    if 'user' in session:
        if session['role'] == 'admin':
            return f"Welcome {session['user']}"
        return abort(401)
    return abort(404)

@app.route('/logout')
def log_out():
    session.pop('user', None)
    session.pop('role', None)
    return "Logged out sucessfully!"

app.run(debug=True)
```

If the application is running locally on <http://127.0.0.1:5000>, What will be the correct sequence of response status codes if the client visits the URLs one by one in the sequence given below?

1. <http://127.0.0.1:5000/home>
2. <http://127.0.0.1:5000/login/admin>
3. <http://127.0.0.1:5000/login?user=admin>
4. <http://127.0.0.1:5000/home>
5. <http://127.0.0.1:5000/logout>

Options :

401
401
200
404

6406532331385. ✘ 200

404
404
200
401

6406532331386. ✓ 200

404
200
200
200

6406532331387. ✘ 200

404
200
404
200

6406532331388. ✘ 200

Sub-Section Number :

5

Sub-Section Id :

640653103374

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 69 Question Id : 640653698053 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 two code snippets.

Snippet 1

```
@app.route("/base")
@app.route("/home")
def homepage():
    return "Welcome to MAD I!"
```

Snippet 2

```
@app.route("/mad1")
def homepage():
    return "Welcome to MAD I!"

@app.route("/mad2")
def homepage():
    return "Welcome to MAD II!"
```

Which of the following is/are correct options if the above snippets are run as view functions of a flask application ?

Options :

6406532331321. ✓ Snippet 1 is valid, but Snippet 2 is invalid.

6406532331322. ✗ Snippet 2 is valid, but Snippet 1 is invalid.

6406532331323. ✓ Snippet 1 will run successfully, while Snippet 2 will raise an AssertionError.

6406532331324. ✗ Snippet 2 will run successfully, while Snippet 1 will raise an AssertionError.

Question Number : 70 Question Id : 640653698054 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following flask application.

app.py

```
from flask import Flask, render_template, url_for, request, redirect
app = Flask(__name__)
list_of_courses = ['Java', 'Python', 'DBMS', 'PDSA']

@app.route("/if")
def if_loop():
    name = request.args.get("name")
    if name == "MADI":
        return redirect("/home")
    elif name in list_of_courses:
        return url_for("for_loop")
    return "You are not authorized to view this page"

@app.route("/home")
def home_page():
    return "Welcome to MADI!"

@app.route("/for")
def for_loop():
    return render_template("for_course.html", courses=list_of_courses)

app.run(debug=True)
```

Which of the following statements is/are true if the application is running locally on <http://127.0.0.1:5000> ?

Options :

For URL, <http://127.0.0.1:5000/if?name=MADI> browser will display, /home as output.
6406532331325. *

For URL, <http://127.0.0.1:5000/if?name=Java> browser will render, 6406532331326. * for_course.html

For URL <http://127.0.0.1:5000/if> browser will display, 6406532331327. ✓ You are not authorized to view this page! as output.

For URL <http://127.0.0.1:5000/if?name=Python> browser will display, 6406532331328. ✓ /for as output.

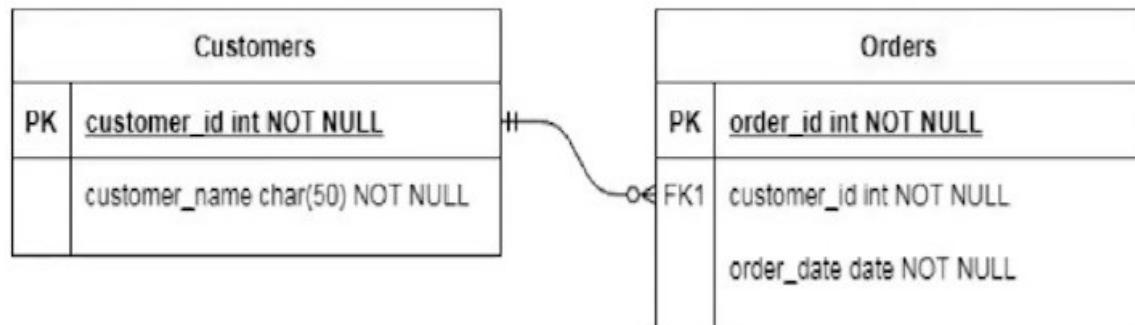
Question Number : 71 Question Id : 640653698055 Question Type : MSQ Is Question

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 ER diagram below.



Which of the following statement is/are correct?

Options :

6406532331329. ✓ One order must have exactly one customer associated with it.

6406532331330. ✗ One customer must have many orders associated with it.

6406532331331. ✓ One customer may have zero or many orders associated with it.

6406532331332. ✓ It's not mandatory for a customer to have an order.

Question Number : 72 Question Id : 640653698059 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

The table "Student" in SQLite database is used by an application.

ID	Name	Age	Marks	Courses
102	Ravi	21	45	Geography
105	Ashnoor	22	80	Physics
109	Kavya	20	71	Mathematics
114	Vivek	25	63	Chemistry

Which of the following SQL commands will change the state of the database server?

Options :

6406532331345. ✓ `CREATE TABLE Student (ID int NOT NULL, Name varchar(255) NOT NULL, Age int, Marks int, Courses varchar(255), PRIMARY KEY (ID));`

6406532331346. ✘ `SELECT * from Student;`

6406532331347. ✓ `UPDATE Student SET Name = 'Kavya', Age = 20 WHERE ID = 109;`

6406532331348. ✘ `SELECT Name, Courses from Student where Marks>60;`

Question Number : 73 Question Id : 640653698060 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following Python code snippet.

```
from string import Template

statement = Template("the $var1 boxing $var2 jump $var3")

out = statement.substitute(var_dict)

print(out)
```

Which of the following options correctly represent(s) the dictionary var_dict, such that the code does not throw any error when run in the terminal?

Options :

6406532331349. ✘ var_dict = {'var1': 'five', 'var2': 'wizards'}

6406532331350. ✓ var_dict = {'var1': 'five', 'var2': 'wizards', 'var3': 'quickly'}

6406532331351. ✓ var_dict = {'var1': 'five', 'var2': 'wizards', 'var3': 'quickly',
'var4': 'away'}

6406532331352. ✘ None of these

Sub-Section Number : 6

Sub-Section Id : 640653103375

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 74 Question Id : 640653698046 Question Type : MSQ Is Question

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

Correct Marks : 4.5 Max. Selectable Options : 0

Question Label : Multiple Select Question

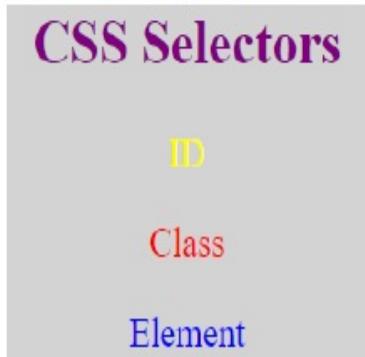
An HTML code is given below then which of the following CSS code will render the output as

shown below.

HTML Code:

```
<!DOCTYPE html>
<html>
<head>
    <title>Document</title>
    <link href="style.css" rel="stylesheet">
    <style>
        body{background-color:lightgray !important; text-align: center;}
        h2{color: purple !important ;}
    </style>
</head>
<body style="background-color:lavender;" >
    <h2 style="color: blue;">CSS Selectors</h2>
    <p class="one">ID</p>
    <p class="two" >Class</p>
    <p class="three" id="id">Element</p>
</body>
</html>
```

Rendered Output:



Options :

```
body{background-color: skyblue !important;}
#id{color: blue ;}
.one{color: yellow;}
.two{color: red;}
.three{color: green;}
```

6406532331297. ✓

```
body{background-color: skyblue ;}
#id{color: red ;}
.one{color: yellow;}
.two{color: blue;}
.three{color: green;}
```

6406532331298. ✗

```
body{background-color: skyblue !important;}  
#id{color: red ;}  
.one{color: blue;}  
.two{color: yellow;}  
.three{color: green;}
```

6406532331299. ✘

```
body{background-color: skyblue ;}  
#id{color: blue ;}  
.one{color: yellow;}  
.two{color: red;}
```

6406532331300. ✓

Question Number : 75 Question Id : 640653698067 Question Type : MSQ Is Question

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

Correct Marks : 4.5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following python code snippet and choose the correct option.

```
def modify(func):  
    def wrapper(x):  
        list = func(x, [])  
        return list  
    return wrapper
```

```
@modify  
def expandList(x, list = []):  
    list.append(x)  
    return list  
  
print(expandList(5))  
print(expandList(6))
```

Options :

6406532331377. ✘

If @modify is commented and the updated code is run on the terminal, the output will be;

- [5]
- [6]

If @modify is commented and the updated code is run on the terminal, the output will be;

- [5]
- [5, 6]

6406532331378. ✓

If the code is run on the terminal directly, the output on the terminal will be;

- [5]
- [6]

6406532331379. ✓

If the code is run on the terminal directly, the output on the terminal will be;

- [5]
- [5, 6]

6406532331380. ✘

Question Number : 76 Question Id : 640653698068 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 4.5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following flask application.

```
from flask import Flask, abort
app = Flask(__name__)
modules = ['python', 'react', 'node']

@app.route('/home/modules')
def all_modules():
    return f"<h3>List of modules: {modules}</h3>"

@app.route('/get/<string:module_1>')
def get_module(module_1):
    if module_1 in modules:
        return f"<h3>One module found: {module_1}.</h3>"
    else:
        abort(400)

@app.errorhandler(400)
def module_error(error):
    return "<h3>Cannot find module</h3>"

@app.errorhandler(404)
def module_error(error):
    return "<h3>Incorrect Path</h3>"

app.run(debug=True)
```

If the application is running locally on <http://127.0.0.1:5000>, select the correct statement(s).

Options :

For the URL, <http://127.0.0.1:5000/home/modules>, the browser will render;
6406532331381. ✓ **List of modules: ['python', 'react', 'node']**

For the URL, <http://127.0.0.1:5000/home/modules>, the browser will render;
6406532331382. ✗ **Incorrect Path**

For the URL, <http://127.0.0.1:5000/get/react/>, the browser will render;
6406532331383. ✗ **One module found: react.**

For the URL, <http://127.0.0.1:5000/get/vuejs>, the browser will render;

6406532331384. ✓ **Cannot find module**

Sub-Section Number :	7
Sub-Section Id :	640653103376
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653698049 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 : (77 to 78)

Question Label : Comprehension

Given below is a part of the HTTP response upon running the command:

```
curl --head https://www.httpbin.org/
```

HTTP response

```
HTTP/2 200
date: Fri, 02 Dec 2022 16:38:16 GMT
content-type: text/html; charset=utf-8
content-length: 9593
server: gunicorn/19.9.0
access-control-allow-origin: *
access-control-allow-credentials: true
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 77 Question Id : 640653698050 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 part of the response indicates the MIME type of the response body?

Options :

6406532331309. ✘ charset=utf-8

6406532331310. ✘ server: gunicorn/19.9.0

6406532331311. ✓ content-type: text/html;

6406532331312. ✘ None of these

Question Number : 78 Question Id : 640653698051 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 part of the response indicates that the request created a successful response?

Options :

6406532331313. ✘ server: gunicorn/19.9.0

6406532331314. ✘ content-type: text/html;

6406532331315. ✓ HTTP/2 200

6406532331316. ✘ None of these

Sub-Section Number : 8

Sub-Section Id : 640653103377

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698041 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 : (79 to 80)

Question Label : Comprehension

A machine client M makes multiple requests to three different servers A, B and C in the order A then B followed by C. However, it can make a request to server B only after receiving the response from server A and same with server C i.e. the client can make a request to server C only after receiving response from server B. If the servers A, B and C are located at 900 kms, 1200 kms and 1500 kms respectively, answer the given subquestions.[Consider speed of light in air to be 3×10^8 m/s]

Sub questions

Question Number : 79 Question Id : 640653698042 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 maximum number of requests that can be made to A per second?

Options :

6406532331281. ✘ 166

6406532331282. ✓ 42

6406532331283. ✘ 56

6406532331284. ✘ 111

Question Number : 80 Question Id : 640653698043 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 round trip time (RTT) in milliseconds for server C?

Options :

6406532331285. ✘ 24

6406532331286. ✘ 12

6406532331287. ✓ 10

6406532331288. ✘ 5

MLF

Section Id :	64065349278
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	40
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103378
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 81 Question Id : 640653698073 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 :

6406532331401. ✓ YES

6406532331402. ✘ NO

Question Number : 82 Question Id : 640653698074 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 ($F_X(x)$)	$E[X]$	$\text{Var}(X)$
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,

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

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

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

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

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

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

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

5. **Likelihood of i.i.d. samples:** Likelihood of a sampling x_1, x_2, \dots, x_n , denoted

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

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

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

Options :

6406532331403. ✓ Useful Data has been mentioned above.

6406532331404. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 640653103379

Question Shuffling Allowed : Yes

Is Section Default? :

null

Question Number : 83 Question Id : 640653698075 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Consider an encoder-decoder pair used for dimensionality reduction, where the encoder function is denoted as $f(x_1, x_2, x_3) = (x_1 + x_2 + x_3)/3$ and the decoder function is denoted as $g(u) = [u \ u^2 \ u]$.

Compute the reconstruction error $\left(R(f, g) = \frac{1}{n} \sum_{i=1}^n \|X_i - g(f(X_i))\|^2 \right)$ for the following dataset:

$$X_1 = [1, 2, 0], \quad X_2 = [-1, 1, 0], \quad X_3 = [1, 2, 3]$$

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 :

3.31 to 3.35

Question Number : 84 Question Id : 640653698078 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 and Y be two independent random variables, where $X \sim \text{Bernoulli}\left(\frac{1}{2}\right)$

and $Y \sim \text{Bernoulli}\left(\frac{1}{4}\right)$. Determine $P(X + Y = 1)$ and enter the answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.5

Question Number : 85 Question Id : 640653698080 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Suppose you want to check whether a coin is fair or not. The coin shows heads with probability p each time it is flipped. Suppose you flip the coin 1000 times and observe a total of 485 heads, then find the ML estimate of p . Enter the answer correct to three decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.480 to 0.490

Sub-Section Number : 3

Sub-Section Id : 640653103380

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 86 Question Id : 640653698076 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 linear approximation of $f(x, y) = e^{xy}$ around $(1, 1)$?

Options :6406532331406. ✓ $e(x + y - 1)$ 6406532331407. ✗ $x + y - 1$ 6406532331408. ✗ e 6406532331409. ✗ $ex + ey$ **Question Number : 87 Question Id : 640653698079 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 $X = \begin{pmatrix} X_1 \\ X_2 \\ X_3 \end{pmatrix} \sim \text{Normal}(\mu, \Sigma)$, where $\mu = \begin{pmatrix} 2 \\ 5 \\ 1 \end{pmatrix}$ and $\Sigma = \begin{pmatrix} 5 & 2 & -2 \\ 2 & 6 & 3 \\ -2 & 3 & 8 \end{pmatrix}$

If $Y = BX$, where $B = \begin{pmatrix} 2 & 0 & 1 \\ 0 & 3 & 1 \end{pmatrix}$, then find the distribution of Y .

Options :6406532331412. ✗ $Y \sim \text{Normal}\left(\begin{bmatrix} 5 \\ 16 \end{bmatrix}, \begin{bmatrix} 80 & 25 \\ 25 & 20 \end{bmatrix}\right)$ 6406532331413. ✓ $Y \sim \text{Normal}\left(\begin{bmatrix} 5 \\ 16 \end{bmatrix}, \begin{bmatrix} 20 & 25 \\ 25 & 80 \end{bmatrix}\right)$ 6406532331414. ✗ $Y \sim \text{Normal}\left(\begin{bmatrix} 2 \\ 5 \end{bmatrix}, \begin{bmatrix} 20 & 25 \\ 25 & 80 \end{bmatrix}\right)$

$$Y \sim \text{Normal} \left(\begin{bmatrix} 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 80 & 25 \\ 25 & 20 \end{bmatrix} \right)$$

6406532331415. *

Question Number : 88 Question Id : 640653698089 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

There once lived a queen named Queen Dido who was exiled from her kingdom, and so she fled to another nearby kingdom. She begged the king of the nearby kingdom to give her some land. The king agreed to give her a rectangular piece of land, which she could enclose with a rope of length 96 units. How should Queen Dido choose the sides of the rectangle so that she gets as much land as possible?

Hint: Perimeter of the rectangle with sides x and y is $2(x + y)$.

Options :

6406532331442. ✓ $x = 24, y = 24$

6406532331443. * $x = 30, y = 18$

6406532331444. * $x = 48, y = 0$

6406532331445. * $x = 48, y = 48$

Sub-Section Number : 4

Sub-Section Id : 640653103381

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 89 Question Id : 640653698077 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 X and Y have the following joint density function

$$f(x, y) = \begin{cases} x(y - x)e^{-y}, & 0 < x \leq y < \infty \\ 0, & \text{otherwise} \end{cases}$$

Find the conditional expectation $E(X | Y = 2)$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Sub-Section Number : 5

Sub-Section Id : 640653103382

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 90 **Question Id :** 640653698081 **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 $A = \begin{pmatrix} 1 & 2 & 0 \\ 3 & 3 & 1 \\ 4 & 5 & 2 \end{pmatrix}$. Find the nullspace of A .

Options :

$$\text{span} \left\{ \begin{pmatrix} 1 \\ 1 \\ 1 \end{pmatrix} \right\}$$

6406532331417. *

$$\left\{ \begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix} \right\}$$

6406532331418. ✓

$$\text{span} \left\{ \begin{pmatrix} -1 \\ -1 \\ -1 \end{pmatrix} \right\}$$

6406532331419. ✗

$$\text{span} \left\{ \begin{pmatrix} 1 \\ -1 \\ 1 \end{pmatrix} \right\}$$

6406532331420. ✗

Question Number : 91 Question Id : 640653698082 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 among the following statements are correct?

Options :

6406532331421. ✗ The eigenvalues of a matrix are on its main diagonal.

6406532331422. ✓ Each eigenvector of an $n \times n$ matrix A is also an eigenvector of A^2 .

6406532331423. ✗ Two eigenvectors corresponding to the same eigenvalues are always linearly dependent.

6406532331424. ✗ If v_1 and v_2 are linearly independent eigenvectors, then they correspond to distinct eigenvalues.

Question Number : 92 Question Id : 640653698088 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

A firm produces two products, A and B , with respective manufacturing costs of Rs. 20 and Rs. 30 per unit. The objective is to minimize the total manufacturing cost while meeting certain production constraints. A minimum of 250 units must be produced daily, and at least 1000 machine hours should be utilized each day. Machine hours consumption per unit is 6 hours for A and 5 hours for B . Let the number of units of A produced per day be x_1 and the number of units of B produced per day be x_2 . Then, choose the correct optimization problem from the following:

Options :

Minimize: $x_1 + x_2$
6406532331438. ❌ Subject to: $x_1 + x_2 \geq 250, 6x_1 + 5x_2 \geq 1000, x_1, x_2 \geq 0$

Minimize: $20x_1 + 30x_2$
6406532331439. ❌ Subject to: $x_1 + x_2 \leq 250, 6x_1 + 5x_2 \leq 1000, x_1, x_2 \geq 0$

Minimize: $x_1 + x_2$
6406532331440. ❌ Subject to: $x_1 + x_2 \geq 250, 6x_1 + 5x_2 \geq 1000, x_1, x_2 \geq 0$

Minimize: $20x_1 + 30x_2$
6406532331441. ✓ Subject to: $x_1 + x_2 \geq 250, 6x_1 + 5x_2 \geq 1000, x_1, x_2 \geq 0$

Sub-Section Number : 6

Sub-Section Id : 640653103383

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 93 Question Id : 640653698083 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let A be a $n \times n$ positive definite matrix. Then, which among the following are correct?

Options :

6406532331425. ✓ A^k is positive definite, for all $k \geq 1$.

6406532331426. ✓ Each of the diagonal entry of A will be positive.

6406532331427. ✗ rA is positive definite, $r \in \mathbb{R}$.

6406532331428. ✓ A^{-1} is positive definite.

Question Number : 94 Question Id : 640653698087 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 functions $f(x) = \sqrt{x}$, $x \geq 0$ and $g(x) = |x|$, $x \in \mathbb{R}$. Then, which among the following options are correct?

Options :

6406532331434. ✗ fog is convex.

6406532331435. ✓ fog is not convex.

6406532331436. ✓ $-f$ is convex.

6406532331437. ✗ $h : (0, \infty) \rightarrow \mathbb{R}$ defined by $h(x) = f(x) + g(x)$ is convex.

Sub-Section Number :	7
Sub-Section Id :	640653103384
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653698084 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 : (95 to 96)

Question Label : Comprehension

Consider the following data points:

$$X_1 = \begin{bmatrix} 0 \\ 0 \end{bmatrix}, \quad X_2 = \begin{bmatrix} 2 \\ 1 \end{bmatrix}, \quad X_3 = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$$

For the given data points, the goal is to find transformed data points for one dimensional PCA. Based on the information, answer the given subquestions.

Sub questions

Question Number : 95 Question Id : 640653698085 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 represents the covariance matrix, C for the given data points?

Options :

6406532331429. ✘ $\frac{1}{3} \begin{bmatrix} 2 & 2 \\ 2 & 2 \end{bmatrix}$

6406532331430. ✘ $\begin{bmatrix} 1 & 2 \\ 2 & 1 \end{bmatrix}$

6406532331431. ✓ $\frac{1}{3} \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$

6406532331432. ✗ $\begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$

Question Number : 96 Question Id : 640653698086 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 projected variance?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Sub-Section Number : 8

Sub-Section Id : 640653103385

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 97 Question Id : 640653698090 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let $S = \{x_1, x_2, x_3, x_4\} \subseteq \mathbb{R}^d$. Which of the following points must be the part of convex hull(S)?

Options :

6406532331446. ✓ $0.4x_1 + 0.6x_2$

6406532331447. ✓ $0.4x_1 + 0.2x_2 + 0.2x_3 + 0.2x_4$

6406532331448. ✗ $0.4x_1 - 0.2x_2 + 0.5x_3 + 0.3x_4$

6406532331449. ✗ $0.4x_1 + 0.2x_2 + 0.3x_3 + 0.3x_4$

Java

Section Id : 64065349279

Section Number : 5

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 24

Number of Questions to be attempted : 24

Section Marks : 100

Display Number Panel : Yes

Section Negative Marks : 0

Group All Questions : No

Enable Mark as Answered Mark for Review and Yes

Clear Response :

Maximum Instruction Time : 0

Sub-Section Number : 1

Sub-Section Id : 640653103386

Question Shuffling Allowed : No

Is Section Default? : null

Question Number : 98 Question Id : 640653698091 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 :

6406532331450. ✓ YES

6406532331451. ✘ NO

Sub-Section Number : 2

Sub-Section Id : 640653103387

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 99 Question Id : 640653698092 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the Java program below.

```

class Student {
    String name;
    public Student(String n) {
        name = n;
    }
    public String toString() {
        return "Name = " + name;
    }
}
class Leader extends Student {
    private int marks;
    public Leader(String n, int m) {
        super(n);
        marks = m;
    }
    public Leader(Leader l) {
        super(l.name);
        marks = l.marks;
    }
    public String toString() {
        return super.toString() + ", " + "Marks = " + marks;
    }
}
public class College {
    public static void main(String args[]) {
        Student l1 = new Leader("Rohan", 97);
        Student l2 = new Leader((Leader) l1);
        l2.name = "Ananya";
        System.out.println(l1 + "\n" + l2);
    }
}

```

What will the output be?

Options :

Name = Rohan, Marks = 97
6406532331452. ✗ Name = Rohan, Marks = 97

Name = Rohan, Marks = 97
6406532331453. ✓ Name = Ananya, Marks = 97

Name = Ananya, Marks = 97
6406532331454. ✗ Name = Ananya, Marks = 97

Name = Ananya, Marks = 97
6406532331455. * Name = Rohan, Marks = 97

Question Number : 100 Question Id : 640653698093 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Method `Optional.ofNullable(T value)` returns an `Optional` that describes the specific value, if non-null; otherwise returns an empty `Optional`.

Based on this description, consider the code given below, and answer the question that follows.

```
import java.util.*;
class GoldQC {
    String type;
    int karats;
    public GoldQC(int k){
        karats = k;
    }
    public GoldQC(String t, int k){
        type = t;
        karats = k;
    }
}
public class Test {
    public static void main(String[] args) {
        var goldList = new ArrayList<GoldQC>();
        goldList.add(new GoldQC("Ring", 24));
        goldList.add(new GoldQC(18));
        for (GoldQC g: goldList) {
            System.out.print("karats = " + g.karats + ", type = ");
            Optional<String> karatsValue = Optional.ofNullable(g.type);
            karatsValue.ifPresentOrElse(t -> System.out.println(t),
                () -> System.out.println("unknown")
            );
        }
    }
}
```

Choose the correct option.

Options :

This program generates the output:

karats = 24, type = null

6406532331456. ✗ karats = 18, type = unknown

This program generates the output:

karats = 24, type = Ring

6406532331457. ✗ karats = 18, type = null

This program generates the output:

karats = 24, type = Ring

6406532331458. ✓ karats = 18, type = unknown

This program terminates abnormally due to NullPointerException after printing:

6406532331459. ✗ karats = 24, type = Ring

Question Number : 101 Question Id : 640653698096 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.

```
abstract class Operation implements Runnable {
    static int result = 0;
}
class AddOperation extends Operation {
    public void run() {
        if (result != 8) {
            result = result + 3;
        }
    }
}
class MultiplyOperation extends Operation {
    public void run() {
        if (result != 9) {
            result = result * 2;
        }
    }
}
public class MathOperations {
    public static void main(String[] args) {
        Operation addOp = new AddOperation();
        Operation multiplyOp = new MultiplyOperation();
        Thread t1 = new Thread(addOp);
        Thread t2 = new Thread(multiplyOp);
        t1.start();
        t2.start();
        System.out.println(Operation.result);
    }
}
```

Choose the correct option.

Options :

6406532331468. ✘ The program will never generate the output: 0

6406532331469. ✘ The program will never generate the output: 3

6406532331470. ✘ The program will never generate the output: 6

6406532331471. ✓ The output can be 0 or 3 or 6 .

Question Number : 102 Question Id : 640653698097 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the Java code given below.

```
import java.util.*;
public class Test {
    public static void main(String args[]) {
        Map<String, Integer> tmap, lhmap, hmap;
        hmap = new HashMap<String, Integer>();
        hmap.put("Bhuvana", 6);
        hmap.put("Ann", 9);
        hmap.put("Greeshma", 12);
        hmap.put("Karan", 20);
        lhmap = new LinkedHashMap<String, Integer>();
        tmap = new TreeMap<String, Integer>();
        for(Map.Entry<String, Integer> entry:hmap.entrySet()) {
            tmap.put(entry.getKey(), entry.getValue());
        }
        for(Map.Entry<String, Integer> entry:tmap.entrySet()) {
            lhmap.put(entry.getKey(), entry.getValue());
        }
        System.out.println(hmap);
        System.out.println(tmap);
        System.out.println(lhmap);
    }
}
```

Choose the correct option regarding predicting the order of elements, with respect to the original ordering, in each map object.

Options :

6406532331472. ❌ We cannot predict the order of elements in hmap, tmap or lhmap.

6406532331473. ❌ We can predict the order of elements in hmap and lhmap, but not tmap.

6406532331474. ✓ We can predict the order of elements in tmap and lhmap but not that of hmap.

6406532331475. ❌ We can predict the order of elements in hmap, tmap and lhmap.

Question Number : 103 Question Id : 640653698098 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the Java code given below.

```
import java.util.*;
import java.util.stream.*;
public class Test {
    public static void main(String[] args) {
        var list = new ArrayList<String>();
        list.add(null);
        list.add("Java");
        list.add(null);
        list.add("Python");
        list.add("Kotlin");
        list.add("CPP");
        list.add("CPP");
        list.add("Kotlin");
        Stream<String> stream = list.stream();
        // CODE BLOCK
        System.out.println(obj);
    }
}
```

Choose the correct option(s) to fill in place of CODE BLOCK so that the output is:
[CPP, Java, Kotlin, Python]

Options :

```
var obj = list.stream()
    .filter(str -> str != null)
    .limit(4)
    .collect(Collectors.toSet());
```

6406532331476. *

```
var obj = list.stream()
    .map(str -> str != null)
    .collect(Collectors.toList());
```

6406532331477. *

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

6406532331478. ✓

```
var obj = list.stream()
    .filter(str -> str != null)
    .limit(4)
    .collect(Collectors.toList());
```

6406532331479. ✘

Question Number : 104 Question Id : 640653698100 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the code given below.

```
import java.io.*;
class Product implements Serializable {
    private String name = "****";
    private double price = 0.0;
    private transient String discountCode = "****";
    public Product(String name, double price, String discountCode) {
        this.name = name;
        this.price = price;
        this.discountCode = discountCode;
    }
    public String toString() {
        return "Product_name = " + name + ", Price = " + price + ", Discount Code
               = " + discountCode;
    }
}
public class Test {
    public static void main(String[] args) throws Exception {
        var fos = new FileOutputStream("product.txt");
        var oos = new ObjectOutputStream(fos);
        oos.writeObject(new Product("Laptop", 1200.00, "DISCOUNT123"));
        oos.close();
        var fis = new FileInputStream("product.txt");
        var ois = new ObjectInputStream(fis);
        Product p = (Product) ois.readObject();
        ois.close();
        System.out.println(p);
    }
}
```

What will the output be?

Options :

6406532331484. ✖ Product_name = Laptop, Price = 1200.0, Discount Code = DISCOUNT123

6406532331485. ✖ Product_name = Laptop, Price = null, Discount Code = null

6406532331486. ✓ Product_name = Laptop, Price = 1200.0, Discount Code = null

6406532331487. ✖ Product_name = Laptop, Price = 1200.0, Discount Code = ****

Question Number : 105 Question Id : 640653698102 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Method `Collectors.summarizingInt(mapping function)` returns a Collector which applies an int-producing mapping function to each input element, and returns summary statistics, such as count, min, max, sum, and average, for the resulting values.

```
import java.util.*;
import java.util.stream.*;
public class Test {
    public static void main(String[] args) {
        var salaryList = new ArrayList<Integer>();
        salaryList.add(50000);
        salaryList.add(60000);
        salaryList.add(75000);
        salaryList.add(90000);
        salaryList.add(55000);
        IntSummaryStatistics stat = salaryList.stream()
            .collect(Collectors.summarizingInt(x -> x));
        System.out.println(stat.getMin());
        System.out.println(stat.getMax());
        System.out.println(stat.getSum());
        System.out.println(stat.getAverage());
    }
}
```

Choose the correct option.

Options :

This program gives compile time error because a list cannot be converted to a
6406532331492. ✘ stream.

This program generates compile time error with the message:
6406532331493. ✘ incompatible types: possible lossy conversion from double to int

This program generates compile time error with the message:
6406532331494. ✘ Cannot invoke stream() on the primitive type int

This program generates the output:

50000
90000
330000

6406532331495. ✓ 66000.0

Question Number : 106 Question Id : 640653698105 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the code given below.

```
public class Test {  
    public static int factorial(int n) {  
        int result = 1;  
        assert n >= 0 : "n must be >= 0"; // assert-1  
        for (int i = 1; i <= n; i++) {  
            result *= i;  
        }  
        assert result >= 0 : result; // assert-2  
        return result;  
    }  
    public static void main(String[] args) {  
        int number = -7;  
        assert number != 0 : "number == 0"; // assert-3  
        int fact = factorial(number);  
        assert fact >= 0 : fact; // assert-4  
    }  
}
```

Identify the first assert statement that throws the `AssertionError` when the class is executed as: `java -ea Test`

Options :

6406532331504. ✓ assert-1

6406532331505. ✘ assert-2

6406532331506. ✘ assert-3

6406532331507. ✘ assert-4

Question Number : 107 Question Id : 640653698106 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the code given below.

```
import java.util.*;
class NegativeValueException extends Exception {
    public String toString() {
        return "Negative value encountered during update";
    }
}
public class Test {
    public static void update(int[] array, int index) throws NegativeValueException{
        if (array[index] < 0) {
            throw new NegativeValueException();
        }
        array[index] = array[index] * 3;
    }
    public static void main(String[] args) {
        int[] arr = {2, 8, -5, 10, 12};
        try {
            for (int i = 0; i < arr.length; i++) {
                update(arr, i);
            }
        } catch (NegativeValueException e) {
            System.out.println(e);
        }
        for (int n : arr) {
            System.out.print(n + " ");
        }
    }
}
```

What will the output be?

Options :

6406532331508. ✘ Negative value encountered during update

6406532331509. ✘ 6 24 -5 10 12

Negative value encountered during update

6406532331510. ✘ 6 24

Negative value encountered during update

6406532331511. ✓ 6 24 -5 10 12

Question Number : 108 Question Id : 640653698108 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the code given below.

```
import java.util.*;
public class Test{
    public static void main(String[] args) {
        PriorityQueue<String> queue1 = new PriorityQueue<String>();
        queue1.add("LG");
        queue1.add("Samsung");
        queue1.add("Panasonic");
        queue1.add("Bosch");
        queue1.add("Whirlpool");
        ArrayDeque<String> queue2 = new ArrayDeque<String>();
        while(queue1.size()>0) {
            queue2.addLast(queue1.poll()); //LINE-1
        }
        System.out.print(queue2);
    }
}
```

Choose the correct option.

Options :

This program generates the output:

6406532331516. ✓ [Bosch, LG, Panasonic, Samsung, Whirlpool]

This program generates the output:

6406532331517. ✗ [LG, Samsung, Panasonic, Bosch, Whirlpool]

6406532331518. ✗ [Whirlpool, Bosch, Panasonic, Samsung, LG]

6406532331519. ✗ Compilation error at LINE-1

Question Number : 109 Question Id : 640653698109 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the code given below.

```
class Vehicle {  
    public void start() {  
        System.out.println("Vehicle started");  
    }  
    public void drive() {  
        System.out.println("Driving");  
    }  
}  
class Car extends Vehicle {  
    public void drive() {  
        System.out.println("Driving a car");  
    }  
    public void park() {  
        System.out.println("Parked the car");  
    }  
}  
class ElectricCar extends Car {  
    public void charge() {  
        System.out.println("Charging the electric car");  
    }  
}  
public class Test {  
    public static void main(String[] args) {  
        Vehicle v = new ElectricCar();  
        v.start();  
        v.drive();  
        v.charge();      //LINE 1  
    }  
}
```

Choose the correct option.

Options :

6406532331520. *

This code generates the output:

Vehicle started

Driving a car

Charging the electric car

This code generates the output:

Vehicle started

Driving

6406532331521. ✘ Parked the car

6406532331522. ✓ LINE 1 generates compilation error.

This code generates the output:

Vehicle started

Driving a car

6406532331523. ✘ Parked the car

Question Number : 110 Question Id : 640653698110 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the code given below.

```
import java.util.*;
public class Marks{
    public static void main(String[] args){
        Map<String, Integer> quiz1 = new TreeMap<String, Integer>();
        quiz1.put("Sita", 300);
        quiz1.put("Geeta", 200);
        quiz1.put("Latha", 300);
        quiz1.put("Reena", 340);

        Map<String, Integer> quiz2 = new TreeMap<String, Integer>();
        quiz2.put("Sita", 400);
        quiz2.put("Latha", 400);
        quiz2.put("Reena", 360);
        quiz2.put("Pragna", 400);

        Map<String, Integer> avg = new TreeMap<String, Integer>();

        for(Map.Entry<String, Integer> m1 : quiz1.entrySet())
            avg.put(m1.getKey(), m1.getValue());

        for(Map.Entry<String, Integer> m2 : quiz2.entrySet())
            avg.merge(m2.getKey(), m2.getValue(), (x, y) -> (x + y)/2); // LINE 1

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

Choose the correct option.

Options :

6406532331524. ❌ Compile time error at LINE 1 because of invalid key

This program generates the output:

6406532331525. ✓ {Geeta=200, Latha=350, Pragna=400, Reena=350, Sita=350}

This program generates the output:

6406532331526. ❌ {Sita=350, Geeta=200, Latha=350, Reena=350, Pragna=400}

This program generates the output:

6406532331527. ❌ {Latha=350, Reena=350, Sita=350}

Question Number : 111 Question Id : 640653698112 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.

```
1 class Example {  
2     public void methodOne() {  
3         // ...  
4         methodTwo();  
5         // ...  
6     }  
7     public void methodTwo() {  
8         // ...  
9     }  
10    public static void methodThree() {  
11        // ...  
12        Example example = new Example();  
13        example.methodOne();  
14        // ...  
15    }  
16    public static void main(String[] args) {  
17        // ...  
18        methodThree();  
19    }  
20 }
```

During the execution of Line 14 in the given code, which method's activation record is at the top of the stack of activation records?

Options :

6406532331532. ✘ main

6406532331533. ✘ methodOne

6406532331534. ✘ methodTwo

6406532331535. ✓ methodThree

✓

Sub-Section Number :	3
Sub-Section Id :	640653103388
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 112 Question Id : 640653698104 Question Type : MCQ Is Question

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

Correct Marks : 5

Question Label : Multiple Choice Question

Consider the code given below.

```
class Student implements Cloneable{
    String name;
    int[] marks;
    public Student(String n, int[] m) {
        name = n;
        marks = m;
    }
    public Object clone() throws CloneNotSupportedException{
        return super.clone();
    }
}
public class Cloning {
    public static void main(String[] args) throws CloneNotSupportedException{
        int[] m = {12, 13, 15};
        Student s1 = new Student("Ram", m);
        Student s2 = (Student)s1.clone();
        Student s3 = s1;
        s2.marks[1] = 34;
        s3.name = "Sita";
        System.out.println(s1.name + " " + s1.marks[1]);
        System.out.println(s2.name + " " + s2.marks[1]);
        System.out.println(s3.name + " " + s3.marks[1]);
    }
}
```

What will the output be?

Options :

Sita 34

Ram 34

6406532331500. ✓ Sita 34

Sita 13

Ram 34

6406532331501. ✗ Sita 13

Ram 13

Ram 34

6406532331502. ✗ Sita 13

Ram 34

Ram 34

6406532331503. ✗ Sita 34

Question Number : 113 Question Id : 640653698107 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

Consider the two Java files given below.

Test1.java:

```
package pack1;
public class Test1 {
    protected void f1() {
        System.out.println("Inside Test1");
    }
}
```

Test2.java:

```
package pack2;
import pack1.Test1; //LINE-1
public class Test2 extends Test1{ //LINE-2
    public static void main(String[] args) {
        Test2 obj = new Test2();
        obj.f2();
    }
    public void f2() {
        f1(); //LINE-3
    }
}
```

Choose the correct option.

Options :

The program generates the output:

6406532331512. ✓ Inside Test1

6406532331513. ❌ Runtime error, because custom packages cannot be imported (see LINE-1).

6406532331514. ❌ LINE-2 generates a compilation error because of extending class Test1, which is located in another package.

6406532331515. ❌ LINE-3 generates a compilation error because method f1() is not visible from class Test2.

Sub-Section Number :

4

Sub-Section Id :

640653103389

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 114 Question Id : 640653698099 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

ConcurrentHashMap is a hash table implementation that supports full concurrency of retrievals and high expected concurrency for updates. All operations on this collection are thread-safe. Consider the code given below that uses a ConcurrentHashMap, and answer the question that follows.

```
class Example extends Thread{  
    Map siMap;  
    //Constructor is defined here  
    public void run(){  
        siMap.put("D",4);  
    }  
    }  
    public class FClass{  
        public static void main (String[] args) {  
            Map<String, Integer> siMap = new ConcurrentHashMap<String, Integer>();  
            String[] str = {"A", "B", "C"};  
            Integer[] arr = {1, 2, 3};  
            for(int i = 0; i < str.length; i++){  
                siMap.put(str[i],arr[i]);  
            }  
            Example t = new Example(siMap);  
            t.start();  
            Set s = siMap.entrySet();  
            Iterator itr = s.iterator();  
            while(itr.hasNext()){  
                Map.Entry m = (Map.Entry)itr.next();  
                System.out.println(m.getKey() + " => " + m.getValue());  
            }  
        }  
    }
```

Which of the following is NOT true about the given code?

Options :

6406532331480. ✓ This program may generate ConcurrentModificationException.

This program generates the output:

A => 1

B => 2

C => 3

6406532331481. ✘ D => 4

This program generates the output:

D => 4

A => 1

B => 2

6406532331482. ✘ C => 3

This program generates the output:

A => 1

B => 2

6406532331483. ✘ C => 3

Question Number : 115 Question Id : 640653698114 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

`FileOutputStream(String name,boolean append)` method creates a file output stream to write to the file with the specified name. If the second argument is true, then bytes will be written to the end of the file rather than the beginning.

Consider the code given below. Assume that, before execution of the given code, the files "file1.txt" and "file2.txt" have the following text in them.

Hello friend

```
public class Test {  
    public static void main(String[] args) {  
        try {  
            var out = new FileOutputStream("file1.txt", true);  
            var dout = new DataOutputStream(out);  
            dout.writeBytes(", What's up?");  
            dout.close();  
            var out2 = new FileOutputStream("file2.txt", false);  
            var dout2 = new DataOutputStream(out2);  
            dout2.writeBytes(", What's up?");  
            dout2.close();  
        }  
        catch(IOException e) {  
            System.out.println(e);  
        }  
    }  
}
```

Choose the correct option regarding the contents of file1.txt and file2.txt after the program finishes execution.

Options :

file1.txt:
, What's up?
file2.txt:
6406532331540. ✘ Hello friend, What's up?

file1.txt and file2.txt
6406532331541. ✘ Hello friend, What's up?

file1.txt:
Hello friend, What's up?
file2.txt:
6406532331542. ✓ , What's up?

file1.txt and file2.txt

6406532331543. *, What's up?

Sub-Section Number : 5

Sub-Section Id : 640653103390

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 116 Question Id : 640653698103 Question Type : MSQ Is Question

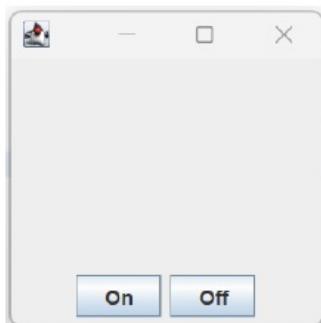
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6 Max. Selectable Options : 0

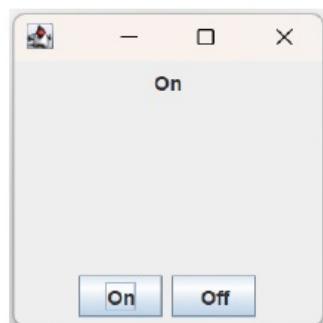
Question Label : Multiple Select Question

Consider the code given below.

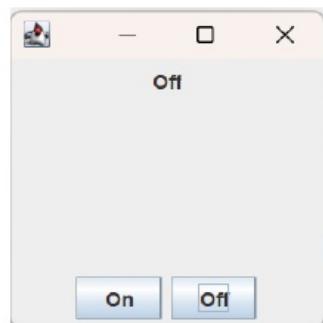
```
import javax.swing.*;
import java.awt.event.*;
public class ButtonEvents extends JFrame implements ActionListener {
    private JButton b1, b2;
    private JLabel l1;
    JPanel pnl1, pnl2;
    public ButtonEvents() {
        b1 = new JButton("On");
        b2 = new JButton("Off");
        pnl1 = new JPanel();
        //add b1 and b2 to pnl1
        add(pnl1, "South");
        l1 = new JLabel("");
        pnl2 = new JPanel();
        //add l1 to pnl2
        add(pnl2, "North");
        setVisible(true);
        setSize(200, 200);
        b1.setActionCommand("s1");
        b2.setActionCommand("s2");
        b1.addActionListener(this);
        b2.addActionListener(this);
    }
    public void actionPerformed(ActionEvent e) {
        // CODE BLOCK
    }
    public static void main(String[] args) {
        new ButtonEvents();
    }
}
```



(a) Initial appearance



(b) Clicking button "On"



(c) Clicking button "Off"

Figure 1: GUI

Choose the correct code segment inside method `actionPerformed()` such that whenever either of the two buttons (On/Off) is clicked, the label text of `pnl2` will change accordingly as shown in Figure 1.

Options :

```
if(e.getSource().equals(b1))
    l1.setText("On");
else if(e.getSource().equals(b2))
    l1.setText("Off");
```

6406532331496. ✓

6406532331497. ❌

```
if(e.getActionCommand().equals(b1))
    l1.setText("On");
else if(e.getActionCommand().equals(b2))
    l1.setText("Off");
```

```
if(e.getActionCommand().equals("s1"))
    l1.setText("On");
else if(e.getActionCommand().equals("s2"))
    l1.setText("Off");
```

6406532331498. ✓

```
if(e.getSource().equals("s1"))
    l1.setText("On");
else if(e.getSource().equals("s2"))
    l1.setText("Off");
```

6406532331499. ✘

Sub-Section Number : 6

Sub-Section Id : 640653103391

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 117 Question Id : 640653698094 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements count(s) the number of integers between 200 and 300 (including 200 and 300) that are not divisible by 7?

Options :

```
Stream.iterate(200, n -> n + 1).limit(101).filter(n -> n % 7 != 0)
6406532331460. ✓ .count();
```

```
Stream.iterate(200, n -> n + 1).filter(n -> n % 7 != 0)
6406532331461. ✘ .count();
```

Stream.iterate(200, n-> n <= 300, n -> n + 1).filter(n -> n % 7 != 0)
6406532331462. ✓ .count();

Stream.filter(200, n-> n <= 300, n -> n + 1).iterate(n -> n % 7 == 0)
6406532331463. ✗ .count();

Question Number : 118 Question Id : 640653698095 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.

```
import java.util.*;
class GiftBasket {
    private int giftsCount;
    public synchronized void removeGifts(int count) {
        if (giftsCount > count)
            giftsCount = giftsCount - count;
        System.out.println("After removing gifts, remaining count = " + giftsCount);
    }
    public synchronized void addGifts(int count) {
        giftsCount = giftsCount + count;
        System.out.println("After adding gifts, total count = " + giftsCount);
    }
}
class Child extends Thread {
    GiftBasket giftBasket;
    public Child(GiftBasket g) {
        this.giftBasket = g;
    }
    public void run() {
        giftBasket.removeGifts(2);
        giftBasket.addGifts(5);
    }
}
public class Test {
    public static void main(String[] args) {
        GiftBasket giftBasket = new GiftBasket();
        Child c1 = new Child(giftBasket);
        Child c2 = new Child(giftBasket);
        c1.start();
        c2.start();
    }
}
```

Choose all the options that would NEVER occur as a result of execution of this code.

Options :

- After removing gifts, remaining count = 0
- After adding gifts, total count = 5
- After removing gifts, remaining count = 3
- 6406532331464. ❌ After adding gifts, total count = 8

6406532331465. ❌

After removing gifts, remaining count = 0
After removing gifts, remaining count = 0
After adding gifts, total count = 5
After adding gifts, total count = 10

After removing gifts, remaining count = 0
After adding gifts, total count = 5
After adding gifts, total count = 10
6406532331466. ✓ After removing gifts, remaining count = 5

After adding gifts, total count = 5
After removing gifts, remaining count = 3
After removing gifts, remaining count = 5
6406532331467. ✓ After adding gifts, total count = 10

Question Number : 119 Question Id : 640653698101 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 Brewable {  
    void brew();  
}  
interface Drinkable extends Brewable {  
    void drink();  
}  
class CoffeeMachine {  
    public Drinkable getEspressoMaker() {  
        return new EspressoMaker();  
    }  
    private class EspressoMaker implements Drinkable {  
        public void brew() {  
            System.out.println("Brewing espresso in a coffee machine");  
        }  
        public void drink() {  
            System.out.println("Enjoying a cup of espresso");  
        }  
    }  
}  
public class Test {  
    public static void main(String[] args) {  
        CoffeeMachine cm = new CoffeeMachine();  
        // CODE BLOCK  
    }  
}
```

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

Brewing espresso in a coffee machine

Enjoying a cup of espresso

Options :

Brewable b = cm.getEspressoMaker();
b.brew();
Drinkable d = b;
6406532331488. ❌ d.drink();

Drinkable d = cm.getEspressoMaker();
d.brew();
6406532331489. ✓ d.drink();

Brewable b = cm.getEspressoMaker();
b.brew();
6406532331490. ❌ b.drink();

```
Brewable b = cm.getEspressoMaker();
b.brew();
6406532331491. ✓ ((Drinkable)b).drink();
```

Question Number : 120 Question Id : 640653698111 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.

```
abstract class Vehicle {
    abstract void start(); // LINE-1
    public void drive() { // LINE-2
        System.out.println("Driving vehicle");
    }
}
class Car extends Vehicle {
    void start() {
        System.out.println("Car started");
    }
}
class Bike extends Vehicle {
    void start() {
        System.out.println("Bike started");
    }
}
public class TestAbstract {
    public static void main(String[] args) {
        Vehicle[] v = new Vehicle[2];
        v[0] = new Car(); // LINE-3
        v[1] = new Bike(); // LINE-4
        for (int i = 0; i < v.length; i++) {
            v[i].start();
            v[i].drive();
        }
    }
}
```

Choose the correct option(s) regarding the above code.

Options :

Compilation error at LINE 1 because an abstract method should be public in
6406532331528. ❌ an abstract class.

Compilation error at LINE 2 because you should write only abstract methods
6406532331529. ❌ in an abstract class.

Compilation errors at LINE 3 and LINE 4 because it is illegal to add objects
6406532331530. ❌ of type Car and Bike to Vehicle array.

This program generates the output:

Car started
Driving vehicle
Bike started
Driving vehicle

6406532331531. ✓

Question Number : 121 Question Id : 640653698113 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the Java code given below that prints the vehicle with highest mileage. From among the options, identify the appropriate function header for the function printHighestMileage that takes as input an array of Vehicle objects and prints the vehicle with highest mileage among them.

```
import java.util.*;
abstract class Vehicle {
    public abstract double getMileage();
}
class Car extends Vehicle {
    // getMileage() method that returns the mileage of the car
}
class Motorcycle extends Vehicle {
    // getMileage() method that returns the mileage of the motorcycle
}
public class Test {
    // LINE 1 : FUNCTION HEADER
    {
        //invokes method getMileage()
        //to print the value of highest mileage
    }
    public static void main(String[] args) {
        Vehicle[] vehicles = { new Car(), new Motorcycle() };
        printHighestMileage(vehicles);
    }
}
```

Choose the correct option(s).

Options :

6406532331536. ✓ public static void printHighestMileage(Vehicle[] v)

6406532331537. ✗ public static void printHighestMileage(T[] v)

6406532331538. ✓ public static <T extends Vehicle> void printHighestMileage(T[] v)

6406532331539. ✗ public static void printHighestMileage(<?> v)

AppDev2

Section Id :	64065349280
Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	33
Number of Questions to be attempted :	33
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103392
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 122 Question Id : 640653698115 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 :

6406532331544. ✓ YES

6406532331545. ✘ NO

Sub-Section Number : 2

Sub-Section Id : 640653103393

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 123 Question Id : 640653698116 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 false.

Options :

6406532331546. ✘ SMTP is a mail delivery protocol.

6406532331547. ✓ SMTP is a protocol to retrieve email from an email server.

6406532331548. ✓ IMAP is a mail delivery protocol.

6406532331549. ✘ IMAP is a protocol to retrieve email from an email server.

Question Number : 124 Question Id : 640653698117 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 correct regarding CDN.

Options :

6406532331550. ✓ CDN is an acronym for Content Delivery Network.

6406532331551. ✓ CDN is a group of servers that helps in fast delivery of web contents.

6406532331552. ✗ Web content is always delivered from the closest server to the client in the network.

6406532331553. ✗ None of these.

Question Number : 125 Question Id : 640653698118 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is correct regarding Celery?

Options :

6406532331554. ✓ Celery is a task queue.

6406532331555. ✓ It needs broker to function.

6406532331556. ✓ Celery can be used to schedule the task.

6406532331557. ✗ None of these.

Question Number : 126 Question Id : 640653698132 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

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

Options :

6406532331610. ✗ Replit.com is an example of a javascript engine.

6406532331611. ✓ The language supports the concept of first class functions.

6406532331612. ❌ The language does not allow the implementation of user defined higher order functions.

6406532331613. ✓ The language can be used for DOM manipulation.

Question Number : 127 Question Id : 640653698134 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 method(s) does not guarantee that the displayed state and system state are kept in sync at all times?

Options :

6406532331619. ❌ Ajax requests on each UI change

6406532331620. ✓ Periodic reloading of web-page

6406532331621. ✓ Vue bindings to update data reactively

6406532331622. ❌ Pure static pages with all updates rendered from server

Question Number : 128 Question Id : 640653698141 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

You are trying to build a distributed system with N servers, each of which may need to communicate with any of the other servers. Which of the following statement(s) is/are false?

Options :

6406532331651. ✓ With point-to-point communication, the number of connection links will grow as $O(n)$.

6406532331652. ❌ With point-to-point communication, the number of connection links will grow

as $O(n^2)$.

6406532331653. ❌ With the use of a central message broker, the number of connection links will grow as $O(n)$.

6406532331654. ✓ With the use of a central message broker, the number of connection links will grow as $O(n^2)$.

Question Number : 129 Question Id : 640653698142 Question Type : MSQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

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

Options :

6406532331655. ❌ A webhook uses HTTP protocol.

6406532331656. ✓ A webhook uses web socket protocol.

6406532331657. ✓ A webhook receiver must be deployed on the same origin as the webhook initiator.

6406532331658. ❌ A webhook is supposed to be used for machine to machine communication

Sub-Section Number : 3

Sub-Section Id : 640653103394

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 130 Question Id : 640653698119 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is correct regarding XSS attacks?

Options :

6406532331558. ✓ XSS attack is an exploit where an attacker attaches a malicious code into a website.

6406532331559. ✓ XSS can be used to steal the user's cookie.

6406532331560. ✓ XSS is a client side injection attack.

6406532331561. ✓ It can be avoided by validating the user's input.

Question Number : 131 Question Id : 640653698135 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is/are valid use(s) of “v-for” directive, assuming “obj” is an object having a number of key value pairs?

Options :

6406532331623. ✓ v-for = “value in obj”

6406532331624. ✓ v-for = “(value, name) in obj”

6406532331625. ✓ v-for = “(value, name, index) in obj”

6406532331626. ✘ None of these

Question Number : 132 Question Id : 640653698139 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Suppose an application is loaded from an origin “<https://abc.com>”. Which of the following origins will result in a CORS error, while making a fetch call, by default?

Options :

6406532331643. ✘ <https://abc.com>

6406532331644. ✓ <https://xyz.abc.com>

6406532331645. ✘ <https://abc.com/page>

6406532331646. ✓ <https://abc8.com>

Question Number : 133 Question Id : 640653698143 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are false regarding long and short polling?

Options :

6406532331659. ✓ A webhook is the same as short polling.

6406532331660. ✘ The short polling can be used to know the state of an asynchronous task, and trigger an action if the task gets completed.

6406532331661. ✓ The long polling cannot be achieved using HTTP protocol.

6406532331662. ✘ Long Polling can be used to achieve real time communication

Question Number : 134 Question Id : 640653698144 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

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

Options :

6406532331663. ✓ It is recommended to cache the social networking apps feed responses for a longer duration.

6406532331664. ✗ Caching is primarily done to reduce the load from the origin server.

6406532331665. ✗ The shared cache is meant to serve responses to the multiple users.

6406532331666. ✓ A browser cannot cache JavaScript corresponding to a web page.

Question Number : 135 Question Id : 640653698145 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements is true regarding CORS and CSRF?

Options :

6406532331667. ✓ CORS stands for Cross Origin Resource Sharing.

6406532331668. ✓ The CORS reduces chances of malicious code by explicitly saying which URLs can be originators of data.

6406532331669. ✓ CSRF stands for Cross Site Request Forgery.

6406532331670. ✗ None of these

Sub-Section Number : 4

Sub-Section Id : 640653103395

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 136 Question Id : 640653698147 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

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

Options :

6406532331676. ✓ A celery system may consist of multiple brokers.

6406532331677. ✗ Redis must be used as a message broker for Celery.

6406532331678. ✗ The framework does not support periodic scheduling of tasks.

6406532331679. ✗ All of these.

Sub-Section Number : 5

Sub-Section Id : 640653103396

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 137 Question Id : 640653698120 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 code.

```

function goUpDown(num) {
    return new Promise((res, rej) => {
        setTimeout(() => {
            if (num < 20) {
                return num > 10 ? res('Go Up') : res('Go Down')
            } else {
                return rej('Number Too Large')
            }
        }, 1000)
    })
}

async function getData() {
    const data3 = await goUpDown(8)
    const data2 = await goUpDown(15)
    const data1 = await goUpDown(12)
}
getData().then(
    (data) => {
        console.log(data)
    },
    (err) => {
        console.log(err)
    }
)

```

What will be logged on to console, if executed?

Options :

6406532331562. ✘ Go Up

6406532331563. ✘ Go Down

6406532331564. ✘ Number Too Large

6406532331565. ✓ None of these.

Question Number : 138 Question Id : 640653698121 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 code.

```
async function getResponse(url) {
  try {
    const response = await fetch(url)
    try {
      const data = await response.json()
      if (response.ok) {
        return data
      } else {
        return response.status
      }
    } catch {
      return 'Network Error'
    }
  } catch {
    return 'Response is not json'
  }
}

getResponse('url').then((data) => {
  console.log(data)
})
```

Suppose there is an network error and fetch request to the 'url' fails. What will be logged on to console, if the code is executed?

Options :

6406532331566. ✓ Response is not json

6406532331567. ✗ Network Error

6406532331568. ✗ 200

6406532331569. ✗ None of these.

Question Number : 139 Question Id : 640653698122 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 JavaScript code.

```
async function getResponse(url) {  
    try {  
        const response = await fetch(url)  
        try {  
            const data = await response.json()  
            if (response.ok) {  
                return data  
            } else {  
                return response.status  
            }  
        } catch {  
            return 'Network Error'  
        }  
    } catch {  
        return 'Response is not json'  
    }  
}  
  
getResponse('url').then((data) => {  
    console.log(data)  
})
```

Suppose the 'url' returns a JSON response with 500 status code. What will be logged on to console?

Options :

6406532331570. ✘ Response is not json

6406532331571. ✘ Network Error

6406532331572. ✘ 404

6406532331573. ✓ 500

Question Number : 140 Question Id : 640653698124 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 code.

```

class Tshirt {
    constructor(size, price) {
        this.size = size
        this.price = price
    }
}

class LargeTshirt extends Tshirt {
    constructor() {
        super('large', 500)
    }
}

class MediumTshirt extends Tshirt {
    constructor() {
        super('medium')
    }
}

class Order {
    constructor(item, count) {
        this.item = item
        this.count = count
    }

    totalPrice() {
        try {
            return this.item.price * this.count
        } catch {
            return 'Some Error'
        }
    }
}

const t1 = new MediumTshirt()
const order = new Order(t1, 5)
console.log(order.totalPrice())

```

What will be logged on to console, if executed?

Options :

6406532331578. ✓ NaN

6406532331579. ✗ 500

6406532331580.

* 2500

6406532331581. * Some Error

Question Number : 141 Question Id : 640653698126 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

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

```
app.js
new Vue({
  el: '#app',
  template: `<div>
    <div v-for="item in items">
      Name:{{item.name}}, Count:{{item.count}}, Price:
      {{item.price*item.count}}
      <button @click="inscreeseCount(item)">Increase Count</button>
      <button @click="addToCart(item)">Add To Cart</button>
    </div>
    Total Amount: {{amount}} <button @click="buy"> Buy </button>
  </div>`,
  data: {
    cart: [],
    totalAmount: 50,
    items: [
      { name: 'Apple', count: 1, price: 10 },
      { name: 'Orange', count: 1, price: 5 },
    ],
  },
  methods: {
    buy() {
      if (this.amount > this.totalAmount) {
        console.log('Failure')
      } else {
        console.log('Success')
        this.cart = []
      }
    },
    inscreeseCount(item) {
      item.count += 2
    },
    addToCart(item) {
      this.cart.push(item)
    },
  },
  computed: {
    amount() {
      let total = 0
      this.cart.forEach((item) => {
        total += item.count * item.price
      })
      return total
    },
  },
})
```

index.html

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

Suppose the application is running on "<http://127.0.0.1:8080/>". If the user clicks on "Increase Count" and "Add to cart" button associated with the item name "Apple" once. Then user clicks on "Increase Count" and "Add to cart" button associated with the item name "Orange" once and then clicks on the button "Buy". What will be logged on to console?

Options :

6406532331586. ✓ Success

6406532331587. ✗ Failure

6406532331588. ✗ NaN

6406532331589. ✗ None of these.

Question Number : 142 Question Id : 640653698128 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

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

```
app.js
const Error = {
  template: `<div>Result Not Found</div>`,
}

const Dashboard = {
  template: `<div> This is dashboard of {{user}}</div>`,
  props: ['user'],
}

const routes = [
  { path: '/dashboard/:user', component: Dashboard, props: true },
  { path: '*', component: Error },
]

const router = new VueRouter({
  routes,
})

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

index.html

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

What will be rendered by the browser for the URL <http://127.0.0.1:8080/#/dashboard/7>?

Options :

6406532331594. ❌ This is dashboard of User

6406532331595. ✓ This is dashboard of 7

6406532331596. ❌ Dashboard

6406532331597. ❌ Result Not Found

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

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

app.js

```
const Home = {
  template: `<div>
    <slot name="navbar"> This is navbar</slot>
    <slot></slot>
    <slot name="footer"></slot>
  </div>`,
}

new Vue({
  el: '#app',
  template: `<Home>
    <template slot="footer">This is Footer</template>
    <template slot="navbar"> This is header</template>
    <div>Welcome to exam</div>
  </Home>`,
  components: {
    Home,
  },
})
```

index.html

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

Suppose the application is running on "<http://127.0.0.1:8080/>". What will be rendered by the browser for the URL "<http://127.0.0.1:8080/>"?

Options :

This is Footer

6406532331598. ✘ This is Header

This is Footer

This is Header

6406532331599. ✘ Welcome to exam

This is Header

6406532331600. ✘ This is Footer

This is Header

Welcome to Exam

6406532331601. ✓ This is Footer

Question Number : 144 Question Id : 640653698131 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following flask application.

```
app.py
from flask import Flask
from flask_caching import Cache
from time import sleep

config = {
    "CACHE_TYPE": "RedisCache",
    "CACHE_REDIS_HOST": "localhost",
    "CACHE_REDIS_PORT": 6379,
    "CACHE_REDIS_DB": 1
}

app = Flask(__name__)
app.config.from_mapping(config)
cache = Cache(app)

@app.get('/')
@cache.cached(timeout=40)
def home():
    sleep(30)
    return "hello world"

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

Suppose the application is running on "<http://localhost:5000>". If user1 visits the URL "<http://localhost:5000>" and after 3 minutes user2 visits the same URL. What will be the approx difference between the response time for user1 and user2?

Options :

6406532331606. ✓ 0 seconds

6406532331607. ✗ 30 seconds

6406532331608. ✗ 120 seconds

6406532331609. ✗ None of these

Question Number : 145 Question Id : 640653698140 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.

```
for (var i = 0; i < 3; i++) {  
    setTimeout(() => console.log(i), (i+1)*1000);  
}
```

What will be the output of the above program, if executed? Also, predict the minimum number of seconds the program will take to complete the execution?

Options :

0
1
2

6406532331647. ✖ Minimum Time Taken: 6 seconds

0
1
2

6406532331648. ✖ Minimum Time Taken: 12 seconds

3
3
3

6406532331649. ✖ Minimum Time Taken: 12 seconds

3
3
3

6406532331650. ✓ Minimum Time Taken: 6 seconds

Question Number : 146 Question Id : 640653698146 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.

```
async function func() {  
    const num = await Promise.resolve(2);  
    console.log("Second");  
    return num;  
}  
  
console.log("First");  
func().then((data) => console.log(data));  
console.log("Third");
```

What will be the output of the above program, if executed?

Options :

First
Second
Third

6406532331671. ✘ 2

First

6406532331672. ✘ Error

First
Third
Second

6406532331673. ✘ undefined

First
Third
Second

6406532331674. ✓ 2

6406532331675. ✘ The output cannot be predicted

Sub-Section Number :	6
Sub-Section Id :	640653103397
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 147 Question Id : 640653698123 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 JavaScript code.

```

class Tshirt {
    constructor(size, price) {
        this.size = size
        this.price = price
    }
}

class LargeTshirt extends Tshirt {
    constructor() {
        super('large', 500)
    }
}

class MediumTshirt extends Tshirt {
    constructor() {
        super('medium')
    }
}

class Order {
    constructor(item, count) {
        this.item = item
        this.count = count
    }

    totalPrice() {
        try {
            return this.item.price * this.count * 2
        } catch {
            return 'Some Error'
        }
    }
}

const t1 = new LargeTshirt()
const order = new Order(t1, 5)
console.log(order.totalPrice())

```

What will be logged on to console, if executed?

Options :

6406532331574. ❌ NaN

6406532331575. ❌ 500

6406532331576.

* 2500

6406532331577. ✓ 5000

Question Number : 148 Question Id : 640653698125 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

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

```
app.js
new Vue({
  el: '#app',
  template: `<div>
    <div v-for="item in items">
      Name:{{item.name}}, Count:{{item.count}}, Price:
      {{item.price*item.count}}
      <button @click="inscreeseCount(item)">Increase Count</button>
      <button @click="addToCart(item)">Add To Cart</button>
    </div>
    Total Amount: {{amount}} <button @click="buy"> Buy </button>
  </div>`,
  data: {
    cart: [],
    totalAmount: 50,
    items: [
      { name: 'Apple', count: 1, price: 10 },
      { name: 'Orange', count: 1, price: 5 },
    ],
  },
  methods: {
    buy() {
      if (this.amount > this.totalAmount) {
        console.log('Failure')
      } else {
        console.log('Success')
        this.cart = []
      }
    },
    inscreeseCount(item) {
      item.count += 2
    },
    addToCart(item) {
      this.cart.push(item)
    },
  },
  computed: {
    amount() {
      let total = 0
      this.cart.forEach((item) => {
        total += item.count * item.price
      })
      return total
    },
  },
})
```

index.html

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

Suppose the application is running on "<http://127.0.0.1:8080/>". Suppose the user clicks on "Increase Count" button associated with the item name "Apple" 5 times and then clicks on "Increase Count" button associated with the item name "Orange" once and then clicks on the button "Buy". What will be logged on to console?

Options :

6406532331582. ✓ Success

6406532331583. ✗ Failure

6406532331584. ✗ NaN

6406532331585. ✗ None of these.

Question Number : 149 Question Id : 640653698127 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

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

```

app.js
const Error = {
  template: `<div>Result Not Found</div>`,
}

const Dashboard = {
  template: `<div> This is dashboard of {{user}}</div>`,
  props: ['user'],
}

const routes = [
  { path: '/dashboard/:user', component: Dashboard, props: true },
  { path: '*', component: Error },
]

const router = new VueRouter({
  routes,
})

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

```

index.html

```

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

```

Suppose the application is running on “<http://127.0.0.1:8080/>”. What will be rendered by the browser for “<http://127.0.0.1:8080/#/user>”?

Options :

6406532331590. ✘ This is dashboard of User

6406532331591. ✘ Dashboard

6406532331592. ✘ Error

6406532331593. ✓ Result Not Found

Question Number : 150 Question Id : 640653698130 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following flask application.

```
app.py
from flask import Flask
from flask_caching import Cache
from time import sleep

config = {
    "CACHE_TYPE": "RedisCache",
    "CACHE_REDIS_HOST": "localhost",
    "CACHE_REDIS_PORT": 6379,
    "CACHE_REDIS_DB": 1
}

app = Flask(__name__)
app.config.from_mapping(config)
cache = Cache(app)

@app.get('/')
@cache.cached(timeout=40)
def home():
    sleep(30)
    return "hello world"

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

Suppose the application is running on "<http://localhost:5000>". If user1 visits the URL "<http://localhost:5000>" and after 50 seconds user2 visits the same URL. What will be the approx difference between the response time for user1 and user2?

Options :

6406532331602. ✓ 0 seconds

6406532331603. ✗ 30 seconds

6406532331604. ✗ 120 seconds

6406532331605. ✗ None of these

Question Number : 151 Question Id : 640653698133 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.

```
var first = 1;
obj1 = {
    'first' : 2,
    'second' : function some () {
        console.log(this.first);
    }
}
obj2 = {
    'first' : 3,
    'second' : () => {
        console.log("Function Invoked !!");
        this.second();
    }
}
obj2.second();
```

What will be the output of the above program, if executed?

Options :

Function Invoked !!

6406532331614. ✗ 2

6406532331615. ✗

Function Invoked !!

3

Function Invoked !!

6406532331616. ✖ 1

Function Invoked !!

6406532331617. ✓ Error

6406532331618. ✖ Error

Question Number : 152 Question Id : 640653698136 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.

```
exams = ['Jan 2023', 'May 2023', 'Sep 2023']

new Promise((rej, res) => {
    let count = 2
    let a = setInterval(() => {
        count += 3;
        const last = exams.pop();
        if (count % 2) {
            exams.push('May 2023')
        }
        else if (count % 5 == 0) {
            clearInterval(a);
            rej(last);
        }
    }, 1000)
}).then(d => console.log("Resolved", exams, d))
.catch(e => console.log("Rejected", exams, d))
```

What will be the output of the above program, if executed? Also, predict the minimum number of seconds the program will take to complete the execution?

Options :

Resolved []

6406532331627. ❌ Minimum Time Taken: 6 seconds

Resolved [] May 2023

6406532331628. ❌ Minimum Time Taken: 12 seconds

Rejected [May 2023] May 2023

6406532331629. ❌ Minimum Time Taken: 6 seconds

Resolved [] May 2023

6406532331630. ✓ Minimum Time Taken: 6 seconds

Rejected [May 2023]

6406532331631. ❌ Minimum Time Taken: 12 seconds

Rejected [] May 2023

6406532331632. ❌ Minimum Time Taken: 12 seconds

Question Number : 153 Question Id : 640653698137 Question Type : MCQ Is Question

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

Correct Marks : 4.5

Question Label : Multiple Choice Question

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

index.html:

```
<div id = "app">
  <input v-model = "name" @input = "do_something">
  <p> {{age}} </p>
</div>
<script scr = "app.js"></script>
```

app.js:

```
new Vue({
  el : "#app",
  data : {
    name : "#app",
    age : 0,
  },
  mounted () {
    try {
      this.name = localStorage.getItem("name").split(" ")[0];
      this.age = localStorage.getItem("name").split(" ")[1];
      localStorage.setItem("name",
        localStorage.getItem("name").split(" ")[0] + " " + this.name);
    }
    catch {
      this.name = "Default";
      this.age = "Default";
    }
  },
  methods : {
    do_something() {
      localStorage.setItem("name", this.name);
      localStorage.setItem("age", this.age);
    }
  }
})
```

Suppose you open “index.html” file in a browser, and type the text “IIT Madras” in the text box shown (after removing the previous text, if any), and hard refresh the page twice, without clicking anywhere. What will be the value shown in the text box, and the “age” placeholder, respectively?

Options :

6406532331633. ❗ The app will show an error in the console

6406532331634. ✘ Default, Default

6406532331635. ✘ IIT, Madras

6406532331636. ✓ IIT, IIT

6406532331637. ✘ Madras, IIT

6406532331638. ✘ None of these

Question Number : 154 Question Id : 640653698138 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

Fill in code1 & code2, which can be used in Vuex Store to update the “below_average” state variable with the objects of those students who have scored more than 50 marks.

```

const store= new Vuex.Store({
  state:{ 
    student_total:0,
    students:[
      {
        name : 'Akshay',
        marks : 52
      },
      {
        name : 'Vishwajeet',
        marks : 78
      },
      {
        name : 'Sonali',
        marks : 43
      }
    ],
    below_average:[]
  },
  code1:{ 
    belowAverageStudents(state){
      code2
    },
  }
})

```

Options :

code1: mutations
 code2: students.forEach(student=>{
 if(student.marks > 50)
 below_average.push(student)
 })
 6406532331639. *

code1: actions
 code2: state.students.forEach(student=>{
 if(student.mark > 50)
 below_average.toppers.push(student)
 })
 6406532331640. *

```
code1: actions  
code2: context.students.forEach(student=>{  
    if(student.marks < 55)  
        context.below_average.push(student)  
})
```

6406532331641. ✘

```
code1: mutations  
code2: state.students.forEach(student=>{  
    if(student.marks > 50)  
        state.below_average.push(student)  
})
```

6406532331642. ✓

MLT

Section Id : 64065349281

Section Number : 7

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 17

Number of Questions to be attempted : 17

Section Marks : 100

Display Number Panel : Yes

Section Negative Marks : 0

Group All Questions : No

Enable Mark as Answered Mark for Review and Clear Response : Yes

Maximum Instruction Time : 0

Sub-Section Number : 1

Sub-Section Id : 640653103398

Question Shuffling Allowed : No

Is Section Default? :

null

Question Number : 155 Question Id : 640653698148 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 :

6406532331680. ✓ YES

6406532331681. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653103399

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 156 Question Id : 640653698149 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

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

Options :

6406532331682. ✓ $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$

6406532331683. ✗ $\begin{pmatrix} 0 \\ 1 \end{pmatrix}$

6406532331684. ✗ $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$

6406532331685. ✓ $\begin{pmatrix} -1 \\ 0 \end{pmatrix}$

Sub-Section Number : 3

Sub-Section Id : 640653103400

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698150 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 : (157 to 158)

Question Label : Comprehension

A team was given a dataset $X \in \mathbb{R}^{d \times n}$ where d denotes the number of features and n denotes the number of samples. They found that there are 20 samples in the dataset and each sample contains 100 features. Assume that the datapoints x_5 to x_{20} are all linear combination of linearly independent data points (x_1, x_2, x_3, x_4) .

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 157 Question Id : 640653698151 Question Type : MCQ Is Question

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

Correct Marks : 5

Question Label : Multiple Choice Question

Suppose the team applies linear PCA on the dataset and reconstructs the data points with zero error using k principal components (directions). For which value of k the reconstruction error would become zero?

Options :

6406532331686. ✘ 1

6406532331687. ✘ 2

6406532331688. ✘ 3

6406532331689. ✓ 4

6406532331690. ✘ 10

6406532331691. ✘ 100

Question Number : 158 Question Id : 640653698152 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

Suppose the team applies kernel PCA by computing the kernel matrix $K = X^T X$ on the dataset. Choose all the correct statements.

Options :

The principal directions given by the kernel PCA is the same as the one

6406532331692. ✓ given by linear PCA

6406532331693. ✓

Kernel PCA takes a lesser number of computations than linear PCA to find the principal directions

The eigenvectors of the kernel matrix K are pointing in the same direction as the eigenvectors of the covariance matrix C

6406532331694. ✘

Kernel PCA takes more computations than linear PCA to find the principal directions

6406532331695. ✘

Sub-Section Number : 4

Sub-Section Id : 640653103401

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 159 Question Id : 640653698153 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

Consider Lloyd's algorithm used for k-means clustering and choose the correct statements:

Options :

6406532331696. ✓ K-means algorithm may get stuck at local minima.

6406532331697. ✘ It guarantees finding the optimal clustering(global minima) in every run.

6406532331698. ✓ If the resources are limited and the data set is huge, it will be good to prefer K-means over K-means++.

6406532331699. ✘ In practice, k should be as large as possible.

Sub-Section Number :	5
Sub-Section Id :	640653103402
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 160 Question Id : 640653698154 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

We wish to fit a GMM with $K = 2$ for a dataset having 4 points. At the beginning of the t^{th} time step of the EM algorithm, we have $\theta^{(t)}$ as follows:

$$\begin{aligned}\pi_1 &= 0.4, \pi_2 = 0.6 \\ \mu_1 &= 2, \sigma_1^2 = 1 \\ \mu_2 &= 3, \sigma_2^2 = 1\end{aligned}$$

The density of the points given a particular mixture is given to you for all four points. f is the density of a Gaussian.

x_i	$f(x_i z_i = 1)$	$f(x_i z_i = 2)$
1	0.242	0.054
2	0.399	0.242
3	0.242	0.399
4	0.054	0.242

What is the value of λ_k^i for $i = 1$ and $k = 2$ after the E-step? 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 :

0.22 to 0.28

Question Number : 161 Question Id : 640653698155 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

Consider a linearly independent set of data points

$$X = \begin{bmatrix} 1 & 1 & -1 \\ 1 & 0 & 1 \\ -1 & 1 & 1 \end{bmatrix}$$

and the corresponding label $y = \begin{bmatrix} 0.5 \\ 0 \\ -0.5 \end{bmatrix}$. Suppose we fit the data points using a

simple linear regression model that minimizes squared error loss $L(w) = \sum(w^T x_i - y_i)^2$. Compute the value of loss at $w = w^*$, where $w^* = (X X^T)^{-1} X y$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Sub-Section Number : 6

Sub-Section Id : 640653103403

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698156 **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 : (162 to 163)

Question Label : Comprehension

Consider the following dataset with 3 features and 5 data points:

Feat ₁	Feat ₂	Feat ₃	Y
1	2	3	10.5
2	3	1	d_1
3	1	2	9.5
4	4	5	d_2
5	5	4	d_3

$$(d_1, d_2, d_3 \in \mathbb{R})$$

You decide to train a linear regression model on this dataset.

After training, you obtain the following weight vector

$$\mathbf{w} = \begin{bmatrix} 1.2 \\ 0.5 \\ 2.5 \end{bmatrix}$$

Now, you decide to introduce L2 regularization to your model.

You train the model again with a regularization parameter (λ) set to 0.5. The new regularized weight vector is:

$$\mathbf{w}_{\text{regularized}} = \begin{bmatrix} 0.9 \\ 0.4 \\ 1.5 \end{bmatrix}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 162 Question Id : 640653698157 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

Based on the given data, using the regularized model, predict the target variable (Y) for the following data point.

$$x_{\text{new}} : \begin{bmatrix} 2 \\ 4 \\ 3 \end{bmatrix}$$

Options :

6406532331702. ✓ 7.9

6406532331703. ✗ 12.2

6406532331704. ✗ 11.9

6406532331705. ✗ None of these

Question Number : 163 Question Id : 640653698158 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

If you further reduce the regularization parameter (λ) to zero. What would be the new prediction for the target variable?

Options :

6406532331706. ✗ 7.9

6406532331707. ✗ 12.2

6406532331708. ✓ 11.9

6406532331709. ✗ None of these

Sub-Section Number : 7

Sub-Section Id : 640653103404

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 164 Question Id : 640653698159 Question Type : SA Calculator : None

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

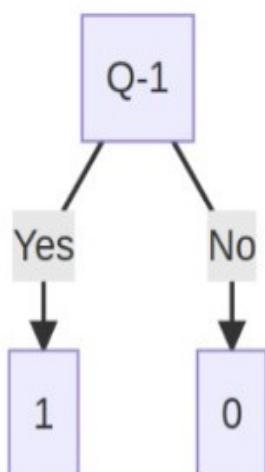
Correct Marks : 6

Question Label : Short Answer Question

Consider the following training dataset for a binary classification task:

X	y
6	1
20	0
16	0
-4	1
0	1
18	0

The following decision tree cleanly separates the two classes, such that the resulting leaves are pure.



Q-1 is of form $x < p$. How many possible integer value can p take?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Sub-Section Number : 8

Sub-Section Id : 640653103405

Question Shuffling Allowed : Yes

Is Section Default? :

null

Question Number : 165 Question Id : 640653698160 Question Type : SA Calculator : None

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

Correct Marks : 5

Question Label : Short Answer Question

Suppose you have a four-class classification problem where class label $y \in \{0, 1, 2, 3\}$ and each training example x_i has binary features $f_1, f_2, f_3 \in \{0, 1\}$. How many parameters do we need to know to classify an example using Naive Bayes classifier?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

15

Sub-Section Number : 9

Sub-Section Id : 640653103406

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 166 Question Id : 640653698161 Question Type : MCQ Is Question

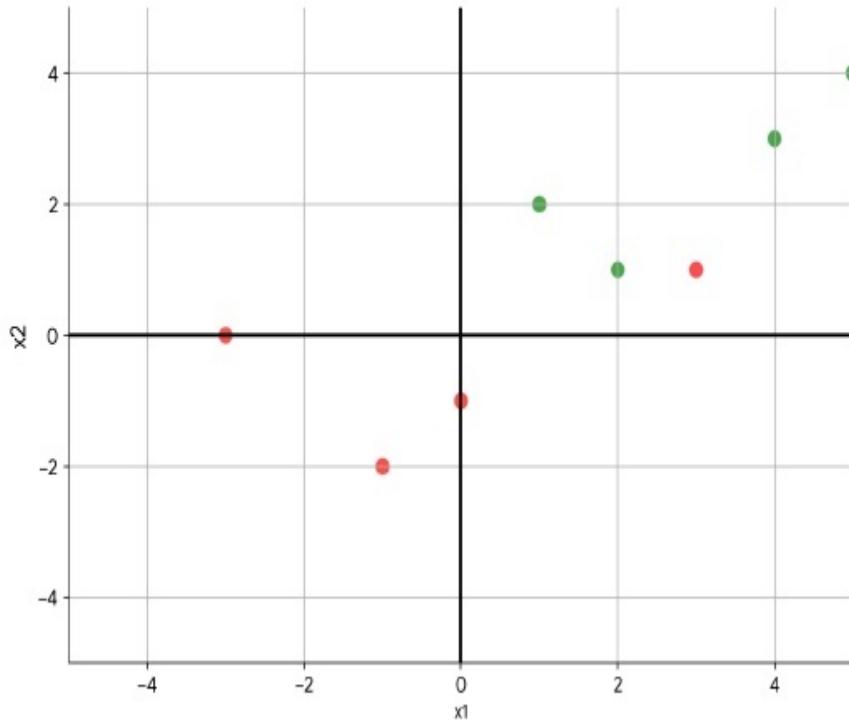
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

The figure below displays the samples from dataset D , where each sample $x_i \in \mathbb{R}^2$. The green point belongs to class1 and red point belongs to class2



Suppose we run the perceptron learning algorithm by initializing the weight vector to zero. Does the algorithm converge (with zero error) in a finite number of iterations?

Options :

6406532331712. ✘ Yes, it will converge.

6406532331713. ✓ No, it will never converge.

6406532331714. ✘ Insufficient data

Sub-Section Number : 10

Sub-Section Id : 640653103407

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 167 Question Id : 640653698162 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

Consider a logistic regression model that has been trained for a binary classification problem on a dataset in \mathbb{R}^2 . The final weight vector learned by the model is $w = \begin{bmatrix} 3/2 \\ 5/12 \end{bmatrix}$. Given a test data point as input to the model, it returns 1 as the predicted label if the probability output by the model is greater than 0.75 and 0 otherwise.

What is the predicted label for the test data point $x = \begin{bmatrix} 0 \\ 2 \end{bmatrix}$? Note that the probability output by a logistic regression model is $P(y = 1 | x)$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Sub-Section Number : 11

Sub-Section Id : 640653103408

Question Shuffling Allowed : No

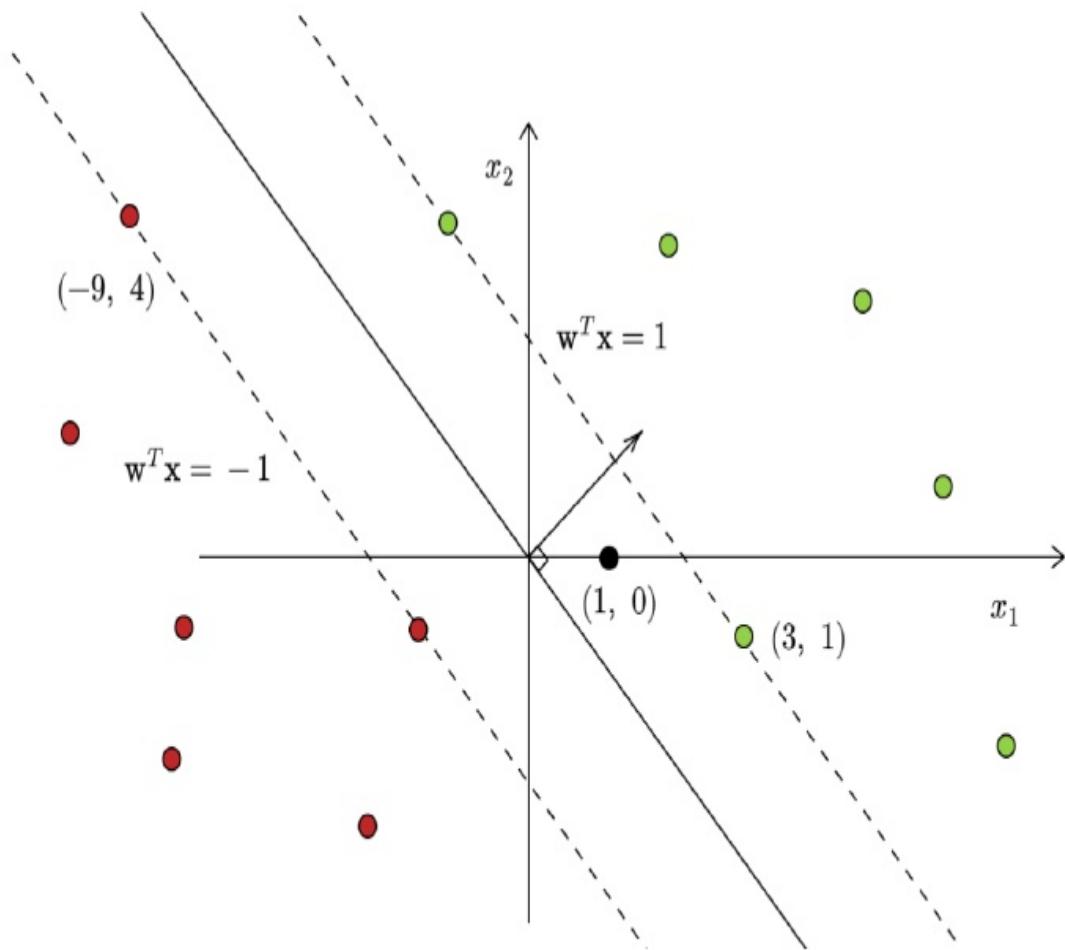
Is Section Default? : null

Question Id : 640653698163 **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 : (168 to 169)

Question Label : Comprehension

Consider a hard-margin SVM trained on a dataset in \mathbb{R}^2 for a binary classification task. Red and green points belong to the training dataset. Red points belong to class -1 and green points belong to class +1. The black-point is a test data-point. The dotted lines are the supporting hyperplanes for the SVM. Note: We don't have access to the test data-point during training; it is given to us after the model has been learned on the training dataset.



Based on the above data, answer the given subquestions.

Sub questions

Question Number : 168 Question Id : 640653698164 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

What is the equation of the decision boundary? Select all options that are correct.

Options :

6406532331716. ✓ $5x_1 + 6x_2 = 0$

6406532331717. ✓ $\frac{5}{21}x_1 + \frac{2}{7}x_2 = 0$

6406532331718. ✓ $\frac{5}{2}x_1 + 3x_2 = 0$

6406532331719. ✗ $\frac{27}{2}x_1 + 21x_2 = 0$

Question Number : 169 Question Id : 640653698165 Question Type : SA Calculator : None

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

Correct Marks : 5

Question Label : Short Answer Question

What is the width of the separation

between the two supporting

hyperplanes? Enter your answer

correct to two decimal places.

(Hint: Calculate width using

formulae $\frac{2}{\|w\|}$)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

5.32 to 5.44

Sub-Section Number : 12

Sub-Section Id : 640653103409

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 170 Question Id : 640653698166 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a soft-margin Support Vector Machine (SVM) for a binary classification problem with a dataset in a two-dimensional space. The optimization problem for the soft-margin SVM is formulated as:

$$\text{Minimize } \frac{1}{2} \|\mathbf{w}\|^2 + C \sum_{i=1}^N \xi_i$$

subject to the constraints:

$$y_i(\mathbf{w} \cdot \mathbf{x}_i + b) \geq 1 - \xi_i \text{ and } \xi_i \geq 0 \text{ for all } i$$

Where C is a positive constant.

Which of the following statements about the soft-margin SVM is correct?

Options :

When $C = 0$, the optimal value of the objective function of the soft-margin 6406532331721. ✓ problem is 0.

6406532331722. ✓ For a dataset with n data-points, there are $2n$ constraints for soft-margin SVM.

6406532331723. ✗ A smaller value of C allows for a larger margin, potentially leading to less misclassifications on the training data.

6406532331724. ✗ For a dataset with n data-points, there are n constraints for soft-margin SVM.

Question Number : 171 Question Id : 640653698167 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements are **correct**?

Options :

6406532331725. ✓ Underfitting models have high bias and low variance.

6406532331726. ✓ Overfitting models have low bias and high variance.

6406532331727. ❌ Generally, weak learners in the random forest tend to underfit.

6406532331728. ✓ If the performance of each estimator in the bagging algorithm is almost identical, the benefit of using bagging to combine them may be minimal or insignificant.

6406532331729. ✓ In random forests, multiple decision trees (estimators) are trained simultaneously, allowing for parallel processing and faster model training.

Sub-Section Number : 13

Sub-Section Id : 640653103410

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 172 Question Id : 640653698168 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

Suppose we have trained four different models using the same training set from the dataset D and recorded the training error. The testing error for each model was also recorded using a separate test set. The recorded values are summarized in the table below

Model	Training error	Test error
1	0.2	1.8
2	1.0	1.1
3	0.5	0.7
4	5.9	6.3

Based on the above information, which of the following statement(s) is/are correct?

Options :

6406532331730. ❌ Model 4 tends to overfit.

6406532331731. ✓ Model 4 tends to underfit.

6406532331732. ❌ Model 1 tends to underfits.

6406532331733. ✓ Model 1 tends to overfits.

Question Number : 173 Question Id : 640653698169 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

Consider a binary classification problem. Suppose that we have 10 samples and each sample belongs to a positive (+1) or a negative class (-1). Suppose we define the squared error loss as follows

$$L(w) = \sum (h(x_i)y_i - y_i)^2$$

For which of the following $h(x)$ the loss function values can never be greater than 10?

Options :

6406532331734. ❌ $h(x_i) = w^T x_i$

6406532331735. ✓ $h(x_i) = \frac{1}{1+exp(-w^T x_i)}$

6406532331736.

✓ $h(x_i) = \text{sign}(w^T x_i)$

Sub-Section Number :	14
Sub-Section Id :	640653103411
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 174 Question Id : 640653698170 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

Choose all the correct statements about neural networks

Options :

6406532331737. ❌ It can not be used for both regression and classification problems

6406532331738. ✓ It can have more than two hidden layers

6406532331739. ✓ The activation functions have to be non-linear to separate not linearly separable data points

6406532331740. ✓ Each neuron in the neural network may or may not have bias associated with it

MLP

Section Id :	64065349282
Section Number :	8
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	36
Number of Questions to be attempted :	36

Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103412
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 175 Question Id : 640653698171 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 :

6406532331741. ✓ YES

6406532331742. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653103413
Question Shuffling Allowed :	Yes

Is Section Default? :

null

Question Number : 176 Question Id : 640653698172 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 using Pandas:

```
import pandas as pd

# Assume a DataFrame df is already loaded with appropriate data.

grouped_data = df.groupby('Category')['Quantity'].sum()
```

What does the groupby operation in the code achieve?

Options :

6406532331743. ✓ It calculates the total quantity for each category.

6406532331744. ✗ It calculates the average quantity for each category.

6406532331745. ✗ It groups the data by the 'Category' column.

6406532331746. ✗ It filters out rows where the 'Quantity' column is zero.

Question Number : 177 Question Id : 640653698174 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 below code:

```
data = [[-6, 5],  
       [-6, 5],  
       [ 3, 1],  
       [ 3, 1]]  
  
from sklearn.preprocessing import StandardScaler  
ss = StandardScaler()  
print(ss.fit_transform(data))
```

Which of the following option represents the print output :

Options :

[[0, -1],
 [0, -1],
 [1, 1],
 [1, 1]]

6406532331751. ✘

[[-0.5, -2],
 [-0.5, -2],
 [1, 2],
 [1, 2]]

6406532331752. ✘

[[-1, 1],
 [-1, 1],
 [1, -1],
 [1, -1]]

6406532331753. ✓

[[-1, -1],
 [-1, -1],
 [1, 1],
 [1, 1]]

6406532331754. ✘

Question Number : 178 Question Id : 640653698181 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 Ridge regression model in scikit-learn, represented by the Ridge class.

Which of the following statements about Ridge regression is correct?

Options :

6406532331782. ❌ Ridge regression is specifically designed for handling non-linear relationships in the data.

6406532331783. ✓ The regularization term in Ridge regression is added to the sum of squared residuals.

6406532331784. ❌ Increasing the value of the regularization parameter (**alpha**) in Ridge regression tends to overfit the model.

6406532331785. ❌ Ridge regression is equivalent to ElasticNet regression when the regularization parameter (**alpha**) is set to one.

Question Number : 179 Question Id : 640653698191 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

Why is it relevant to add a preprocessing step to scale the data using a StandardScaler when working with a KNeighborsClassifier?

Options :

6406532331812. ❌ Speeds up the process of finding neighbors on unscaled data.

6406532331813. ✓ k-nearest neighbors relies on computing distances. Normalizing features ensures that each feature contributes approximately equally to the distance computation.

6406532331814. ❌ Scaling the data significantly improves the accuracy of k-nearest neighbor models.

6406532331815. ❌ It doesn't matter. K-nearest neighbors works equally well with or without normalizing the dataset.

Question Number : 180 Question Id : 640653698192 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

When using CountVectorizer in scikit-learn, what does the max_features parameter control?

Options :

6406532331816. ❌ The upper limit on the number of documents considered during vectorization.

6406532331817. ✓ The maximum number of features (words) to be extracted based on term frequency.

6406532331818. ❌ The maximum number of randomly selected features (words).

6406532331819. ❌ The upper limit on the number of characters allowed in each document.

Question Number : 181 Question Id : 640653698203 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

Rahul is working on an unsupervised machine learning algorithm. He is not able to choose the optimum number of clusters(k) for his model (model is based on K- means algorithm). He tried to plot the elbow chart which is shown below. By looking at this chart, which option would you recommend Rahul as the most suitable value of number of clusters (k).

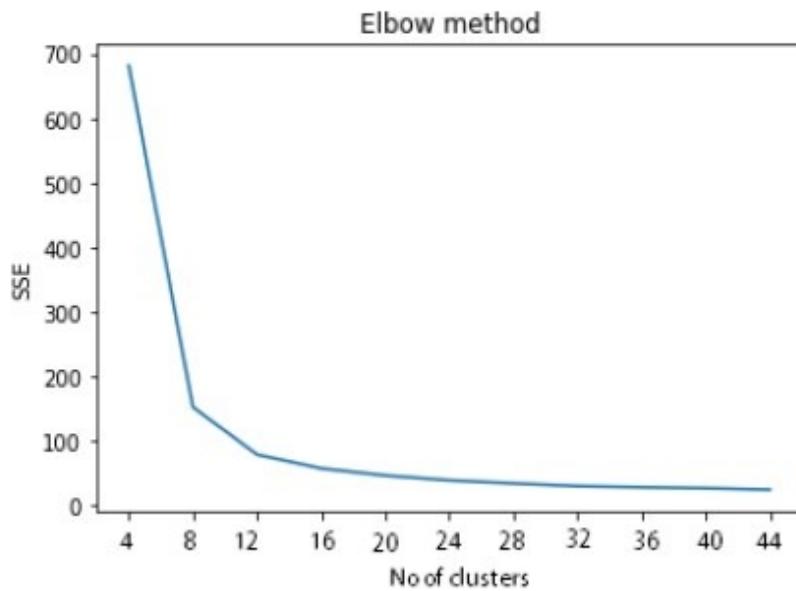


Figure 1: Elbow chart

Options :

6406532331851. ✘ 4

6406532331852. ✘ 8

6406532331853. ✓ 12

6406532331854. ✘ 40

6406532331855. ✘ 44

Question Number : 182 Question Id : 640653698207 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

You're training a multi-layer perceptron (MLP) classifier on a dataset for a multi-class classification task. The following code snippet demonstrates the process using the 'MLPClassifier' from scikit-learn:

```
from sklearn.neural_network import MLPClassifier
import numpy as np

# Simulated data (features: X, target: y)
X = np.array([[1, 2], [3, 4], [5, 6]])
y = np.array([0, 1, 2])

# Create an MLPClassifier with a specified maximum number of iterations
model = MLPClassifier(max_iter=100, alpha = 0.01, random_state=42)

# Fit the model on the training data
model.fit(X, y)

# Get the number of iterations used in training
iterations_used = model.n_iter_
```

What does the parameter 'alpha' in the MLPClassifier signify?

Options :

6406532331871. ✘ It determines the maximum fraction of neurons to be used to train the model

6406532331872. ✘ It is the learning rate

6406532331873. ✘ It is the L1 regularization rate.

6406532331874. ✓ It is the L2 regularization rate.

6406532331875. ✘ None of these

Sub-Section Number : 3

Sub-Section Id : 640653103414

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 183 Question Id : 640653698173 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 have loaded a dataset representing various attributes of red wine into a Pandas DataFrame named `wine_data` using the following code:

```
import pandas as pd

data_url = '''https://archive.ics.uci.edu/ml/machine-learning-databases/
wine-quality/winequality-red.csv'''
wine_data = pd.read_csv(data_url, sep=";")
```

Now, suppose you want to retrieve the value of the `alcohol` attribute for the fifth sample in the dataset (4th by index). Which of the following expressions correctly achieves this? The `alcohol` attribute is at the 3rd index of columns.

Options :

6406532331747. ✓ `wine_data.alcohol[4]`

6406532331748. ✓ `wine_data['alcohol'][4]`

6406532331749. ✗ `wine_data[4][3]`

6406532331750. ✓ `wine_data.iloc[4, 3]`

Question Number : 184 Question Id : 640653698179 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

You're building a machine learning pipeline to preprocess data and train a model on a classification task. You decide to use a pipeline that includes data pre-processing and a support vector machine (SVM) classifier. The following code snippet demonstrates the pipeline creation and usage:

```
from sklearn.pipeline import Pipeline
from sklearn.svm import SVC
from sklearn.preprocessing import StandardScaler
import numpy as np

# Simulated data (features: X, target: y)
X = np.array([[2, 3], [5, 7], [8, 10]])
y = np.array([0, 1, 0])

# Create a pipeline with StandardScaler and SVM classifier
pipe = Pipeline([
    ('scaler', StandardScaler()),
    ('svm', SVC())])

# Fit the pipeline on training data
pipe.fit(X, y)

# Make predictions using the trained pipeline
predictions = pipe.predict(X)
```

Which of the following can be used to get number of support vectors of the classifier?

Options :

6406532331773. ✓ pipe[1].n_support_

6406532331774. ✗ pipe[1].n_support_vecs

6406532331775. ✓ pipe['svm'].n_support_

6406532331776. ✗ pipe['svm'].n_support_vecs

6406532331777. ✗ None of these

Question Number : 185 Question Id : 640653698187 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**

You are building a sentiment analysis model using scikit-learn's `SGDClassifier` to classify movie reviews as positive or negative. The dataset is quite large, and you're dealing with a high-dimensional feature space. You want to fine-tune the hyperparameters of the classifier to achieve better convergence and classification performance.

Here's how you're setting up the `SGDClassifier`:

```
from sklearn.linear_model import SGDClassifier  
classifier = SGDClassifier(loss='hinge', alpha=0.0001,  
                           max_iter=1000, tol=1e-3, power_t=0.5)
```

Which of the following are correct?

Options :

6406532331796. ❌ The classifier is based on perceptron model.

6406532331797. ✓ The classifier is based on logistic regression model.

6406532331798. ✓ The learning rate decays every iteration.

6406532331799. ❌ The learning rate is 0.0001.

6406532331800. ❌ It will run exactly for 1000 iterations, which is independent of the data.

6406532331801. ❌ None of these.

Question Number : 186 Question Id : 640653698194 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**

When working with a `KNeighborsClassifier` in scikit-learn, consider the following scenarios. Choose all the correct statements:

Options :

6406532331821. ❌ A higher value of `n_neighbors` tends to overfit the model.

6406532331822. ✓ Reducing the value of `n_neighbors` typically increases the risk of overfitting.

Opting for a small `n_neighbors` can make the model sensitive to noise in the 6406532331823. ✓ data.

Increasing `n_neighbors` always enhances the model's ability to generalize to 6406532331824. ✗ new, unseen data.

Question Number : 187 Question Id : 640653698196 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Fill in the missing parameter value in the following estimator that can be used to classify the data

```
from sklearn.svm import SVC  
clf = SVC(kernel = _____)  
clf.fit(X, y)
```

Options :

6406532331829. ✗ 'lasso'

6406532331830. ✓ 'poly'

6406532331831. ✗ 'scale'

6406532331832. ✓ 'rbf'

Question Number : 188 Question Id : 640653698205 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following are true about multilayer perceptron model in sklearn?

Options :

6406532331861. ✓ It is an iterative algorithm/model.

6406532331862. ✓ It can be used to capture non-linear relationships between features and labels.

6406532331863. ✓ It can be used for regression as well as classification.

6406532331864. ✘ It can be used for clustering.

6406532331865. ✘ None of these

Sub-Section Number : 4

Sub-Section Id : 640653103415

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 189 Question Id : 640653698175 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 below code : keep following symbols in mind:

- >>> : Represents input code
- # : Represents comment in a code
- ... : Represents code continuation
- Without any symbols at the beginning of a line then it is output of just above input line of code.

```
>>> from sklearn.feature_selection import SelectKBest, f_regression
>>> from sklearn.datasets import load_diabetes
>>> X,y = load_diabetes(return_X_y=True,as_frame=True)
>>> print(X.shape)
(442,10)

>>> print(X.columns)
['age', 'sex', 'bmi', 'bp', 's1', 's2', 's3', 's4', 's5', 's6']

>>> skb = SelectKBest(f_regression, k=4)
>>> X_selected = skb.fit_transform(X, y)

>>> print(skb.scores_)
[16.10, 0.81, 230.65, 106.52, 20.71, 13.74, 81.23, 100.06, 207.27, 75.39]

>>> print(skb.pvalues_)
[7.0e-05, 3.6e-01, 3.4e-42, 1.6e-22, 6.9e-06,
 2.3e-04, 6.1e-18, 2.3e-21, 8.8e-39, 7.5e-17]

>>> print(skb.pvalues_.argsort())
[2, 8, 3, 7, 6, 9, 4, 0, 5, 1]
```

Which of the following feature(s) will be selected in X_selected from X ?

Options :

6406532331755. ✘ age

6406532331756. ✓ bmi

6406532331757. ✓ bp

6406532331758. ✘ s3

6406532331759. ✓ s4

6406532331760. ✓ s5

Question Number : 190 Question Id : 640653698177 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

You've built a linear regression model to predict the temperature of a particular place 5 days from today, based on today's humidity and wind speed. The model's coefficients for the features are as follows:

- Coefficient for humidity: +2.4
- Coefficient for wind speed: -2

What does the coefficient for "wind speed" (5000) represent in this context?

Options :

6406532331765. ✓ For each additional unit of increase in wind speed, the temperature is expected to decrease by 2 units.

6406532331766. ✗ For each additional unit of increase in wind speed, the temperature is expected to increase by 2 units.

6406532331767. ✓ Humidity has a stronger impact on salary than years of experience.

6406532331768. ✗ The coefficient doesn't have any meaningful interpretation in this scenario.

Question Number : 191 Question Id : 640653698182 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 snippet using scikit-learn:

```
sgd_regressor = SGDRegressor()

param_dist = { 'loss': ['squared_loss', 'huber', 'epsilon_insensitive'],
    'alpha': loguniform(1e-5, 1e1),
    'penalty': ['l1', 'l2', 'elasticnet'],
    'epsilon': loguniform(1e-5, 1e-2),}

random_search = RandomizedSearchCV(sgd_regressor,
    param_distributions=param_dist, n_iter=15, cv=3,
    scoring='neg_mean_squared_error')
random_search.fit(X, y)
```

Assume all the necessary imports and X, y to be the training dataset. Which of the following statements about the given code are correct?

Options :

6406532331786. ✓ The `n_iter` parameter in `RandomizedSearchCV` controls the number of hyperparameter combinations to try.

6406532331787. ✘ The actual number of combinations tried in the `fit` operation is 36.

6406532331788. ✓ The hyperparameter search space for the `alpha` parameter follows a log-uniform distribution.

6406532331789. ✓ The scoring metric used for the search is the negative mean squared error.

Question Number : 192 Question Id : 640653698188 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 estimators are exactly same?

Options :

6406532331802.

✓
SGDClassifier(loss="perceptron",
 eta0=1,
 learning_rate="constant",
 penalty=None)

6406532331803. ✓ Perceptron()

SGDClassifier(loss="percept",
 eta0=1,
 learning_rate="constant",
 penalty=None)

6406532331804. ✗

SGDRegressor(loss="percept",
 eta0=1,
 learning_rate="constant",
 penalty=None)

6406532331805. ✗

All of these are different.

6406532331806. ✗

Question Number : 193 Question Id : 640653698195 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

When employing a Support Vector Classifier (SVC) in scikit-learn with different values of the regularization parameter (C), how does the complexity of the decision boundary change? Pick all the correct statements:

Options :

6406532331825. ✗ Smaller values of C result in a more complex decision boundary.

6406532331826. ✓ Larger values of C lead to a more complex decision boundary.

6406532331827. ❌ The decision boundary tends to become simpler with increasing values of C.

6406532331828. ✓ Excessively large values of C may result in overfitting.

Question Number : 194 Question Id : 640653698206 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

Choose the correct statements.

Options :

6406532331866. ✓ Hierarchical agglomerative clustering does not need the initial number of clusters to group the data.

6406532331867. ❌ K-means clustering does not need the number of clusters to group the data.

6406532331868. ✓ K-means clustering can be agglomerative or divisive.

6406532331869. ❌ Hierarchical clustering can be agglomerative or divisive.

6406532331870. ❌ None of these

Sub-Section Number : 5

Sub-Section Id : 640653103416

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 195 Question Id : 640653698176 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 below code ?

```
import numpy as np
from sklearn.impute import SimpleImputer
data = [[5, 8, 4], [8, 4, 1], [7, np.nan, 6], [4, 2, 3], [np.nan, 6, 6]]
si = SimpleImputer(missing_values= np.nan,strategy="mean" )
si.fit(data)
print(si.statistics_)
```

Options :

6406532331761. ✘ [6,5,3.75]

6406532331762. ✘ [5,5,3]

6406532331763. ✓ [6,5,4]

6406532331764. ✘ [5,5,5]

Question Number : 196 Question Id : 640653698178 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

You're working on a dataset with two features and a target variable. You decide to use polynomial regression with a degree of 3 to capture potential cubic relationships. The following code snippet demonstrates the process:

```
from sklearn.preprocessing import PolynomialFeatures
import numpy as np

# Simulated data (feature: X)
X = np.array([1, 2, 3, 4])

# Reshape the features
X = X.reshape(-1, 2)

# Transform features into polynomial features
poly = PolynomialFeatures(degree=3)
X_poly = poly.fit_transform(X)
```

What will be the shape of the `X_poly` matrix after transforming the feature '`X`' into polynomial features of degree 3?

Options :

6406532331769. ✓ (2, 10)

6406532331770. ✘ (2, 11)

6406532331771. ✘ (2, 9)

6406532331772. ✘ (2, 8)

Question Number : 197 Question Id : 640653698180 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 using scikit-learn:

```
from sklearn.pipeline import Pipeline
from sklearn.preprocessing import MinMaxScaler
from sklearn.svm import SVC
from sklearn.model_selection import GridSearchCV

pipeline = Pipeline([
    ('scaler', MinMaxScaler()),
    ('classifier', SVC())])

param_grid = {'scaler__feature_range': [(0, 1), (1, 2)],
              'classifier__C': [0.01, 0.1, 1],
              'classifier__kernel': ['linear', 'poly'],
              'classifier__degree': [2, 3]}

grid_search = GridSearchCV(pipeline, param_grid, cv=5, scoring='accuracy')
grid_search.fit(X_train, y_train)
```

Assume that `X_train` and `y_train` are the training feature matrix and label vector, respectively. Which of the following statements about the given code is correct?

Options :

6406532331778. ✘ The `grid_search.score(X_train, y_train)` will give the accuracy on the test dataset by the 4 folds in which the model gives the best parameters.

6406532331779. ✓ The `scaler__feature_range` hyperparameter is being tuned for the `MinMaxScaler`.

6406532331780. ✘ The pipeline always uses a polynomial kernel ('poly') as the kernel for the `SVC` classifier.

A total of 12 combinations of hyperparameters were tried during the Grid-6406532331781. ✖ SearchCV.

Question Number : 198 Question Id : 640653698189 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following is likely to be the correct output of the code given below?

```
from sklearn import linear_model
clf = linear_model.Lasso(alpha=0.1)
clf.fit([[1,2], [2, 1], [2, 3]], [1, 2, 3])

linear_model.Lasso(alpha=0.1,max_iter=1000, tol=0.0001, warm_start=False,
                   fit_intercept=True)
print(clf.coef_)
```

Options :

6406532331807. ✖ [0.85,0.1,0.05]

6406532331808. ✓ [1.05 0.35]

6406532331809. ✖ [3,2,1]

6406532331810. ✖ There are some mistakes in the 3rd /4th line of code, hence it will produce error.

Question Number : 199 Question Id : 640653698199 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following code:

```
from sklearn.tree import DecisionTreeClassifier
from sklearn.datasets import load_wine
X,y = load_wine(as_frame = True, return_X_y = True)

dtc1 = DecisionTreeClassifier(ccp_alpha = 0.0)
dtc1.fit(X, y)

dtc2 = DecisionTreeClassifier(ccp_alpha = 0.06)
dtc2.fit(X, y)

dtc3 = DecisionTreeClassifier(ccp_alpha = 0.1)
dtc3.fit(X, y)

dtc4 = DecisionTreeClassifier(ccp_alpha = 0.03)
dtc4.fit(X, y)
```

Which model is likely to overfit the most?

Options :

6406532331838. ✓ dtc1

6406532331839. ✗ dtc2

6406532331840. ✗ dtc3

6406532331841. ✗ dtc4

Question Number : 200 Question Id : 640653698204 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

Output of the following code snippet is mentioned below.

```
from sklearn.cluster import KMeans
import numpy as np
X = np.array([[5, 4], [5, 6], [10, 8], [10, 12]])
kmeans = KMeans(n_clusters=2, random_state=0).fit(X)
kmeans.labels_
```

Output: array([0, 0, 1, 1], dtype=int32)

Considering the above code, Which of the following do you think as correct output of
Print(kmeans.predict([[6, 5]]))

Options :

6406532331856. ✓ 0

6406532331857. ✗ 1

6406532331858. ✗ 5

6406532331859. ✗ 10

6406532331860. ✗ None of these

Sub-Section Number : 6**Sub-Section Id :** 640653103417**Question Shuffling Allowed :** Yes**Is Section Default? :** null**Question Number : 201 Question Id : 640653698186 Question Type : SA Calculator : None****Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 3**

Question Label : Short Answer Question

Consider the following code and its output:

keep following symbols in mind:

- >>>: Represents input code
- # : Represents comment in a code
- ... : Represents code continuation
- Without any symbols at the beginning of a line then it is output of just above input line of code.

```
>>> from sklearn.datasets import load_iris
>>> from sklearn.linear_model import SGDClasssifier

>>> X, y = load_iris(return_X_y=True)
>>> clf = SGDClasssifier(random_state=0).fit(X, y)

>>> print(y[70:80])
[1 1 0 1 1 1 1 1 0]

>>> print(clf.predict(X[70:80, :]))
[0 1 1 1 1 1 1 0 1 0]

>>> print(clf.score(X[70:80, :], y[70:80]))
```

What will be the output of the above code? Enter your answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.7

Question Number : 202 Question Id : 640653698190 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

What will be the output of the following code?

```
from sklearn.neighbors import KNeighborsClassifier
X_train = [[1,100],[4,400],[5,500],[6,600],[8,800],[9,900],
           [11,1100],[12,1200],[15,1500], [18,1800],[19,1900]]
y_train = [2,2,2,2,2,2,2,2,1,1]

X_test = [[2,200]]

knn = KNeighborsClassifier(n_neighbors= 7,
                           metric="euclidean",
                           weights= 'uniform')
knn.fit(X_train,y_train)

print(knn.predict(X_test))
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Number : 203 Question Id : 640653698198 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Consider the following code. How many DecisionTreeClassifier models will be trained internally?

```
from sklearn.ensemble import RandomForestClassifier
from sklearn.model_selection import GridSearchCV
param_grid = [ {'max_depth':range(1, 10, 2)} ]
gs = GridSearchCV(RandomForestClassifier(n_estimators=10),
                  param_grid,
                  cv = 5)
gs.fit(X,y)
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

250

Sub-Section Number : 7

Sub-Section Id : 640653103418

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 204 **Question Id :** 640653698193 **Question Type :** SA **Calculator :** None

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

Correct Marks : 2

Question Label : Short Answer Question

Consider the following code snippet:

```
from sklearn.neighbors import KNeighborsClassifier  
  
X_train = [[1, 2], [3, 4], [5, 6]]  
y_train = [0, 1, 2]  
  
knn = KNeighborsClassifier(n_neighbors=4)  
knn.fit(X_train, y_train)
```

What will be the output of the following code:

```
print(len(knn.classes_))
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Sub-Section Number : 8

Sub-Section Id : 640653103419

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 205 **Question Id :** 640653698197 **Question Type :** MSQ **Is Question**

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

Correct Marks : 4 **Max. Selectable Options :** 0

Question Label : Multiple Select Question

Consider the following block of code:

```
from sklearn.datasets import load_breast_cancer
from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import train_test_split
X,y = load_breast_cancer(as_frame = True,
                         return_X_y = True)
X_train,X_test,y_train,y_test = train_test_split(X,y,
                                                 test_size = 0.2,
                                                 random_state = 1)
clf = DecisionTreeClassifier(min_samples_split = 5,
                             min_samples_leaf = 3,
                             random_state = 5)
clf.fit(X_train, y_train)
print(clf.score(X_test, y_test))
```

In which of the following scenarios, the split will NOT be made at node N?

Options :

6406532331833. ❌ Number of samples at node N = 10. If it is split, it will result in 5 nodes in the left child and 5 nodes in the right child.

6406532331834. ✓ Number of samples at node N = 5. If it is split, it will result in 2 nodes in the left child and 3 nodes in the right child.

6406532331835. ❌ Number of samples at node N = 12. If it is split, it will result in 5 nodes in the left child and 7 nodes in the right child.

6406532331836. ✓ Number of samples at node N = 4. If it is split, it will result in 3 nodes in the left child and 1 node in the right child.

Sub-Section Number : 9

Sub-Section Id : 640653103420

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 206 Question Id : 640653698200 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 block of code for the binary classification dataset. Shape of feature matrix is (10000,4) and labels (10000,) respectively.

keep following symbols in mind:

- >>>: Represents input code
- # : Represents comment in a code
- ... : Represents code continuation
- Without any symbols at the beginning of a line then it is output of just above input line of code.

```
>>> from sklearn.linear_model import LogisticRegression,SGDClassifier
>>> from sklearn.naive_bayes import GaussianNB
>>> from sklearn.ensemble import VotingClassifier

>>> clf1 = LogisticRegression(multi_class='multinomial', random_state=1)
>>> clf2 = SGDClassifier(random_state=1)
>>> clf3 = GaussianNB()

>>> eclf = VotingClassifier(estimators=[('lr', clf1),
...                                         ('sgd', clf2),
...                                         ('gnb', clf3)],
...                           voting='soft')

>>> eclf.fit(X,y)

>>> eclf.named_estimators_['lr'].predict_proba(X[0:1])
[0.3,0.7]
>>> eclf.named_estimators_['sgd'].predict_proba(X[0:1])
[0.35,0.65]
>>> eclf.named_estimators_['gnb'].predict_proba(X[0:1])
[0.9,0.1]
```

what will be the predicted class for X[0:1] sample using the code given above

Options :

6406532331842. ✓ 0

6406532331843. ✗ 1

6406532331844. ✗ 2

6406532331845. ✗ 3

Question Number : 207 Question Id : 640653698201 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Given the following code using BaggingClassifier with KNeighborsClassifier as the base estimator:

```
from sklearn.ensemble import BaggingClassifier
from sklearn.neighbors import KNeighborsClassifier
base_knn = KNeighborsClassifier(n_neighbors=3,
                                 weights='distance')

bag_clf = BaggingClassifier(base_knn,
                            n_estimators=30, max_samples=100,
                            bootstrap=False, random_state=42)
```

Which of the following statements is correct?

Options :

6406532331846. ✘ Above code uses bootstrapping to generate samples for each base classifier.

Each base KNN classifier will be trained on a random subset of unknown

6406532331847. ✘ number of samples.

Due to `weights='distance'`, nearest neighbors in each base KNN classifier will have voting power inversely proportional to their distances from the sample

6406532331848. ✓ (sample from test set).

6406532331849. ✘ The ensemble will consist of 3 base KNN classifiers.

Sub-Section Number : 10

Sub-Section Id : 640653103421

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 208 Question Id : 640653698202 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 code. How many different parameter combinations will be tried in GridSearchCV?

```
from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import GridSearchCV
from sklearn.datasets import load_iris

X, y = load_iris(as_frame = True, return_X_y = True)

param_grid = [{'max_depth':range(1, 10, 2),
               'min_samples_split': range(2, 10, 3),
               'min_samples_leaf': range(1, 11, 3)}]
gs = GridSearchCV(DecisionTreeClassifier(),
                  param_grid, cv = 5)
gs.fit(X,y)
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

19

Sub-Section Number : 11

Sub-Section Id : 640653103422

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698183 **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 : (209 to 210)

Question Label : Comprehension

Please consider the following data and code for a regression problem with following symbols in mind:

- >>> : Represents input code
- # : Represents comment in a code
- ... : Represents code continuation
- Without any symbols at the beginning of a line then it is output of just above input line of code.

	Age	Car_color	Accidents_per_1000_Driver
0	20	Black	72
1	20	Blue	75
2	20	Red	88
3	25	Black	70
4	25	Blue	73
5	25	Red	90
6	30	Black	84
7	30	Blue	76
8	30	Red	92

Target column: Accidents_per_1000_Driver

```
>>> import pandas as pd
>>> from sklearn.preprocessing import OneHotEncoder
>>> from sklearn.linear_model import LinearRegression

>>> data = pd.DataFrame([[20, 'Black', 72],
...                      [20, 'Blue', 75],
...                      [20, 'Red', 88],
...                      [25, 'Black', 70],
...                      [25, 'Blue', 73],
...                      [25, 'Red', 90],
...                      [30, 'Black', 84],
...                      [30, 'Blue', 76],
...                      [30, 'Red', 92]],
...                      columns=["Age", "Car_color", "Accidents_per_1000_Driver"])

>>> X = data.drop("Accidents_per_1000_Driver", axis=1)
>>> y = data["Accidents_per_1000_Driver"]

>>> ohe = OneHotEncoder(sparse_output=False)

>>> X[['Black', 'Blue', 'Red']] = ohe.fit_transform(X[["Car_color"]])
>>> X.drop("Car_color", axis=1, inplace=True)

>>> lr = LinearRegression().fit(X, y)

>>> print(lr.coef_)
[ 0.57, -4.67, -5.33, 10.00]

>>> print(lr.intercept_)
65.83
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 209 Question Id : 640653698184 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

Predict number of Accidents per 1000 Driver to happen for Age 28 and driving red car ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

91 to 93

Question Number : 210 Question Id : 640653698185 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 improve the given Linear Regression model which of the following preprocessing step you suggest?

Options :

6406532331791. ❌ OrdinalEncoder()

6406532331792. ❌ DecisionTree()

6406532331793. ❌ LabelEncoder()

6406532331794. ✓ StandardScaler()

Sub-Section Number : 12

Sub-Section Id : 640653103423

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698208 Question Type : COMPREHENSION Sub Question Shuffling

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

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

Question Numbers : (211 to 212)

Question Label : Comprehension

Consider the following code snippet and its output:

Code:

```
from sklearn.neural_network import MLPClassifier
from sklearn.datasets import make_classification
from sklearn.model_selection import train_test_split
X, y = make_classification(n_samples=3000, random_state=1)
X_t, X_test, y_t, y_test = train_test_split(X, y, stratify=y, random_state=1)
print(y_test[30:35])
```

Output:

```
[0 0 0 1 0]
```

Code:

```
clf = MLPClassifier(random_state=1).fit(X_t, y_t)
print(clf.predict_proba(X_test[30:35]))
```

Output:

```
[[9.97710379e-01 2.28962074e-03]
 [3.59471505e-01 6.40528495e-01]
 [9.99405675e-01 5.94325017e-04]
 [1.72404926e-03 9.98275951e-01]
 [9.86367828e-01 1.36321719e-02]]
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 211 Question Id : 640653698209 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 following code?

```
print(clf.predict(X_test[30:35]))
```

Options :

6406532331876. ✘ [1 1 0 1 0]

6406532331877. ✘ [0 0 0 1 0]

6406532331878. ✘ [0 1 0 0 0]

6406532331879. ✓ [0 1 0 1 0]

Question Number : 212 Question Id : 640653698210 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

What will be the output of following code?

```
print(clf.score(X_test[30:35], y_test[30:35]))
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.78 to 0.82

System Commands

Section Id : 64065349283

Section Number : 9

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 16

Number of Questions to be attempted : 16

Section Marks : 105

Display Number Panel : Yes

Section Negative Marks : 0

Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103424
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 213 Question Id : 640653698211 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 :

6406532331881. ✓ YES

6406532331882. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653103425
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 214 Question Id : 640653698212 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

The following command is run in the terminal; which statement(s) are true from the option?

```
grep -xF -f <(sort file1.txt) file2.txt | sort | uniq
```

Hint

-x matches whole lines.
-F treats the patterns as fixed strings.
-f reads the patterns from the specified file (output of sort file1.txt).

```
$ seq 5
1
2
3
4
5
$ grep '[23]' <(seq 5) # the command output stored in temporary file, and that
file path is substituted in place of <(seq 5)
2
3
```

Options :

6406532331883. ✓ The sort file1.txt will be executed first and provide sorted input to the grep.

6406532331884. ✓ grep will try to find a match to each line from the process substitution output with file2.txt .

6406532331885. ✗ The command will fail due to the wrong implementation of process substitution.

6406532331886. ✓ The command is correct and will produce the common lines in file1.txt and file2.txt .

Question Number : 215 Question Id : 640653698217 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 command(s) that retrieves the first ten lines of all the files that only end with `.md` in the current working directory and its subfolders.

Note: All the directories and files do not have space in their names

Hint:

- `-type f` option searches only for the files.
- `-name x*` option searches for the filename with the pattern with wildcard characters (not regex)

```
$ xargs --help
Usage: xargs [OPTION]... COMMAND [INITIAL-ARGS]...
Run COMMAND with arguments INITIAL-ARGS and more arguments read from input.

Mandatory and optional arguments to long options are also
mandatory or optional for the corresponding short option.

-0, --null           items are separated by a null, not whitespace;
                     disables quote and backslash processing and
                     logical EOF processing

-a, --arg-file=FILE   read arguments from FILE, not standard input
-d, --delimiter=CHARACTER items in input stream are separated by CHARACTER,
                           not by whitespace; disables quote and backslash
                           processing and logical EOF processing

-E END               set logical EOF string; if END occurs as a line
                     of input, the rest of the input is ignored
                     (ignored if -0 or -d was specified)

-e, --eof[=END]       equivalent to -E END if END is specified;
                     otherwise, there is no end-of-file string

-I R                 same as --replace=R

-i, --replace[=R]      replace R in INITIAL-ARGS with names read
                     from standard input, split at newlines;
                     if R is unspecified, assume {}

-L, --max-lines=MAX-LINES use at most MAX-LINES non-blank input lines per
                         command line

...
.

$ head --help
Usage: head [OPTION]... [FILE]...
Print the first 10 lines of each FILE to standard output.
With more than one FILE, precede each with a header giving the file name.

With no FILE, or when FILE is -, read standard input.
...
```

Options :

6406532331910. ✓ `find . -type f -name '*.md' | xargs -L 1 head`

6406532331911. ✓ `head $(find . -type f -name '*.md')`

6406532331912.

```
* find . -type f -name '*.md*' | xargs -L 1 head
```

6406532331913. * find . type f | grep md | head

Sub-Section Number : 3

Sub-Section Id : 640653103426

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 216 Question Id : 640653698213 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

The following command is executed in the terminal. What would be the output of the command?

```
cat date.txt | sort | tail -1
```

Sample Input

```
$ cat date.txt
Jun 24,2009
April 4,2010
April 14,2009
April 24,2010
May 4,2010
May 14,2010
May 24,2010
Jun 4,2010
Jun 14,2009
Jun 24,2010
```

Hint

By default sort will use string-based sort and not numerical sort.

Options :

6406532331887. ✘ Jun 24,2009

6406532331888. ✘ April 4,2010

6406532331889. ✘ April 14,2009

6406532331890. ✘ April 24,2010

6406532331891. ✓ May 4,2010

6406532331892. ✘ May 14,2010

6406532331893. ✘ May 24,2010

6406532331894. ✘ Jun 4,2010

6406532331895. ✘ Jun 14,2009

6406532331896. ✘ Jun 24,2010

Question Number : 217 Question Id : 640653698224 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

Text

 Lorem ipsum dolor sit amet, consectetur adipiscing elit.

 Donec a diam lectus.

 Sed sit amet ipsum mauris.

 Maecenas congue ligula ac quam viverra nec consectetur ante hendrerit.

 Donec et mollis dolor.

Choose the output after giving the key sequence `ddP` in the vi editor. The cursor is at the beginning of the first line.

The equivalent key sequence in emacs is `C-SPACE C-n C-w C-y`, where `C-SPACE` is the control key and the space bar pressed together.

Options :

Donec a diam lectus.

 Lorem ipsum dolor sit amet, consectetur adipiscing elit.

 Sed sit amet ipsum mauris.

 Maecenas congue ligula ac quam viverra nec consectetur ante hendrerit.

6406532331935. ❌

 Donec et mollis dolor.

 Lorem ipsum dolor sit amet, consectetur adipiscing elit.

 Donec a diam lectus.

 Sed sit amet ipsum mauris.

 Maecenas congue ligula ac quam viverra nec consectetur ante hendrerit.

6406532331936. ✓

 Donec et mollis dolor.

 ipsum Lorem ipsum dolor sit amet, consectetur adipiscing elit.

 Donec a diam lectus.

 Sed sit amet ipsum mauris.

 Maecenas congue ligula ac quam viverra nec consectetur ante hendrerit.

6406532331937. ❌

 Donec et mollis dolor.

 Lorem ipsum dolor sit amet, consectetur adipiscing elit.

 Lorem ipsum dolor sit amet, consectetur adipiscing elit.

 Donec a diam lectus.

 Sed sit amet ipsum mauris.

 Maecenas congue ligula ac quam viverra nec consectetur ante hendrerit.

6406532331938. ❌

 Donec et mollis dolor.

Question Number : 218 Question Id : 640653698226 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 Shell Script is used to print the common lines between two files. Please choose the option that will correct the script.

```
#!/bin/bash
FILENAME1="$1"
FILENAME2="$2"
IFS='\\n'
for line1_file1 in $(cat "$FILENAME1")
do
    for line1_file2 in $(cat "$FILENAME2")
    do
        if [ "${line_file1}" == "${line_file2}" ]
        then
            echo "${line1_file1}"
        fi
    done
done
```

Options :

6406532331946. ✓ There should be a \$ before \\n in the IFS assignment

6406532331947. ✗ The call in for loop \$(cat \${FILENAME1}) is incorrect, and the while loop should have been used to read lines.

6406532331948. ✗ The if statement is incorrect as it has extra space between the [and \$ as well as] and].

6406532331949. ✗ The code is correct and has no issues.

Sub-Section Number : 4

Sub-Section Id : 640653103427

Question Shuffling Allowed : Yes

Is Section Default? : null

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

Correct Marks : 7

Question Label : Multiple Choice Question

Select the **regular expression** (ERE) that matches the date before 2022-01-01 and the amount is less than 10000.00. The date is in YYYY-MM-DD format, and the amount is in decimal format with two digits after the decimal point.

Note: The year is from 2000 to 2023 (both inclusive).

Sample Input

```
Company,Date,Amount
CompanyA,2020-04-29,31211.18
CompanyA,2021-09-20,2366.91
CompanyA,2021-10-23,3491.17
CompanyB,2021-04-04,14304.44
CompanyA,2021-11-01,21679.58
CompanyA,2022-09-06,16277.49
CompanyA,2021-12-14,29527.37
CompanyA,2023-03-01,1447.83
CompanyA,2020-08-22,30383.23
```

Sample Output

```
CompanyA,2021-09-20,2366.91
CompanyA,2021-10-23,3491.17
```

Options :

6406532331897. ❌
.* ,20[12][01]-[01][0-9]-[0-9]{2},[0-9]{4}\.[0-9]{2}

6406532331898. ❌
.* ,20[012][01]-[01][0-9]-[0-9]{2},[0-9]{5}\.[0-9]{2}

6406532331899. ✓
.* ,20[012][01]-[01][0-9]-[0-9]{2},[0-9]{4}\.[0-9]{2}

6406532331900. *

.*,202[1-9]-[01][0-9]-[0-9]{2},[0-9]{5}\.[0-9]{2}

Question Number : 220 Question Id : 640653698215 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 commands can be used to select the package name and its version as shown in the desired output from the following log file?

Note: Your solution should satisfy the sample output given the sample input.

Sample log file

```
2023-12-09 status installed nginx-common:all 1.18.0-6ubuntu14.4
2023-12-09 configure libnginx-mod-http-xslt-filter:amd64 1.18.0-6ubuntu14.4
<none>
2023-12-09 status unpacked libnginx-mod-http-xslt-filter:amd64 1.18.0-6ubuntu14.4
2023-12-09 status half-configured libnginx-mod-http-xslt-filter:amd64 1.18.0-
6ubuntu14.4
```

Desired output

```
nginx-common:all
libnginx-mod-http-xslt-filter:amd64
libnginx-mod-http-xslt-filter:amd64
libnginx-mod-http-xslt-filter:amd64
```

Hint

```
# Relevant section from man grep

-E, --extended-regexp
    Interpret PATTERNS as extended regular expressions (EREs, see
below).

-o, --only-matching
    Print only the matched (non-empty) parts of a matching line, with
each such part on a separate output line.

The Backslash Character and Special Expressions
    The symbols \< and \> respectively match the empty string at the beginning
and end of a word. The symbol \b matches the empty string
at the edge of a word, and \B matches the empty string provided it's not
at the edge of a word. The symbol \w is a synonym for
[_[:alnum:]] and \W is a synonym for [^_[:alnum:]].

Repetition
    A regular expression may be followed by one of several repetition
operators:
    ?      The preceding item is optional and matched at most once.
    *      The preceding item will be matched zero or more times.
    +      The preceding item will be matched one or more times.
    {n}    The preceding item is matched exactly n times.
    {n,}   The preceding item is matched n or more times.
    {,m}   The preceding item is matched at most m times. This is a GNU
extension.
    {n,m}  The preceding item is matched at least n times but not more than m
times.
```

Options :

6406532331901. ✘ `grep -oE '([[:alnum:]-]*:[[:alnum:]]*)' dpkg.log`

6406532331902. ✘ `grep -oE '[:alnum:]-]+:[[:alnum:]]+' dpkg.log`

6406532331903. ❌ grep -oE '[[[:alnum:]-]*:[[:alnum:]]*' dpkg.log

6406532331904. ✓ grep -oE '([[:alnum:]-]+:[[:alnum:]]+)' dpkg.log

Question Number : 221 Question Id : 640653698216 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

Anish wanted to extract phone numbers from the following data. He knows that **grep -oE** can print the pattern selectively using Extended regular expression. Please help him choose the correct regular expression from the options to achieve that.

Sample Input

```
name,phone,email,region
Madan,1-158-662-4996,madan-raja@outlook.ca,GA
Persaud,1-877-704-5869,persaud@google.edu,Meghalaya
Srivas,1-516-922-8416,k-srivas@icloud.com,HR
Swami,761-1395,swami@google.couk,Haryana
Subram,981-5610,subram3142@yahoo.org,Karnataka
Nirmal,474-7526,nirmal@icloud.org,Madhya Pradesh
Sahni,151-8534,sahni@hotmail.ca,KA
Mahajan,1-548-689-8736,mahajan@icloud.couk,Bihar
Rana,1-528-385-7783,rana4716@yahoo.org,AN
```

Sample Output

```
1-158-662-4996
1-877-704-5869
1-516-922-8416
761-1395
981-5610
474-7526
151-8534
1-548-689-8736
1-528-385-7783
```

Options :

6406532331905. ✘ [0-9]{1}\-[0-9]{3}\-[0-9]{3}\-[0-9]{4}|[0-9]{3}\-[0-9]{4}

6406532331906. ✘ [0-9]{1}-[0-9]{3}-[0-9]{3}-[0-9]{4}|[0-9]{3}-[0-9]{4}

6406532331907. ✘ \b[0-9]-[0-9]{3}-[0-9]{3}-[0-9]{4}\b|\b[0-9]{3}-[0-9]{4}\b

6406532331908.

✖ \b[0-9].*[0-9]{3}-[0-9]{4}\b|[0-9]{3}-[0-9]{4}\b

6406532331909. ✓ All of these

Question Number : 222 Question Id : 640653698218 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

What will be the output of the last command in the following sequence of commands?

```
$ seq 10  
1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
$ seq 10 | sed '1d;2d'
```

Options :

3
4
5
6
7
8
9
10

6406532331914. ✓

6406532331915. ✖

1
4
5
6
7
8
9
10

2
4
5
6
7
8
9
10

6406532331916. *

2
3
4
5
6
7
8
9

6406532331917. *

Question Number : 223 Question Id : 640653698220 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 sample input data is provided as follows. The actual file is very long. Vinisha wanted to see if she could filter data using two conditions using bash. She wanted to look at all the Sales and HR department entries with salaries higher than 50000. Which of the following options contains code that will achieve the filtering process?

Sample Input

```
$ cat salarydata.txt
ID      Name       Department  Salary
101     Alice      HR          55000
102     Bob        Sales       60000
103     Charlie    Marketing   58000
104     David      HR          52000
105     Emily      Sales       63000
106     Frank      Marketing   59000
```

Options :

6406532331922. ✓ `awk '($3 == "HR" || $3 == "Sales") && $4 > 50000' salarydata.txt`

6406532331923. ✗ `awk '$3 == "HR" || $3 == "Sales" && $4 > 50000' salarydata.txt`

6406532331924. ✗ `awk '($3 == "HR" && $3 == "Sales") || $4 > 50000' salarydata.txt`

6406532331925. ✗ `awk '$3 == "HR" && $3 == "Sales" || $4 > 50000' salarydata.txt`

Question Number : 224 Question Id : 640653698221 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 awk command is executed on the terminal. Which of the following is true about the output of the command?

```
awk './ { count+=1 } END { print count }' file.txt
```

Options :

6406532331926. ❌ The output will be the count of all the lines with only one character present.

6406532331927. ❌ The output will be the count of all the empty lines present in the file.

6406532331928. ✓ The output will be the count of all the non-empty lines.

6406532331929. ❌ The output will be the count of the total number of lines present in the file.

Question Number : 225 Question Id : 640653698222 Question Type : MCQ Is Question

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

Correct Marks : 7

Question Label : Multiple Choice Question

Select the command that kills the process not owned by the user `root` and consumes the maximum CPU time. Assume you have the permission to kill any process.

Hint:

- The 10th column of the output of `ps aux` command (TIME) contains the total CPU time used by the process.
- The `ps aux` command can list all the processes owned by all the users.

```
$ ps aux | head -5 # get the first 5 lines
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root        1  0.0  0.1  21416 13004 ?      Ss  11:26  0:00 /sbin/init
root        2  0.0  0.0     0     0 ?      S  11:26  0:00 [kthreadd]
root        3  0.0  0.0     0     0 ?      S  11:26  0:00
[pool_workqueue_release]
priya     2336  0.0  0.0  11396  2744 tty1    S+  11:29  0:00 cat
$ ps aux | head -5 | sort -k2,2 -rn # sorted by second column in reverse order
priya     2336  0.0  0.0  11396  2744 tty1    S+  11:29  0:00 cat
root        3  0.0  0.0     0     0 ?      S  11:26  0:00
[pool_workqueue_release]
root        2  0.0  0.0     0     0 ?      S  11:26  0:00 [kthreadd]
root        1  0.0  0.1  21416 13004 ?      Ss  11:26  0:00 /sbin/init
USER      PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
```

Options :

```
kill $(
    ps aux |
    head -1 |
    sort -k10,10 -r |
    grep -v '^root\b' |
    sed 1d |
    awk '{print $2}'
)
```

6406532331930. *

```
kill $(
    ps aux |
    sed 1d |
    sort -k10,10 -rn |
    grep -v '^root\b' |
    head -1 |
    awk '{print $2}'
)
```

6406532331931. ✓

```
kill $(  
    ps aux |  
    sed 1d |  
    sort -k10,10 -r |  
    grep -v '^root\b' |  
    head -1 |  
    awk '{print $2}'  
)
```

6406532331932. *

```
kill $(  
    ps aux |  
    grep -v '^root\b' |  
    sort -k10,10 -rn |  
    sed 1d |  
    awk '{print $2}' |  
    head -1  
)
```

6406532331933. *

Question Number : 226 Question Id : 640653698225 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 scripts are using various means to read a file into a script/loop. Please select the **incorrect statement** from the options.

```
#!/bin/bash

# Case 1
while read line
do
    echo $line
done < "data.txt"

# Case 2
cat data.txt|while read line
do
    echo $line
done

# Case 3
for line in $(cat data.txt)
do
    echo $line
done

# Case 4
while IFS=':' read -r name age country; do
    echo "Name: $name, Age: $age, Country: $country"
done < "data.txt"

# Case 5
while IFS= read -r line; do
    echo "Name: $line"
done < "data.txt"
```

Options :

6406532331939. ✘ Case 1 uses the input redirection method to read the file line-by-line.

6406532331940. ✘ Case 2 uses the pipe redirection to feed the cat output to the while loop.

6406532331941. ✘ The pipe redirection used in case 2 is inefficient compared to input redirection.

6406532331942. ✘ Case 3 uses command substitution with the for loop to read the file.

6406532331943. ✘ Case 4 is input redirection, which reads each entry in the data.txt file (assuming the file has three columns) into individual variables.

6406532331944.

* Case 5 reads the entire line of the data file and assigns it to the line variable.

6406532331945. ✓ None of the options are correct.

Sub-Section Number : 5

Sub-Section Id : 640653103428

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 227 Question Id : 640653698219 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 9

Question Label : Multiple Choice Question

Choose the sed script that converts each line of the input file to an element in the JSON object. The input file contains two words per line, the first word is the key and the second word is the value. The output should be a valid JSON object of key-value pairs.

Note:

- A valid JSON object is enclosed in curly braces.
- The key and value are separated by a colon.
- The key and value are enclosed in double quotes.
- Each key-value pair is separated by a comma.
- There is no comma after the last key-value pair.

Sample Input

```
fruit1,apple
fruit2,banana
fruit3,orange
```

Sample Output

```
{
  "fruit1": "apple",
  "fruit2": "banana",
  "fruit3": "orange"
}
```

Options :

```
#!/usr/bin/sed -f
1 i {
$ s/^(\.*\),\(.*)$/"\1":"\2",/
$ a }
```

6406532331918. *

```
#!/usr/bin/sed -f
1 i {
$! s/^(\.*\),\(.*)$/"\1:\2",/
$ s/^(\.*\),\(.*)$/"\1:\2"/
$ a }
```

6406532331919. *

6406532331920.

```
#!/usr/bin/sed -f
1 i {
$! s/^(\.*\),\(\.*\)$/"\1":"\2"/
$ s/^(\.*\),\(\.*\)$/"\1":"\2"/
$ a }
```



```
#!/usr/bin/sed -f
1 a {
$ s/^(\.*\),\(\.*\)$/"\1":"\2"/
$ i }
```

6406532331921. *

Sub-Section Number : 6

Sub-Section Id : 640653103429

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 228 Question Id : 640653698223 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

The files file1.txt and file2.txt are present in the current working directory with the file1.txt composed of four lines. How many lines does file2.txt have?

Note: The line 4c4,5 is not relevant to the solution.

```
$ diff file1.txt file2.txt
4c4,5
< mnop
---
> mnpo
> qrst
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

TDS

Section Id :	64065349284
Section Number :	10
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	21
Number of Questions to be attempted :	21
Section Marks :	20
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103430
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 229 Question Id : 640653698227 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

**THIS IS QUESTION PAPER FOR THE SUBJECT "DIPLOMA LEVEL : TOOLS IN DATA SCIENCE
(COMPUTER BASED EXAM)"**

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

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

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

Options :

6406532331950. ✓ YES

6406532331951. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653103431

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 230 Question Id : 640653698228 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

How do we find (using Python) all the possible values of categories inside a Pandas data-frame column named 'book'? The name of the Pandas data-frame is data_df.

Options :

6406532331952. ✓ data_df.book.unique()

6406532331953. ✗ data_df.book.category_name()

6406532331954. ✗ data_df['book'].distinct()

6406532331955. ✓ data_df['book'].unique()

Question Number : 231 Question Id : 640653698230 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 these are Python libraries specifically useful for Geospatial analysis:

Options :

6406532331960. ✓ Geopandas

6406532331961. ✗ QGIS

6406532331962. ✓ Folium

6406532331963. ✗ OpenStreetMap

Question Number : 232 Question Id : 640653698234 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

Using cross-validation we find that the ideal K in a K -Nearest Neighbour procedure is 6. Your friend does not use cross-validation but instead guesses a K of 2. His predictor would:

Options :

6406532331976. ✗ have higher bias

6406532331977. ✓ have higher variance

6406532331978. ✗ have lower bias

6406532331979. ✗ have lower variance

6406532331980. ✓ overfit the data compared to your solution

6406532331981. ✗ underfit the data compared to your solution

Question Number : 233 Question Id : 640653698239 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

The analysis metric slope can be observed through which of the following ways?

Options :

6406532331997. ✓ Trend Line in Line Chart

6406532331998. ✓ SLOPE function

6406532331999. ✗ None of these

Question Number : 234 Question Id : 640653698247 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

Under which of the following parts of inspect elements can you find cookie information?

Options :

6406532332026. ✗ Elements

6406532332027. ✓ network

6406532332028. ✗ Source

6406532332029. ✓ Application

Sub-Section Number : 3

Sub-Section Id : 640653103432

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 235 Question Id : 640653698229 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

By default, for making connections in a Kumu network, which of the following column names are necessary for the data frame that is passed?.

Options :

6406532331956. ✘ name , attribute

6406532331957. ✘ to , from

6406532331958. ✓ from , to

6406532331959. ✘ first , second

Question Number : 236 Question Id : 640653698231 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

If the p-value in a regression analysis is less than the significance level (e.g., 0.05), what does it generally indicate?

Options :

6406532331964. ✘ There is no relationship between variables

6406532331965. ✘ The analysis is inconclusive

6406532331966. ✓ The relationship between variables is statistically significant

6406532331967. ✘ The model is overfitting

Question Number : 237 Question Id : 640653698232 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

What is OpenRefine used for?

Options :

6406532331968. ✓ Data cleaning and transformation

6406532331969. ✗ Data compression and storage

6406532331970. ✗ Real-time data analysis

6406532331971. ✗ Open source refined data

Question Number : 238 Question Id : 640653698233 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

In the WEEKNUM function, how can you change the starting day of the week to Sunday?

Options :

6406532331972. ✗ By using the optional argument: =WEEKNUM(A1, 1)

6406532331973. ✗ It is not possible to change the starting day

6406532331974. ✓ By using the optional argument: =WEEKNUM(A1, 7)

6406532331975. ✗ By adjusting the Excel settings in the options menu

Question Number : 239 Question Id : 640653698235 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

We are interested in fitting an ARIMA model to our time series data. Specifically, we are interested in a moving average model of 0, setting a lag value of 4 for autoregression, and a difference order

of 1. Which of the following gives you such a model?

Options :

6406532331982. ✘ ARIMA(..., trend = (4,1,0))

6406532331983. ✓ ARIMA(..., order = (4,1,0))

6406532331984. ✘ ARIMA(..., order = (0,4,1))

6406532331985. ✘ ARIMA(..., trend = (0,4,1))

Question Number : 240 Question Id : 640653698236 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Subjectivity score ranges between -1 to +1.

Options :

6406532331986. ✘ TRUE

6406532331987. ✓ FALSE

Question Number : 241 Question Id : 640653698237 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 tab in chrome devtools will show API calls on the website?

Options :

6406532331988. ✘ Elements

6406532331989. ✘ Console

6406532331990. ✘ Sources

6406532331991. ✓ Network

6406532331992. ✗ APILogs

Question Number : 242 Question Id : 640653698238 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

Chrome devtools can be accessed by which of the following steps?

Options :

6406532331993. ✗ Right click, choose View page-source

6406532331994. ✓ Right click, choose Inspect

6406532331995. ✗ Settings, more tools and choose Developer Tools

6406532331996. ✗ Settings, extensions and search for devtools

Question Number : 243 Question Id : 640653698240 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

Nominatim can output the type of place for every latitude longitude.

Options :

6406532332000. ✓ TRUE

6406532332001. ✗ FALSE

Question Number : 244 Question Id : 640653698241 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 Streamlit command is used to add text to the app interface?

Options :

6406532332002. ❌ st.add_text()

6406532332003. ✓ st.text()

6406532332004. ❌ st.insert_text()

6406532332005. ❌ st.display_text()

Question Number : 245 Question Id : 640653698242 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

What is a "Tableau Workbook" in Tableau terminology?

Options :

6406532332006. ❌ A workbook created in Microsoft Excel

6406532332007. ✓ A Tableau file containing sheets, dashboards, and stories

6406532332008. ❌ A spreadsheet in Tableau

6406532332009. ❌ A summary of visualizations

Question Number : 246 Question Id : 640653698243 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

K-Means clustering algorithm is sensitive to the initial choice of centroids. Which parameter in kmeans() function helps the user mitigate this problem?

Options :

6406532332010. ✘ algorithm

6406532332011. ✘ max_iter

6406532332012. ✘ n_clusters

6406532332013. ✓ n_init

Question Number : 247 Question Id : 640653698244 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

What is the purpose of the "st.button()" command in a Streamlit app?

Options :

6406532332014. ✓ Adds a button to trigger an action

6406532332015. ✘ Displays the current status of the app

6406532332016. ✘ Resets all input fields

6406532332017. ✘ Turns the app into full-screen mode

Question Number : 248 Question Id : 640653698245 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 happens if you choose the "Delimited" option in "Text to Columns" and don't select any delimiter?

Options :

6406532332018. ❌ The text will be split based on spaces

6406532332019. ✓ The text will not be split, and the original content remains unchanged

6406532332020. ❌ An error message will be displayed

6406532332021. ❌ The text will be split into individual characters

Question Number : 249 Question Id : 640653698246 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

How can you change the calculation performed in the "Values" area of a Pivot Table?

Options :

6406532332022. ✓ By selecting a function from the "Summarize Values by" in the "Value Field settings"

6406532332023. ❌ By right-clicking the cell and choosing "Change Calculation"

6406532332024. ❌ By dragging a new field into the "Values" area

6406532332025. ❌ By adjusting the cell formatting in the "Values" area

CT

Section Id : 64065349285

Section Number : 11

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 18

Number of Questions to be attempted : 18

Section Marks : 100

Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103433
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 250 Question Id : 640653698248 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 :

6406532332030. ✓ YES

6406532332031. ✗ NO

Question Number : 251 Question Id : 640653698249 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

Scores

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

Words

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

Library

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

Olympics

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

Three sample cards out of 30 for Shopping Bills dataset

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 :

6406532332032. ✓ Useful Data has been mentioned above.

6406532332033. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 640653103434

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 252 Question Id : 640653698251 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

The following pseudocode is executed using the "Words" dataset. Assume there are more than five sentences in the "Words" dataset.

```
1 A = 0, sNum = 0
2 while(Table 1 has more rows and sNum < 5){
3     Read the first row X in Table 1
4     if(X.PartOfSpeech == "Verb"){
5         *****
6         *** Fill the code ***
7         ****
8     }
9     if(X.word ends with a full stop){
10        sNum = sNum + 1
11    }
12    Move X to Table 2
13 }
```

If A represents the letter count of the longest verb in the first five sentences, then **fill the code** with the correct code fragment below.

Options :

```
1 if(X.LetterCount > A){
2     A = X.LetterCount
3 }
```

6406532332038. ✓

```
1 if(X.LetterCount > A){
2     A = A + X.LetterCount
3 }
```

6406532332039. ✗

```
1 if(X.LetterCount > A){
2     A = X.LetterCount
3     sNum = sNum + 1
4 }
```

6406532332040. ✗

```
1 if(X.LetterCount > A){
2     A = A + X.LetterCount
3     sNum = sNum + 1
4 }
```

6406532332041. ✗

Sub-Section Id :

640653103435

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 253 Question Id : 640653698250 Question Type : MCQ Is Question

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

Correct Marks : 5

Question Label : Multiple Choice Question

The following pseudocode is executed using the "Scores" dataset.

```
1 count = 0
2 while(Table 1 has more rows){
3     A = 0, B = 0, C = 0
4     Read the first row X in Table 1
5     if(X.Gender == 'M'){
6         A = 1
7     }
8     else {
9         A = -1
10    }
11    if(x.cityTown == "Chennai"){
12        B = 1
13    }
14    C = A + B
15    if(**Statement I**){
16        count = count + 1
17    }
18    Move X to Table 2
19 }
```

Match the following for different expressions of **Statement I** with the appropriate **Value of count**.

	Statement I		Value of count
(i)	C < 0	p	Number of male students from Chennai
(ii)	C == 1	q	Number of female students who are not from Chennai
(iii)	C > 1	r	Number of male students who are not from Chennai
(iv)	C == 0	s	Number of female students who are from Chennai

Options :

6406532332034. ✘ (i) - r, (ii) - p, (iii) - s,(iv)- q

6406532332035. ✘ (i) - q, (ii) - r, (iii) - s, (iv)- p

6406532332036. ✘ (i) - q, (ii) - p, (iii) - r, (iv)- s

6406532332037. ✓ (i) - q, (ii) - r, (iii) - p, (iv)- s

Question Number : 254 Question Id : 640653698255 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

Which of the following pseudocodes when executed using the “Words” dataset, the **count** will give a number of verbs which have at least one noun adjacent to it?

Options :

```
1 | count = 0
2 | vList = [], nList = []
3 | while(Table 1 has more rows){
4 |     Read the first row x in Table 1
5 |     if(x.Partofspeech == "Noun"){
6 |         nList = nList ++ [x.SeqNo]
7 |     }
8 |     if(x.Partofspeech == "Verb"){
9 |         vList = vList ++ [x.SeqNo]
10 |
11 |     Move X to Table 2
12 |
13 |     foreach i in nList{
14 |         if(member(vList, i-1) or member(vList, i+1)){
15 |             count = count + 1
16 |         }
17 |     }
```

6406532332050. ✘

6406532332051. ✘

```

1 count = 0
2 vList = [], nList = []
3 while(Table 1 has more rows){
4     Read the first row X in Table 1
5     if(X.Partofspeech == "Noun"){
6         nList = nList ++ [X.SeqNo]
7     }
8     if(X.Partofspeech == "Verb"){
9         vList = vList ++ [X.SeqNo]
10    }
11    Move X to Table 2
12 }
13 foreach i in nList{
14     if(member(vList, i) or member(vList, i)){
15         count = count + 1
16     }
17 }
```

```

1 count = 0
2 vList = [], nList = []
3 while(Table 1 has more rows){
4     Read the first row X in Table 1
5     if(X.PartofSpeech == "Noun"){
6         nList = nList ++ [X.SeqNo]
7     }
8     if(X.PartofSpeech == "Verb"){
9         vList = vList ++ [X.SeqNo]
10    }
11    Move X to Table 2
12 }
13 foreach i in vList{
14     if(member(nList, i-1) or member(nList, i+1)){
15         count = count + 1
16     }
17 }
```

6406532332052. ✓

6406532332053. ✗

```
1 count = 0
2 vList = [], nList = []
3 while(Table 1 has more rows){
4     Read the first row X in Table 1
5     if(X.Partofspeech == "Noun"){
6         nList = nList ++ [X.SeqNo]
7     }
8     if(X.Partofspeech == "verb"){
9         vList = vList ++ [X.SeqNo]
10    }
11    Move X to Table 2
12 }
13 foreach i in vList{
14     if(member(nList, i-1) and member(nList, i+1)){
15         count = count + 1
16     }
17 }
```

Question Number : 255 Question Id : 640653698259 Question Type : MCQ Is Question

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

Correct Marks : 5

Question Label : Multiple Choice Question

The following pseudocode is executed using the “Shopping Bills” dataset. The variable **count** gives the number of bills which are either from Big Bazaar or have a total bill amount of less than Rs. 500, but not both. Choose the correct code fragment to complete the pseudocode.

```

1 count = 0
2 while(Table 1 has more rows){
3     Read the first row x in Table 1
4     if(checkvalue(x)){
5         count = count + 1
6     }
7     Move x to Table 2
8 }
9
10 Procedure checkvalue(Y)
11     A = False, B = False
12     if(Y.ShopName == "BigBazaar"){
13         A = True
14     }
15     if(Y.TotalBillAmount < 500){
16         B = True
17     }
18 **** Fill the code ****
19 ****
20 ****
21 End checkvalue

```

Options :

```

1 if(A and B){
2     return(True)
3 }
4 else{
5     return(False)
6 }

```

6406532332062. *

```

1 if(A or B){
2     return(True)
3 }
4 else{
5     return(False)
6 }

```

6406532332063. *

```

1 if(not(A and B) or (A or B)){
2     return(True)
3 }
4 else{
5     return(False)
6 }

```

6406532332064. *

```
1 if(not(A and B) and (A or B)){
2     return(True)
3 }
4 else{
5     return(False)
6 }
```

6406532332065. ✓

Question Number : 256 Question Id : 640653698266 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

What does the given procedure **calculate(a, b)** return for **a = 24** and **b = 12**?

```
1 Procedure calculate(a, b){
2     sub = 0
3     if(a < b){
4         return(calculate(b, a))
5     }
6     if(a == b){
7         return(b)
8     }
9     sub = a - b
10    return(calculate(b, sub))
11 }
12 End calculate
```

Options :

6406532332086. ✘ 1

6406532332087. ✘ 3

6406532332088. ✓ 12

6406532332089. ✘ 15

Question Number : 257 Question Id : 640653698273 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

flights is a dictionary with flight number as key mapped to a list of airports that the flight travels through. For example, **flights** = {101: ["Bengaluru", "Howrah", "Guwahati"],.....}. In this example, the flight with flight number 101 starts from Bengaluru and reaches Guwahati via Howrah. Note: Assume that the flights numbers are less than or equal to 1000

What will **L** store at the end of the execution of pseudocode?

```
1 airports = { }, N = 1000, L = []
2 foreach x in keys(flights){
3     airports = updateDictionary(airports, x)
4 }
5
6 foreach Y in keys(airports){
7     if(airports[Y] == N){
8         L = L ++ [Y]
9     }
10    if(airports[Y] < N){
11        L = [Y]
12        N = airports[Y]
13    }
14 }
15
16 Procedure updateDictionary(D, Z)
17     foreach A in flights[Z]{
18         if(not isKey(D, A)){
19             D[A] = 0
20         }
21         D[A] = D[A] + 1
22     }
23     return(D)
24 End updateDictionary
```

Options :

6406532332112. ✘ List of airports through which maximum number of flights pass

6406532332113. ✓ List of airports through which minimum number of flights pass

6406532332114. ✘ List of flights that pass through a maximum number of airports

6406532332115. ✘ List of flights that pass through a minimum number of airports

Sub-Section Number :

4

Sub-Section Id :

640653103436

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 258 Question Id : 640653698264 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

The following table contains information regarding items from the "Shopping Bills" dataset. Each entry in the table corresponds to an item and the list of customers who have purchased it. For an item to have entry in the table there should be at least three customers who have purchased it. There are n customers and each customer is assigned to a unique index between 0 and $n-1$. There are M items in the table.

Seq.No	Customer List
0	[3, 7, 9]
...	...
M-1	[0, 3, 5, 9]

The table is represented by a dictionary named **items**, with the keys as **Seq.No.** and values as the corresponding list of customers. Assume that **items** have already been computed. For example, we have: **items[0] = [3, 7, 9]**.

For two different customers **x** and **y**, what does the value **A[x][y]** represent at the end of the execution?

```

1 A = createMatrix(n, n)
2 foreach j in rows(A){
3     foreach k in columns(A){
4         A[j][k] = [ ]
5     }
6 }
7 foreach i in keys(items){
8     foreach j in items[i]){
9         foreach k in items[i]){
10            foreach h in items[i]){
11                if(j != k and j != h and k != h and not member(A[j][k], h)){
12                    A[j][k] = A[j][k] ++ [h]
13                    A[k][j] = A[k][j] ++ [h]
14                }
15            }
16        }
17    }
18 }
```

Options :

6406532332078. ✓ List of customers who purchased an item other than what both customers **x** and **y** purchased.

6406532332079. ✗ List of customers who purchased exactly the same item(s), which was purchased by either customer **x** or customer **y**

6406532332080. ❖ List of customers who bought at least one item in common with both customer **x** and customer **y**

6406532332081. ❖ List of customers who purchased at least one item, which was purchased by either customer **x** or customer **y**

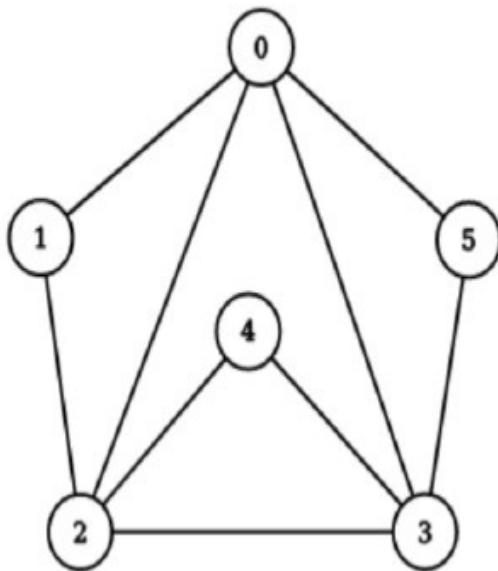
Question Number : 259 Question Id : 640653698267 Question Type : MCQ Is Question

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

Correct Marks : 6

Question Label : Multiple Choice Question

Consider the following graph with six nodes. M is a 6×6 adjacency matrix corresponding to this graph. Assume that M has already been computed.



What will the value of L be after executing the following pseudocode?

```
1 D = []
2 L = []
3 D[2] = -1
4 D, L = exploreGraph(M, D, L, 2)
5
6 Procedure exploreGraph(graph, P, S, i)
7     S = S ++ [i]
8     foreach j in columns(graph) {
9         if(graph[i][j] == 1 and not(isKey(P, j))){
10             P[j] = i
11             P, S = exploreGraph(graph, P, S, j)
12         }
13     }
14     return (P, S)
15 End exploreGraph
```

Options :

6406532332090. ✘ $L= [2, 1, 0, 5, 3, 4]$

6406532332091. ✘ $L= [2, 1, 0, 4, 5, 3]$

6406532332092. ✓ $L= [2, 0, 1, 3, 4, 5]$

6406532332093. ✘ $L= [2, 0, 1, 3, 5, 4]$

Question Number : 260 Question Id : 640653698271 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

The following pseudocode is executed using the "Shopping Bills" dataset. At the end of the execution, the dictionary **D** captures the following information: for each category **i**, **D[i][j]** stores the list of prices of item **j** across all bills. Choose the correct code fragment to complete the pseudocode.

```
1 D = []
2 while (Pile 1 has more cards){
3     Read the top card X in Pile 1
4     foreach a in X.ItemList{
5         if(isKey(D, a.category)){
6             if(isKey(D[a.category], a.ItemName)){
7                 *** Statement I ***
8             }
9         else{
10             D[a.Category][a.ItemName] = [a.Price]
11         }
12     }
13     else{
14         D[a.Category] = { }
15         *** Statement II ***
16     }
17 }
18 Move card X to Pile 2
19 }
```

Options :

Statement I: **D[a.Category][a.ItemName] = [a.Price]**

6406532332102. ❌ Statement II: **D[a.Category][a.ItemName] = [a.Price]**

Statement I: **D[a.Category][a.ItemName] = [a.Price]**

6406532332103. ❌ Statement II: **D[a.Category][a.ItemName] = D[a.Category][a.ItemName] ++ [a.Price]**

Statement I: **D[a.Category][a.ItemName] = D[a.Category][a.ItemName] ++ [a.Price]**

6406532332104. ✓ Statement II: **D[a.Category][a.ItemName] = [a.Price]**

6406532332105. ❌

Statement I: **D[a.Category][a.ItemName] = D[a.Category][a.ItemName] ++ [a.Price]**

Statement II: **D[a.Category][a.ItemName] = D[a.Category][a.ItemName] ++ [a.Price]**

Sub-Section Number : 5

Sub-Section Id : 640653103437

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 261 Question Id : 640653698260 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 "Library" dataset. At the end of the execution, **A** stores a dictionary with the author's name as the key and the number of books written by him/her as its value. But the code may have mistakes. Identify all such mistakes (if any). Assume that all statements not listed in the options below are free of errors.

```
1 | A = []
2 | while(Table 1 has more rows){
3 |     Read the first row X from Table 1
4 |     if(not isKey(A, X.Author)){
5 |         A[X.Author] = A[X.Author] + [1]
6 |     }
7 |     else{
8 |         A[X.Author] = 1
9 |     }
10 |    Move X to Table 2
11 | }
```

Options :

Replacing the statements given in lines 5 and 8 with the two statements given below will provide the correct result.

1 Line 5:	A[X.Author] = 1
2 Line 8:	A[X.Author] = A[X.Author] + 1

6406532332066. ✓

Replacing the statements given from lines 4 to 9 with the statements given below will provide the correct result.

```
1 | if(not isKey(A, X.Author)){  
2 |     A[X.Author] = 0  
3 | }  
4 | A[X.Author] = A[X.Author] + 1
```

6406532332067. ✓

Interchanging lines 5,8 and changing the line 8 statement given below will provide the correct result.

```
1 | Line 8: A[X.Author] = A[X.Author] + 1
```

6406532332068. ✓

Replacing the statements given from lines 4 to 9 with the statements given below will provide the correct result.

```
1 | if(not isKey(A, X.Author)){  
2 |     A[X.Author] = 0  
3 | }  
4 | else{  
5 |     A[X.Author] = A[X.Author] + 1  
6 | }  
7 | }
```

6406532332069. ❌

Sub-Section Number : 6

Sub-Section Id : 640653103438

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 262 Question Id : 640653698265 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

findSomething is a procedure that accepts a non-empty list of distinct integers **L** as input and finds the smallest integer present in the input list. Choose the correct code fragment to complete the pseudocode.

```
1 Procedure findSomething(L)
2     if(length(L) == 1){
3         return(first(L))
4     }
5     else{
6         **** Fill the code ***
7         ****
8     }
9 }
10 End findSomething
```

Options :

```
1 if(first(L) < last(L)){
2     return(findsomething(init(L)))
3 }
4 else{
5     return(findsomething(rest(L)))
6 }
```

6406532332082. ✓

```
1 if(first(L) > last(L)){
2     return(findsomething(init(L)))
3 }
4 else{
5     return(findsomething(rest(L)))
6 }
```

6406532332083. ✗

```
1 if(first(L) > last(L)){
2     return(findsomething(rest(L)))
3 }
4 else{
5     return(findsomething(init(L)))
6 }
```

6406532332084. ✓

```
1 if(first(L) < last(L)){
2     return(findsomething(rest(L)))
3 }
4 else{
5     return(findsomething(init(L)))
6 }
```

6406532332085. *

Question Number : 263 Question Id : 640653698272 Question Type : MSQ Is Question

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

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

The given pseudocode is executed using the “Words” dataset. At the end of execution **A** captures the frequency count of the most frequent letter in the dataset. 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.

```

1 D = { }, A = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     D = updateDictionary(D, X)
5     Move X to Table 2
6 }
7 foreach C in keys(D){
8     if(D[C] > A){
9         A = D[C] ++ A
10    }
11 }
12 Procedure updateDictionary(D, Y)
13     i = 1
14     while(i ≤ Y.LetterCount){
15         B = ith letter in Y.Word
16         if(isKey(D, B)){
17             D[B] = D[B] + 1
18         }
19         else{
20             D[B] = 1
21         }
22     }
23     i = i + 1
24     return(D)
25 End updateDictionary

```

Options :

6406532332106. ✖ Line 1: Incorrect initialization of **D**

6406532332107. ✖ Line 8: Incorrect conditional expression

6406532332108. ✓ Line 9: **A** updated with wrong value

6406532332109. ✖ Line 13: Incorrect initialization of **i**

6406532332110. ✖ Line 16: Incorrect expression

6406532332111. ✓ Line 23: **i** updated at wrong place

Sub-Section Number : 7

Sub-Section Id : 640653103439

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698252 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 : (264 to 265)

Question Label : Comprehension

The following pseudocode is executed using the "Scores" dataset.

```
1 A = 0, B = 0
2 while(Table 1 has more rows){
3     Read the first row x in Table 1
4     Flag = False
5     if(x.Gender == 'M' and x.Physics > 90){
6         Flag = True
7     }
8     else{
9         Flag = False
10    }
11    if(not Flag){
12        if(x.Chemistry > 90){
13            B = B + 1
14        }
15    }
16    else{
17        A = A + 1
18    }
19    Move X to Table 2
20 }
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 264 Question Id : 640653698253 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

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

Options :

6406532332042.

* Number of students who have scored less than 90 marks in Physics

6406532332043. * Number of female students who have scored more than 90 marks in Chemistry

6406532332044. * Number of female students

6406532332045. ✓ Number of male students who have scored more than 90 marks in Physics

Question Number : 265 Question Id : 640653698254 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the below numbers that **B** represent at the end of the execution?

Options :

6406532332046. * Number of male students who have scored more than 90 marks in both Physics and chemistry

6406532332047. ✓ Number of male students who have scored less than 90 marks in Physics and more than 90 marks in chemistry

6406532332048. * Number of female students who have scored less than 90 marks in both Physics and Chemistry

6406532332049. ✓ Number of female students who have scored more than 90 marks in Chemistry

Question Id : 640653698261 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 : (266 to 267)

Question Label : Comprehension

The following pseudocode is executed using the "Shopping Bills" dataset. Assume each customer has a distinct name.

```

1 A = 1, N = 1000, 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         if(X.CustomerName == Y.CustomerName){
8             A = A + 1
9             Move Y to Table 2
10        }
11    else{
12        Move Y to Table 3
13    }
14 }
15 if(A < N){
16     N = A
17 }
18 A = 1
19 count = count + 1
20 Move all rows from Table 3 to Table 1
21 }

```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 266 Question Id : 640653698262 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 **N** represent at the end of the execution?

Options :

6406532332070. ✓ Minimum number of bills issued to a single customer

6406532332071. ✗ Minimum number of bills issued to a single customer from the same shop

6406532332072. ✗ Minimum number of customers who purchased items from the same shop

6406532332073. ✗ Maximum number of customers who purchased items from the same shop

Question Number : 267 Question Id : 640653698263 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 **count** represent at the end of the execution?

Options :

6406532332074. ✘ Total number of bills

6406532332075. ✓ Total number of customers

6406532332076. ✘ Number of customers who have the minimum number of bills

6406532332077. ✘ Number of customers who have the maximum number of bills

Sub-Section Number : 8

Sub-Section Id : 640653103440

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698256 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 : (268 to 269)

Question Label : Comprehension

The following pseudocode constructs a matrix **M** from the “Shopping Bills” dataset. Two bills are said to be similar if the difference in their total bill amount is at most 100. Procedure **abs(a)** returns the absolute value of input integer **a**. For example: **abs(5) = 5, abs(-5) = 5.**

```

1 D = {}
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     D[X.SeqNo] = [X.Name, X.Total]
5     Move X to Table 2
6 }
7
8 n = length(keys(D))
9 M = createMatrix(n, n)
10 foreach i in keys(D){
11     foreach j in keys(D){
12         if(i != j and abs(last(D[i]) - last(D[j])) <= 100){
13             M[i][j] = 1
14             if(first(D[i]) == first(D[j])){
15                 M[i][j] = M[i][j] + 1
16             }
17         }
18     }
19 }

```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 268 Question Id : 640653698257 Question Type : MSQ Is Question

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

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let i and j be the sequence numbers of two similar bills, where $i \neq j$. Which of the following statement(s) is/are true about $M[i][j]$?

Options :

6406532332054. ✓ The maximum value of $M[i][j]$ can be 2.

6406532332055. ✗ If $M[i][j] = 1$, then both the bills have the same customer name

6406532332056. ✓ If $M[i][j] = 1$, then both the bills have different customer names

6406532332057. ✖ $M[i][j]$ can be more than 2 if both the bills have the same customer names

Question Number : 269 Question Id : 640653698258 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

Choose the correct statement(s) based on the given pseudocode.

Options :

6406532332058. ✖ For $i \neq j$, if $M[i][j] = 0$ then $M[j][i] = 1$

6406532332059. ✓ For $i \neq j$, if $M[i][j] = 1$ then $M[j][i] = 1$

6406532332060. ✖ For $i \neq j$, if $M[i][j] = 1$ then $M[j][i] = 0$

6406532332061. ✓ For $i \neq j$, if $M[i][j] = 0$ then $M[j][i] = 0$

Question Id : 640653698268 Question Type : COMPREHENSION Sub Question Shuffling

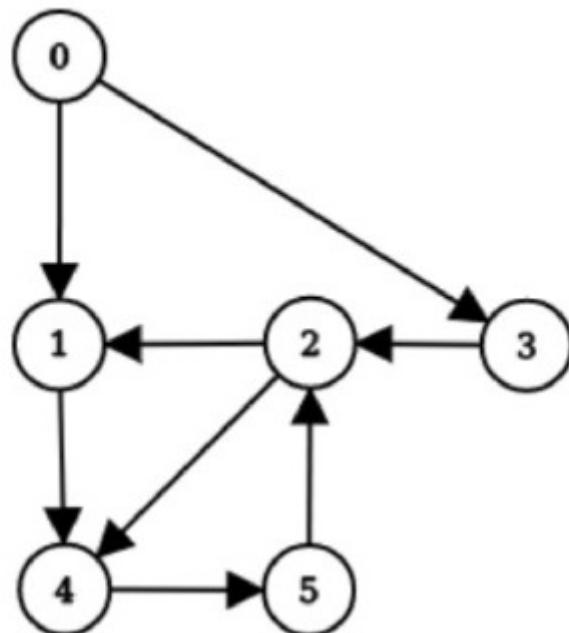
Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

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

Question Numbers : (270 to 271)

Question Label : Comprehension

Let M be an adjacency matrix of a graph G given below.



```
1 Procedure updateMatrix(AM)
2     tempMat = AM
3     foreach i in rows(AM){
4         foreach j in columns(AM){
5             foreach k in columns(AM){
6                 if(AM[i][k] == 1 and AM[k][j]==1){
7                     tempMat[i][j] = 1
8                 }
9             }
10        }
11    }
12    return(tempMat)
13 End updateMatrix
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 270 Question Id : 640653698269 Question Type : MCQ Is Question

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

Correct Marks : 5

Question Label : Multiple Choice Question

What will the values of **a** and **b** be at the end of execution of the pseudocode given below?

```
1 newMatrix = updateMatrix(M)
2 a = newMatrix[1][3]
3 b = newMatrix[4][5]
```

Options :

6406532332094. ✘ a = 1, b = 1

6406532332095. ✓ a = 0, b = 1

6406532332096. ✘ a = 1, b = 0

6406532332097. ✘ a = 0, b = 0

Question Number : 271 Question Id : 640653698270 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

What will the values of **a** and **b** be at the end of execution of the pseudocode given below?

```
1 newMatrix1 = updateMatrix(M)
2 newMatrix2 = updateMatrix(newMatrix1)
3 a = newMatrix2[1][3]
4 b = newMatrix2[4][5]
```

Options :

6406532332098. ✘ a = 0, b = 0

6406532332099. ✘ a = 1, b = 0

6406532332100. ✓ a = 0, b = 1

6406532332101. ✘ a = 1, b = 1

Intro to Python

Section Id :

64065349286

Section Number :	12
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	18
Number of Questions to be attempted :	18
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103441
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 272 Question Id : 640653698274 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 :

6406532332116. ✓ YES

6406532332117. ✗ NO

Question Number : 273 Question Id : 640653698275 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

Useful Data

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:

Line Numbers ← → Code/Input/Output

1	0
2	2
3	4
4	6
5	8

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 :

6406532332118. ✓ Useful Data has been mentioned above.

6406532332119. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 640653103442

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 274 Question Id : 640653698276 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 code snippets given below computes the minimum of three integers, not necessarily distinct from each other?

Snippet-1

```
1 a, b, c = int(input()), int(input()), int(input())
2 if (a <= b <= c) or (a <= c <= b):
3     print(a)
4 if (b <= a <= c) or (b <= c <= a):
5     print(b)
6 else:
7     print(c)
```

Snippet-2

```
1 a, b, c = int(input()), int(input()), int(input())
2 if (a < b < c) or (a < c < b):
3     print(a)
4 if (b < a < c) or (b < c < a):
5     print(b)
6 if (c < a < b) or (c < b < a):
7     print(c)
```

Note that the correct code snippet should have exactly one line, which displays the minimum of a, b and c .

Options :

6406532332120. ✘ Only snippet-1 is correct

6406532332121. ✘ Only snippet-2 is correct

6406532332122. ✘ Both snippets 1 and 2 are correct

6406532332123. ✓ Both snippets 1 and 2 are incorrect

Question Number : 275 Question Id : 640653698277 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following snippet. Assume that `Q` is a non-empty list of integers that has already been given to you in line-10.

```
1 def do_something(L):
2     n = len(L)
3     out = [ ]
4     for i in range(n):
5         if L[i] in L[i + 1: ]:
6             continue
7         out.append(L[i])
8     return out
9
10 P = do_something(Q)
```

How is the list `P` obtained from the list `Q` in this code snippet?

Options :

`P` is obtained by removing all duplicate entries in `Q`. That is, if an element has multiple copies in `Q`, exactly one copy of this element is retained in `P`. For each element that has duplicates, its last occurrence from the left in the list `Q` is retained.

6406532332124. ✓

`P` is obtained by removing all duplicate entries in `Q`. That is, if an element has multiple copies in `Q`, exactly one copy of this element is retained in `P`. For each element that has duplicates, its first occurrence from the left in the list `Q` is retained.

6406532332125. ✗

`P` is obtained by removing all entries in `Q` that appear at least two times. That is, if an element appears more than once in `Q`, no copy of this element is retained in `P`.

6406532332126. ✗

`P` is obtained by removing all entries in `Q` that appear exactly once. That is, if an element appears exactly once in `Q`, no copy of this element is retained in `P`.

6406532332127. ✗

Question Number : 276 Question Id : 640653698278 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 output of the following snippet of code?

```
1 def f(D):
2     L = [ ]
3     for key, value in D.items():
4         L.append((key, value))
5     return L
6
7 def g(L):
8     D = dict()
9     for (a, b) in L:
10        D[b] = a
11    return D
12
13 print(g(f({0: 1, 3: 8, 5: 32, 1: 2, 10: 1024})))
```

Options :

6406532332128. ✓ 1 | {1: 0, 8: 3, 32: 5, 2: 1, 1024: 10}

6406532332129. ✗ 1 | {0: 1, 3: 8, 5: 32, 1: 2, 10: 1024}

6406532332130. ✗ 1 | [(0, 1), (3, 8), (5, 32), (1, 2), (10, 1024)]

6406532332131. ✗ 1 | [(1, 0), (8, 3), (32, 5), (2, 1), (1024, 10)]

Question Number : 277 Question Id : 640653698280 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 wish to get the following output:

```
1 az
2 by
3 cx
4 dw
5 ev
6 fu
7 gt
8 hs
9 ir
10 jq
11 kp
12 lo
13 mn
```

Which of these two snippets produces this output?

Snippet-1

```
1 f = open('pattern.txt', 'w')
2 letters = 'abcdefghijklmnopqrstuvwxyz'
3 n = len(letters) // 2
4 for i in range(n):
5     line = letters[i] + letters[-1 - i]
6     if i != n - 1:
7         line = line + '\n'
8     f.write(line)
9 f.close()
```

Snippet-2

```
1 f = open('pattern.txt', 'w')
2 letters = 'abcdefghijklmnopqrstuvwxyz'
3 n = len(letters)
4 for i in range(n):
5     line = letters[i] + letters[-1 - i]
6     if i != n - 1:
7         line = line + '\n'
8     f.write(line)
9 f.close()
```

Options :

6406532332136. ✓ Only snippet-1 is correct

6406532332137. ✗ Only snippet-2 is correct

6406532332138. ✗ Both snippets 1 and 2 are correct

6406532332139. ✗ Both snippets 1 and 2 are incorrect

Sub-Section Number :	3
Sub-Section Id :	640653103443
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 278 Question Id : 640653698279 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

If n is a positive integer, what does $f(n)$ return?

```

1 def f(n):
2     if n < 10:
3         return 1
4     return 1 + f(n // 10)

```

Options :

6406532332132. ❌ Sum of digits in n

6406532332133. ✓ Number of digits in n

6406532332134. ❌ Product of digits in n

6406532332135. ❌ Factorial of n

Sub-Section Number :	4
Sub-Section Id :	640653103444
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 279 Question Id : 640653698281 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

L is a list of tuples. Each tuple is of the form (course, grade), which records the grade obtained by a student in a course. Select all snippets of code that create a list good that contains the names of the courses where the student has scored an 'S', 'A' or 'B' grade. A sample list L and the expected output is given below. You can assume that L is already available to you.

Sample Input

```
1 | L = [('Maths-2', 'S'), ('Stats-2', 'C'), ('Python', 'D'), ('English-1', 'B')]
```

Sample Output

```
1 | ['Maths-2', 'English-1']
```

Options :

6406532332140. ✓
1 | good = [x for (x, y) in L if y in ['S', 'A', 'B']]
2 | print(good)

6406532332141. ✓
1 | good = []
2 | for (x, y) in L:
3 | if y == 'S' or y == 'A' or y == 'B':
4 | good.append(x)
5 | print(good)

6406532332142. ✘
1 | good = [x if y in 'SAB' for (x, y) in L]
2 | print(good)

6406532332143. ✘
1 | good = [x for (x, y) in L]
2 | print(good)

Question Number : 280 Question Id : 640653698282 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 snippet:

```
1 f = open('runs.csv', 'r')
2 D = dict()
3 for line in f:
4     name, opn, runs = line.strip().split(',')
5     runs = int(runs)
6     if name not in D:
7         D[name] = dict()
8     D[name][opn] = runs
9 print(D)
```

This code produces the given output:

```
1 {'Rohit': {'Aus': 100, 'Pak': 80}, 'Virat': {'Eng': 120, 'Ban': 159}}
```

Which of the following could be the contents of the file `runs.csv`? Select all possible answers.

Note that dictionaries store keys from left to right in the order in which they are inserted. Once a key has been inserted into a dictionary, its order with respect to other keys doesn't change, unless it is deleted and reinserted.

Options :

- 1 Rohit,Aus,100
- 2 Virat,Eng,120
- 3 Rohit,Pak,80
- 4 Virat,Ban,159

6406532332144. ✓

- 1 Rohit,Aus,90
- 2 Virat,Eng,120
- 3 Rohit,Pak,80
- 4 Virat,Ban,159
- 5 Rohit,Aus,100

6406532332145. ✓

- 1 Rohit,Aus,100
- 2 Virat,Ban,159
- 3 Virat,Eng,120
- 4 Rohit,Pak,80

6406532332146. ✘

```
1 | Virat,Eng,120  
2 | Rohit,Pak,80  
3 | Rohit,Aus,100  
4 | Virat,Ban,159
```

6406532332147. ✘

Question Number : 281 Question Id : 640653698283 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 snippet:

```
1 | words = input().split(',')  
2 |  
3 | flag = True  
4 | for word in words:  
5 |     if word[0] not in 'aeiou':  
6 |         flag = False  
7 |  
8 | if flag:  
9 |     print('vowely')  
10 | else:  
11 |     print('not vowely')
```

Select all input strings for which the output of this code is `vowely`.

Options :

6406532332148. ✓ 1 | a,is,an,article

6406532332149. ✓ 1 | arrive,early,or,else,it,is,an,issue

6406532332150. ✘ 1 | a,is,not,the,only,article

6406532332151. ✘ 1 | arrive,early,as,it,is,already,late

Question Number : 282 Question Id : 640653698284 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

Study the following snippet of code and select all correct options.

```
1 def f(x):
2     if x == 1:
3         return 1
4     for n in range(x):
5         if n ** 2 == x:
6             return n
7     return 0
8
9 #####
10 n = int(input())
11 s = 0
12 for y in range(n):
13     s = s + f(y)
14 print(s)
```

An positive integer is a perfect square if it can be expressed as a^2 where a is a positive integer.

Options :

6406532332152. ❌ This code outputs the sum of all perfect squares less than n

6406532332153. ✓ This code outputs the sum of all positive integers whose square is less than n

6406532332154. ✓ The output of this code is 28 when the input is 50.

6406532332155. ❌ The output of this code is 140 when the input is 50.

Sub-Section Number : 5

Sub-Section Id : 640653103445

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 283 Question Id : 640653698288 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 output of the following snippet of code?

```
1 | L = [(3, 4, 5), (1, 2, 3), (9, 40, 41), (5, 12, 13), (6, 18, 20)]
2 | P = [(x, y, z) for (x, y, z) in L if (x ** 2 + y ** 2 - z ** 2) == 0]
3 | print(len(P))
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Sub-Section Number : 6

Sub-Section Id : 640653103446

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 284 Question Id : 640653698285 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

What is the output of the following snippet of code?

```
1 | def depth(L):
2 |     if len(L) == 0:
3 |         return 1
4 |     return 1 + depth(L[0])
5 |
6 | print(depth([[[[[ ]]]]]))
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Question Number : 285 **Question Id :** 640653698286 **Question Type :** SA **Calculator :** None

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

Correct Marks : 3

Question Label : Short Answer Question

What is the output of the following snippet of code if it is given that the except block is executed at least once?

```
1 val = 0
2 count = 0
3 for x in [1, 10, 20, 0]:
4     try:
5         val += 100 // x
6     except:
7         count += 1
8         val += 15
9
10 print(val + count)
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

131

Question Number : 286 **Question Id :** 640653698287 **Question Type :** SA **Calculator :** None

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

Correct Marks : 3

Question Label : Short Answer Question

What is the output of the following snippet of code?

```
1 words = ['elephants', 'are', 'mammals']
2
3 D = dict()
4 for word in words:
5     for char in word:
6         if char in D:
7             D[char] += 1
8         else:
9             D[char] = 1
10
11 mval = 0
12 for char, value in D.items():
13     if value > mval:
14         mval = value
15 print(mval)
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number : 7

Sub-Section Id : 640653103447

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698289 **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 : (287 to 288)

Question Label : Comprehension

Consider the following class:

```
1 class School:
2     def __init__(self, students):
3         self.students = students
4         self.students_count = len(students)
5
6     def update_stud_count(self):
7         self.students_count = len(self.students)
8
9     def add_student(self, student):
10        self.students.add(student)
11        self.update_stud_count()
12
13    def remove_student(self, student):
14        if student in self.students:
15            self.students.remove(student)
16            self.update_stud_count()
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 287 Question Id : 640653698290 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 snippet?

```
1 sch = School(set())
2 sch.add_student('Atul')
3 sch.add_student('Livin')
4 sch.add_student('Mayur')
5 print(sch.students)
```

Options :

6406532332160. ✓ 1 | {'Atul', 'Livin', 'Mayur'}

6406532332161. ✘ 1 | ['Atul', 'Livin', 'Mayur']

6406532332162. ✘ 1 | ('Atul', 'Livin', 'Mayur')

6406532332163. ✘ 1 | {'Atul': 0, 'Livin': 1, 'Mayur': 2}

Question Number : 288 Question Id : 640653698291 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

Continuing with the previous subquestion, what is the output of the following snippet?

```
1 | sch.remove_student('Atul')
2 | print(sch.students_count)
```

Enter an integer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sub-Section Number : 8

Sub-Section Id : 640653103448

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698292 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 : (289 to 290)

Question Label : Comprehension

You are inside the lift of a building. There are 10 levels in the building:

$$[-4, -3, -2, -1, 0, 1, 2, 3, 4, 5]$$

The number 0 is the ground floor. Positive numbers correspond to floors above the ground floor, negative numbers correspond to basement levels below the ground floor. The lift has only two buttons. The button *U* will take you one level up and the button *D* will take you one level down. You make a sequence of presses.

```
1 # presses contains the sequence of button presses made by you
2 presses = 'UUDDUDDDUDDD'
3 floor = 0
4 index = 0
5 while index < len(presses):
6     char = presses[index]
7     if char == 'U':
8         floor += 1
9     elif char == 'D':
10        floor -= 1
11    if floor == -1:
12        print(index + 1)
13        break
14    index += 1
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 289 Question Id : 640653698293 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 given code snippet printing?

Options :

6406532332165. ✓ It prints the number of button presses after which you reach the floor -1 for

the first time.

6406532332166. ✖ It prints the number of times you cross the floor -1 .

6406532332167. ✖ It prints the final floor level after all the button presses.

Question Number : 290 Question Id : 640653698294 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 output of this snippet of code?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

7

Sub-Section Number : 9

Sub-Section Id : 640653103449

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698295 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 : (291 to 292)

Question Label : Comprehension

Consider the following snippet:

```
1 def do_something(M):
2     P = []
3     n = len(M)
4
5     for i in range(n):
6         temp = M[i][i]
7         M[i][i] = M[i][-i - 1]
8         M[i][-i - 1] = temp
9
10    return M
11
12 def do_another_thing(M):
13     p = 1
14     n = len(M)
15     for i in range(n):
16         p = p * M[i][i]
17     return p
18
19 M = [[1, 2, 3], [4, 5, 6], [7, 8, 9]]
20 P = do_something(M)
21 print(P)
22 print(do_another_thing(P))
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 291 Question Id : 640653698296 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 first line of output?

Options :

6406532332169. ✓ 1 | [[3, 2, 1], [4, 5, 6], [9, 8, 7]]

6406532332170. ✗ 1 | [[1, 2, 3], [4, 5, 6], [7, 8, 9]]

6406532332171. ✖ 1 | [[7, 8, 9], [4, 5, 6], [1, 2, 3]]

6406532332172. ✖ 1 | [[1, 3, 2], [4, 6, 5], [7, 9, 8]]

Question Number : 292 Question Id : 640653698297 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 second line of output?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

105

English1

Section Id : 64065349287

Section Number : 13

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 22

Number of Questions to be attempted : 22

Section Marks : 100

Display Number Panel : Yes

Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103450
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 293 Question Id : 640653698298 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 : ENGLISH 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 :

6406532332174. ✓ YES

6406532332175. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653103451
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653698299 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 : (294 to 308)

Question Label : Comprehension

Read the following passage and answer the given subquestions:

Writing in a diary is a really strange experience for someone like me. Not only because I've never written anything before, but also because it seems to me that later on neither I nor anyone else will be interested in the musings of a thirteen-year-old school girl. Oh well, it doesn't matter. I feel like writing, and I have an even greater need to get all kinds of things off my chest.

'Paper has more patience than people.' I thought of this saying on one of those days when I was feeling a little depressed and was sitting at home with my chin in my hands, bored and listless, wondering whether to stay in or go out. I finally stayed where I was, brooding: Yes, paper *does* have more patience, and since I'm not planning to let anyone else read this stiff-backed notebook grandly referred to as a 'diary', unless I should ever find a real friend, it probably won't make a bit of difference.

Now I'm back to the point that prompted me to keep a diary in the first place: I don't have a friend.

Let me put it more clearly, since no one will believe that a thirteen-year-old girl is completely alone in the world. And I'm not. I have loving parents and a sixteen-year-old sister, and there are about thirty people I can call friends. I have a family, loving aunts and a good home. No, on the surface I seem to have everything, except my one true friend. All I think about when I'm with friends is having a good time. I can't bring myself to talk about anything but ordinary everyday things. We don't seem to be able to get any closer, and that's the problem. Maybe it's my fault that we don't confide in each other. In any case, that's just how things are, and unfortunately they're not liable to change. This is why I've started the diary. To enhance the image of this long-awaited friend in my imagination, I don't want to jot down the facts in this diary the way most people would do, but I want the diary to be my friend, and I'm going to call this friend 'Kitty'.

Since no one would understand a word of my stories to Kitty if I were to plunge right in, I'd better provide a brief sketch of my life, much as I dislike doing so.

My father, the most adorable father I've ever seen, didn't marry my mother until he was thirty-six and she was twenty-five. My sister, Margot, was born in Frankfurt in Germany in 1926. I was born on 12 June 1929. I lived in Frankfurt until I was four. My father emigrated to Holland in 1933.

From the Diary of Anne Frank - Anne Frank

Sub questions

Question Number : 294 Question Id : 640653698300 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 meaning of "*listless*" ?

Options :

6406532332176. ✘ To have courage

6406532332177. ✓ To lack enthusiasm

6406532332178. ✘ To have hope

6406532332179. ✘ To have faith

Question Number : 295 Question Id : 640653698301 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

According to this passage, how old is Anne Frank?

Options :

6406532332180. ✓ Thirteen years

6406532332181. ✘ Fourteen years

6406532332182. ✘ Sixteen years

6406532332183. ✘ Seventeen years

Question Number : 296 Question Id : 640653698302 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

Read the passage and fill in the blank with the appropriate option.

' _____ has more patience than people'

Options :

6406532332184. ✘ Wood

6406532332185. ✘ Silk

6406532332186. ✓ Paper

6406532332187. ✘ Gold

Question Number : 297 Question Id : 640653698303 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 prompted Anne Frank to keep a diary in the first place?

Options :

6406532332188. ✓ She does not have a friend

6406532332189. ✘ She has a lot of free time

6406532332190. ✘ She is bored

6406532332191.

* She did not have a family

Question Number : 298 Question Id : 640653698304 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Select true or false for the following statement.

Anne Frank has a sister.

Options :

6406532332192. ✓ True

6406532332193. * False

Question Number : 299 Question Id : 640653698305 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 meaning of 'jot down' ?

Options :

6406532332194. * To stop trying

6406532332195. * To become an adult

6406532332196. * To go on a vacation

6406532332197. ✓ To write something quickly

Question Number : 300 Question Id : 640653698306 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

Anne Frank calls her diary _____.

Options :

6406532332198. ✘ Kate

6406532332199. ✘ Richie

6406532332200. ✓ Kitty

6406532332201. ✘ Tommy

Question Number : 301 Question Id : 640653698307 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

Anne Frank's sister Margot was born in _____.

Options :

6406532332202. ✘ Berlin

6406532332203. ✘ Munich

6406532332204. ✓ Frankfurt

6406532332205. ✘ Cologne

Question Number : 302 Question Id : 640653698308 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

Anne Frank was born on _____.

Options :

6406532332206. ✘ 12 July

6406532332207. ✓ 12 June

6406532332208. ✘ 13 June

6406532332209. ✘ 14 July

Question Number : 303 Question Id : 640653698309 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

Anne Frank's father emigrated to Holland in _____.

Options :

6406532332210. ✘ 1943

6406532332211. ✓ 1933

6406532332212. ✘ 1953

6406532332213. ✘ 1963

Question Number : 304 Question Id : 640653698310 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 word 'emigrate' is closest in meaning to:

Options :

6406532332214. ✘ Employ

6406532332215. ✘ Reprove

6406532332216. ✘ Integrate

6406532332217. ✓ Move

**Question Number : 305 Question Id : 640653698311 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 an antonym for the word '*enhance*'.

Options :

6406532332218. ✗ Complement

6406532332219. ✗ Elevate

6406532332220. ✓ Diminish

6406532332221. ✗ Embellish

**Question Number : 306 Question Id : 640653698312 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 does '*confide in each other*' mean?

Options :

6406532332222. ✓ To trust each other enough to tell them secret and personal things

6406532332223. ✗ To be confident in one another

6406532332224. ✗ To lack confidence in each other

6406532332225. ✗ To be certain of each other's abilities

Question Number : 307 Question Id : 640653698313 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 does '*not liable to change*' mean?

Options :

6406532332226. ❌ Very likely to change

6406532332227. ✓ Not likely to change

6406532332228. ❌ Likely to be dishonest about change

6406532332229. ❌ Not likely to be dishonest about change

Question Number : 308 Question Id : 640653698314 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

'Get something off your chest' is an idiom. It means:

Options :

6406532332230. ❌ To annoy someone very much

6406532332231. ❌ To make someone believe something

6406532332232. ❌ To finish something so that the speaker can move on to other tasks

6406532332233. ✓ To tell someone about something that has been worrying the speaker for a long time

Sub-Section Number : 3

Sub-Section Id : 640653103452

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698315 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 : (309 to 313)

Question Label : Comprehension

Read the excerpt given below and fill in the blanks with those forms of the verbs which best fit the passage from the options provided. Your chosen answer should maintain the tense consistency of the excerpt.

A quarrel (i) _____ between the Horse and the Stag, so the Horse came to a Hunter to ask his help to take revenge on the Stag. The Hunter agreed, but said: "If you desire to conquer the Stag, you must permit me to place this piece of iron between your jaws, so that I may guide you with these reins, and allow this saddle to be placed upon your back so that I may keep steady upon you as we (ii) _____ after the enemy." The Horse agreed to the conditions, and the Hunter soon saddled and bridled him.

Then with the aid of the Hunter the Horse soon (iii) _____ the Stag, and said to the Hunter: "Now, get off, and remove those things from my mouth and back."

"Not so fast, friend," said the Hunter. "I (iv) _____ you under bit and spur, and prefer to keep you as you are at present."

If you allow men to use you for your own purposes, they (v) _____ you for theirs.

Excerpted from: Originally published by Macmillan & Co, 1894. Project Gutenberg.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 309 Question Id : 640653698316 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 appropriate verb form to fill in blank (i).

Options :

6406532332234. ✘ Arise

6406532332235. ✘ Will arise

6406532332236. ✘ Had been arising

6406532332237. ✓ Had arisen

Question Number : 310 Question Id : 640653698317 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 appropriate verb form to fill in blank (ii).

Options :

6406532332238. ✘ Will follow

6406532332239. ✓ Follow

6406532332240. ✘ Have been following

6406532332241. ✘ Will have been following

Question Number : 311 Question Id : 640653698318 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 appropriate verb form to fill in blank (iii).

Options :

6406532332242. ✘ Overcome

6406532332243. ✘ Will overcome

6406532332244. ✓ Overcame

6406532332245. ✘ Will have overcome

Question Number : 312 Question Id : 640653698319 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 appropriate verb form to fill in blank (iv).

Options :

6406532332246. ✓ Have got

6406532332247. ✘ Am getting

6406532332248. ✘ Get

6406532332249. ✘ Had got

Question Number : 313 Question Id : 640653698320 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 appropriate verb form to fill in blank (v).

Options :

6406532332250. ✘ Uses

6406532332251. ✘ Are using

6406532332252. ✘ Will have used

6406532332253. ✓ Will use

Question Id : 640653698321 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 : (314 to 318)

Question Label : Comprehension

Read the following telephone conversation and answer the given subquestions:

Samrat: Hello, Priya! How are you?

Priya:(i) _____, and you?

Samrat: I am also fine. By the way,(ii) _____

Priya: A very good idea indeed. Let us fix up a date and the venue.

Samrat: (iii) _____

Priya: Oh, fine! Darjeeling is a very beautiful and historical place.

Samrat: (iv) _____

Priya: Only your brothers and sisters and mine. When shall we start?

Samrat: We shall start at 6 o'clock from our residence.

Priya:(v) _____

Samrat: Biriyani. Don't you like it?

Priya: Of course, but we will cook our food ourselves.

Sub questions

Question Number : 314 Question Id : 640653698322 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

Fill in the blank (i) with an appropriate response?

Options :

6406532332254. ✓ I am fine

6406532332255. ❌ My sister is fine

6406532332256. ❌ My brother is fine

6406532332257. ❌ My aunt is fine

Question Number : 315 Question Id : 640653698323 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

Fill in the blank (ii) with an appropriate response?

Options :

6406532332258. ✓ Do you want to go out for a picnic?

6406532332259. ✖ Where are you staying currently?

6406532332260. ✖ When are you going to the party?

6406532332261. ✖ Which place are you from?

Question Number : 316 Question Id : 640653698324 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

Fill in the blank (iii) with an appropriate response?

Options :

6406532332262. ✖ Can you give me your number?

6406532332263. ✓ What about going to Darjeeling next Friday?

6406532332264. ✖ Could you drop me at the bus stand?

6406532332265. ✖ Can you come home this week?

Question Number : 317 Question Id : 640653698325 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

Fill in the blank (iv) with an appropriate response?

Options :

6406532332266. ❌ How much time will it take?

6406532332267. ❌ What plans have you made?

6406532332268. ✓ Who will be with us?

6406532332269. ❌ How're you doing?

Question Number : 318 Question Id : 640653698326 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

Fill in the blank (v) with an appropriate response?

Options :

6406532332270. ❌ What have you been up to?

6406532332271. ❌ What are you doing?

6406532332272. ❌ What about the party?

6406532332273. ✓ What about the menu?

Question Id : 640653698338 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 : (319 to 323)

Question Label : Comprehension

Match the words in List A with the correct synonyms in List B.

List A	List B
(i) Receive	(a) Agree
(ii) Assent	(b) Begrudge
(iii) Ascend	(c) Criticise
(iv) Resent	(d) Climb
(v) Reprove	(e) Obtain

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 319 Question Id : 640653698339 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

Synonym of 'receive' is _____.

Options :

6406532332312. ✘ Agree

6406532332313. ✘ Begrudge

6406532332314. ✘ Criticise

6406532332315. ✘ Climb

6406532332316. ✓ Obtain

Question Number : 320 Question Id : 640653698340 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

Synonym of 'assent' is ____.

Options :

6406532332317. ✓ Agree

6406532332318. ✗ Begrudge

6406532332319. ✗ Criticise

6406532332320. ✗ Climb

6406532332321. ✗ Obtain

Question Number : 321 Question Id : 640653698341 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

Synonym of 'ascend' is ____.

Options :

6406532332322. ✗ Agree

6406532332323. ✗ Begrudge

6406532332324. ✗ Criticise

6406532332325. ✓ Climb

6406532332326. ✗ Obtain

Question Number : 322 Question Id : 640653698342 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

Synonym of 'resent' is ____.

Options :

6406532332327. ✘ Agree

6406532332328. ✓ Begrudge

6406532332329. ✘ Criticise

6406532332330. ✘ Climb

6406532332331. ✘ Obtain

Question Number : 323 Question Id : 640653698343 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

Synonym of 'Reprove' is ____.

Options :

6406532332332. ✘ Agree

6406532332333. ✘ Begrudge

6406532332334. ✓ Criticise

6406532332335. ✘ Climb

6406532332336. ✘ Obtain

Sub-Section Number :

4

Sub-Section Id :

640653103453

Question Shuffling Allowed :

No

Is Section Default? :

null

Question Id : 640653698327 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 : (324 to 333)

Question Label : Comprehension

Read the following programme brochure and answer the given subquestions.

Konark Dance Festival 2022

The enthralling Konark Dance Festival [Edit i] **is held every year**, from 1st to 5th December [Edit ii] **in Open Air Auditorium, Konark, in the backdrop** of the mammoth Sun Temple. Launched in 1989, it is co-organised by the Tourism Department and Odissi Research Centre [Edit iii] **to provide a platform for classical dancers in India and as well as** [Edit iv] **to act as showcase for India's cultural depth where dance forms are concerned.** [Edit v] **It also comes as a right opportunity for budding artists who are yet to make their presence felt on the international scale.**

Conceived as a festival of the classical dances of India, the objective of the Konark Festival was to promote Konark as well as Odisha as a tourist destination. The Konark Dance Festival showcases the best of the traditional and classical dance forms of India besides offering interesting insights into the rich cultural and dance heritage of the country. The Konark Sun Temple is a solitary splendor par excellence built in the 13th century A.D. Folklore and mythology have created layers of legends shrouding the genesis of this world heritage monument.

The leading exponents and dance enthusiasts of almost all the main classical dance forms of India- including Odissi, Bharatanatyam, Manipuri, Kathakali, Kathak, Kuchipudi and Sattriya- take part in the five-day classical dance carnival [Edit vi] **much adding to the appeal of the event that has few parallels elsewhere.**

Programme:

01 Dec 2022:

06:30 PM- 07:30 PM: Odissi: Sutra Foundation, Datuk Ramli Ibrahim and Group, Kuala Lumpur, Malaysia

07:30 PM-08:30 PM: Guru Kundanlal Gangani Foundation, Rajendra Gangani and Group, New Delhi

02 Dec 2022

06:30 PM- 07:30 PM: Manipuri: F Jawaharlal Nehru Manipur Dance Academy, Manipur

07:30 PM-08:30 PM: Odissi: Gunjan Dance Academy- Meera Das and Group, Cuttack

03 Dec 2022:

06:30 PM- 07:30 PM: Kolkata Mayur Lalit Dance Academy- Debamitra Sengupta and Group, Kolkata

07:30 PM-08:30 PM: Mohiniattam: Dasyam Centre for Mohiniattam- Kalaimamani Smt. Gopika Varma and Group, Chennai

04 Dec 2022:

06:30 PM- 07:30 PM: Bharatanatyam: Spanda Dance Company- Leela Samson (Padma Shri Awardee) & Group, Chennai

07:30 PM-08:30 PM: Suravi- Pitambar Biswal & Group, Bhubaneswar

04 Dec 2022:

06:30 PM- 07:30 PM: Odissi: Nrutya Naivedya, Pravat Kumar Swain & Group, Bhubaneswar

07:30 PM-08:30 PM: Kuchipudi: Shivamohanam- Jaikishore Mosalikanty & Group, Chennai

Adapted from: *Konark Dance Festival 2022*. Department of Tourism, Odisha,
<https://odishatourism.gov.in/content/tourism/en/experience/event/konark-dance-festival-2022.html>.

Sub questions

Question Number : 324 Question Id : 640653698328 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 can the part of the sentence given in bold as [Edit i] be changed to improve the brochure?

*The enthralling Konark Dance Festival [Edit i] **is held every year**, from 1st to 5th December [Edit ii] in Open Air Auditorium, Konark, in the backdrop of the mammoth Sun Temple.*

Options :

6406532332274. ❌ Will be held

6406532332275. ✓ Omit the comma after 'year'

6406532332276. ❌ Is held every years

6406532332277. ❌ No change

Question Number : 325 Question Id : 640653698329 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 can the part of the sentence given in bold as [Edit ii] be changed to improve the brochure?

*The enthralling Konark Dance Festival [Edit i] is held every year, from 1st to 5th December [Edit ii] **in Open Air Auditorium, Konark, in the backdrop** of the mammoth Sun Temple.*

Options :

6406532332278. ✓ In the open-air auditorium at Konark against the backdrop of

6406532332279. ❌ In Konark Open Air Auditorium on the backdrop of

6406532332280. ❌ At the open-air auditorium in Konark by the backdrop of

6406532332281. ❌ In Konark open-air auditorium on the backdrop of

Question Number : 326 Question Id : 640653698330 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 can the part of the sentence given in bold as [Edit iii] be changed to improve the brochure?

Launched in 1989, it is co-organised by the Tourism Department and Odissi Research Centre [Edit iii] to provide a platform for classical dancers in India and as well as [Edit iv] to act as showcase for India's cultural depth where dance forms are concerned.

Options :

6406532332282. ❌ Place 'as well as' before 'to provide'

6406532332283. ❌ Change 'in' to 'at'

6406532332284. ❌ Change 'to provide' to 'providing'

6406532332285. ✓ Omit 'as well as'

Question Number : 327 Question Id : 640653698331 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 can the part of the sentence given in bold as [Edit iv] be changed to improve the brochure?

Choose the single most fitting answer from the options given below keeping the tone, theme and purpose of the brochure in mind.

Launched in 1989, it is co-organised by the Tourism Department and Odissi Research Centre [Edit iii] to provide a platform for classical dancers in India and as well as [Edit iv] to act as showcase for India's cultural depth where dance forms are concerned.

Options :

6406532332286. ❌ Showcasing for India's cultural depth where dance forms are concerned

6406532332287. ❖ To act as showcase of India's cultural depth concerning dance forms

6406532332288. ❖ To act as a showcase in the concerns of India's deeply cultural dance forms

6406532332289. ✓ To showcase the cultural depth of Indian dance forms

Question Number : 328 Question Id : 640653698332 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 can the sentence given in bold as [Edit v] be changed to improve the brochure? Choose the single most fitting answer from the options given below keeping the tone, theme and purpose of the brochure in mind.

It also comes as a right opportunity for budding artists who are yet to make their presence felt on the international scale.

i. Change 'a right opportunity' to 'the right opportunity'

ii. Change 'on the international scale' to either 'on an international scale' or to 'on the international stage'

Options :

6406532332290. ❖ Only i

6406532332291. ❖ Only ii

6406532332292. ✓ Both i and ii

6406532332293. ❖ Neither i nor ii

Question Number : 329 Question Id : 640653698333 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 can the part of the sentence given in bold as [Edit vi] be changed to improve the brochure?

Choose the single most fitting answer from the options given below, keeping the tone, theme and purpose of the brochure in mind.

*The leading exponents and dance enthusiasts of almost all main classical dance forms of India-including Odissi, Bharatanatyam, Manipuri, Kathakali, Kathak, Kuchipudi and Sattriya- take part in the five-day classical dance carnival [Edit vi] **much adding to the appeal of the event that has few parallels elsewhere.***

Options :

6406532332294. ❌ Very much adding to the appeal of this unparalleled event.

6406532332295. ✓ Adding to the appeal of this event which has few parallels elsewhere in the world.

6406532332296. ❌ Much adding to the appeal of this event without parallel.

6406532332297. ❌ Much adding to the appeal of the event that has a few parallels elsewhere.

Question Number : 330 Question Id : 640653698334 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

State true or false.

The sentence given below is the topic statement in this brochure:

The leading exponents and dance enthusiasts of almost all main classical dance forms of India-including Odissi, Bharatanatyam, Manipuri, Kathakali, Kathak, Kuchipudi and Sattriya- take part in the five-day classical dance carnival [Edit vi] much adding to the appeal of the event that has few parallels elsewhere.

Options :

6406532332298. ✘ TRUE

6406532332299. ✓ FALSE

Question Number : 331 Question Id : 640653698335 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 assertions is true?

Options :

6406532332300. ✘ The brochure uses expressions such as 'mammoth Sun Temple' because this brochure is an example of literary writing.

6406532332301. ✓ The brochure uses expressions such as 'mammoth Sun Temple' because the purpose of this brochure is to attract the readers to the site of the festival.

6406532332302. ✘ The brochure uses expressions such as 'mammoth Sun Temple' to establish the claims made by the Konark Dance Festival.

6406532332303. ✘ The brochure uses expressions such as 'mammoth Sun Temple' because metaphors are mandatorily required in advertising the creative arts.

Question Number : 332 Question Id : 640653698336 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

In the context of a brochure, which of the following is true?

Options :

6406532332304. ✓ A programme schedule is necessary to serve the brochure's purpose.

6406532332305. ✘ A programme schedule can be avoided as it makes no substantial contribution

to the brochure.

6406532332306. ✘ A programme schedule appeals to the audience's emotions.

6406532332307. ✘ A programme schedule contains the topic statement.

Question Number : 333 Question Id : 640653698337 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 tone of this brochure is:

Options :

6406532332308. ✘ Informal

6406532332309. ✘ Emotional

6406532332310. ✓ Formal

6406532332311. ✘ Colloquial

Sub-Section Number : 5

Sub-Section Id : 640653103454

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698359 Question Type : COMPREHENSION Sub Question Shuffling

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

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

Question Numbers : (334 to 338)

Question Label : Comprehension

Read the passage given below and fill in the blanks with the appropriate form of adjectives in the given subquestions.

"Rush hour crowds jostle for position on the underground train platform. A (1)_____ girl,

looking(2)_____ than her seventeen years, was nervous yet excited as she felt the vibrations of the (3)_____ train. It was her first day at the(3)_____ Royal Academy of Music in London and daunting enough for any teenager fresh from a Scottish farm. But this aspiring musician faced a (4)_____ challenge than most: she was profoundly deaf."

(Source: Cowley, Deborah. "The Sound of Music." *Beehive*, National Council Of Educational Research And Training, 2022, p. 17.)

Sub questions

Question Number : 334 Question Id : 640653698360 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 for blank (1)

Options :

6406532332390. ✓ Slight

6406532332391. ✗ Slightly

6406532332392. ✗ Slighter

6406532332393. ✗ Slightest

Question Number : 335 Question Id : 640653698361 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 for blank (2)

Options :

6406532332394. ✗ Youngest

6406532332395. ✓ Younger

6406532332396. ✘ Young

6406532332397. ✘ Youth

Question Number : 336 Question Id : 640653698362 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 for blank(3)

Options :

6406532332398. ✘ Approach

6406532332399. ✘ Approachability

6406532332400. ✘ Approaches

6406532332401. ✓ Approaching

Question Number : 337 Question Id : 640653698363 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 for blank (4)

Options :

6406532332402. ✓ Prestigious

6406532332403. ✘ Prestige

6406532332404. ✘ Prestigiously

6406532332405. ✘ Prestigiousness

Question Number : 338 Question Id : 640653698364 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 for blank (5)

Options :

6406532332406. ✘ Big

6406532332407. ✓ Bigger

6406532332408. ✘ Biggest

6406532332409. ✘ Bigly

Sub-Section Number : 6

Sub-Section Id : 640653103455

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 339 Question Id : 640653698344 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 word without an 'ai' sound from the following.

Options :

6406532332337. ✘ Right

6406532332338. ✘ Write

6406532332339. ✓ kit

6406532332340. ✘ Both Right and Write

Question Number : 340 Question Id : 640653698345 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

Pick the odd one out on the basis of the similarity of vowel sounds:

Options :

6406532332341. ✘ Prick

6406532332342. ✘ Flick

6406532332343. ✓ Pine

6406532332344. ✘ Pit

Question Number : 341 Question Id : 640653698346 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the nouns in the following sentence.

Riya visited the Gateway of India in Mumbai.

Options :

6406532332345. ✘ Riya

6406532332346. ✘ Gateway of India

6406532332347. ✓ Riya, Gateway of India and Mumbai

6406532332348. ✘ Mumbai

Question Number : 342 Question Id : 640653698347 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Select the word in the sentence below that contains a grammatical error.

She is better than him.

Options :

6406532332349. ❌ She

6406532332350. ✓ Him

6406532332351. ❌ Than

6406532332352. ❌ None

Question Number : 343 Question Id : 640653698348 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 team members hugged _____ after they had won the competition.

Options :

6406532332353. ❌ All

6406532332354. ❌ Both

6406532332355. ❌ Each other

6406532332356. ✓ One another

Question Number : 344 Question Id : 640653698349 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Select the option that will improve the underlined part of the given sentence.

One should try to make the most optimum use of resources.

Options :

6406532332357. ✓ Make the optimum use of resources.

6406532332358. ✗ Make the more optimum use of resources.

6406532332359. ✗ Made the most optimum use of resources.

6406532332360. ✗ No improvement required.

Question Number : 345 Question Id : 640653698350 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

Fill in the blank with the appropriate option.

Don't trust him, he always _____ his word.

Options :

6406532332361. ✗ Gets over

6406532332362. ✗ Gets around

6406532332363. ✓ Goes back on

6406532332364. ✗ Goes back

Question Number : 346 Question Id : 640653698351 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.

It is a legal rule and you _____ obey it strictly.

Options :

6406532332365. ✘ Could

6406532332366. ✘ Should

6406532332367. ✓ Must

Question Number : 347 Question Id : 640653698352 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

How many syllables are there in the word *ultimate*?

Options :

6406532332368. ✘ 2

6406532332369. ✓ 3

6406532332370. ✘ 4

6406532332371. ✘ 5

Question Number : 348 Question Id : 640653698353 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

How many syllables are there in the word *staple*?

Options :

6406532332372. ✓ 2

6406532332373. ✘ 3

6406532332374. ✘ 4

6406532332375.

* 5

Question Number : 349 Question Id : 640653698354 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

In the plural noun *boxes*, the plural marker sounds as _____.

Options :

6406532332376. * [s]

6406532332377. * [z]

6406532332378. ✓ [iz]

Question Number : 350 Question Id : 640653698355 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 word *justify* is stressed as _____ (stress is indicated in bold).

Options :

6406532332379. * **Justify**

6406532332380. * **Justify**

6406532332381. ✓ **Justify**

Question Number : 351 Question Id : 640653698356 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the grammatically correct sentence from the options given.

Options :

6406532332382. ❌ A fashion dress is very costly.

6406532332383. ✓ A fashionable dress is very costly.

Question Number : 352 Question Id : 640653698357 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the grammatically correct sentence from the options given.

Options :

6406532332384. ❌ I will avail of this opportunity.

6406532332385. ✓ I will avail myself of this opportunity.

Question Number : 353 Question Id : 640653698358 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 sentences makes use of a phrase that means '*to be difficult to understand*'?

Focus on the underlined parts of the sentence.

Options :

6406532332386. ❌ I was trying to comprehend her speech, but I zoned out.

6406532332387. ✓ This Maths textbook is all Greek to me.

6406532332388. ❌ This hieroglyph, while cryptic at an advanced level, can be cracked with the right technique.

6406532332389. ❀ She is a very difficult person – she even snitched on our team.

Statistics1

Section Id :	64065349288
Section Number :	14
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	13
Number of Questions to be attempted :	13
Section Marks :	40
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103456
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 354 Question Id : 640653698365 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406532332410. ✓ YES

6406532332411. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653103457

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 355 Question Id : 640653698366 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 repairman services five washing machines each day. For each machine, there is a 50% chance that the repair will involve installing a specific part. Find the probability that at most one washing machine out of the five will need this part for installation.

Options :

6406532332412. ✗ $\frac{1}{32}$

6406532332413. ✗ $\frac{5}{32}$

6406532332414. ✓ $\frac{6}{32}$

$$6406532332415. \times \frac{3}{32}$$

Sub-Section Number : 3

Sub-Section Id : 640653103458

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 356 Question Id : 640653698370 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

A shopkeeper has five red, four black and two blue pens. A customer went to his shop and selects three pens at random. Find the total number of ways in which the customer can select the pens of different colours.

Options :

6406532332421. ✘ 20

6406532332422. ✘ 11

6406532332423. ✓ 40

6406532332424. ✘ 65

Question Number : 357 Question Id : 640653698375 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

A box contains 10 red balls and 3 blue balls. Four balls are drawn at random from the urn without replacement. Let the random variable X denote the number of red balls that are drawn from the

box. Find the possible values that X can take.

Options :

6406532332431. ✓ {1, 2, 3, 4}

6406532332432. ✗ {1, 2, ..., 10}

6406532332433. ✗ {0, 1, 2, 3, 4}

6406532332434. ✗ {0, 1, 2, ..., 10}

Question Number : 358 Question Id : 640653698380 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

If X and Y are independent Poisson random variables with parameter 2, then find the $\text{Var}(2X - Y)$.

Options :

6406532332442. ✗ 2

6406532332443. ✗ 11

6406532332444. ✗ 6

6406532332445. ✓ 10

Sub-Section Number : 4

Sub-Section Id : 640653103459

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 359 Question Id : 640653698376 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

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

Options :

6406532332435. ✓ Vehicle Number plate has a nominal scale of measurement.

6406532332436. ✗ Phone brand has an ordinal scale of measurement.

6406532332437. ✗ Amount of milk (in litres) is a numeric and discrete variable.

6406532332438. ✓ Life of a bulb (in hours) has a ratio scale of measurement.

Sub-Section Number : 5

Sub-Section Id : 640653103460

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 360 Question Id : 640653698374 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 random variable X has the following probability mass function:

X	0	2	x_3
$P(X = x)$	$3k$	k	$6k$

If $E(X) = 2$, then what will be the value of x_3 ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 361 Question Id : 640653698377 Question Type : SA Calculator : None

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

Correct Marks : 4

Question Label : Short Answer Question

The data of the different languages spoken by the students of a class is given in the following table.

Language	Number of students	Relative frequency
Arabic	6	
German		
Spanish	15	
Hindi		
Vietnamese	27	0.3

Table 1:

If Hindi is the only mode of the given data, then what is the maximum possible value of relative frequency of German? (Enter the answer correct to 3 decimal places)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.151 to 0.161

Question Number : 362 Question Id : 640653698378 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

How many numbers can be formed using the digits 0, 1, 3, 5, 7, 9 (without repetition), such that the number formed is greater than 20, 000?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1080

Sub-Section Number : 6

Sub-Section Id : 640653103461

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 363 **Question Id :** 640653698379 **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

From an ordinary deck of 52 cards, suppose five cards are selected at random without replacement. Find the probability that at least one card is a face card. 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 :

0.72 to 0.78

Sub-Section Number : 7

Sub-Section Id : 640653103462

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698367 **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 : (364 to 365)

Question Label : Comprehension

Suppose the lifetime of a radio is uniformly distributed between a to 150 weeks. Based on the given information, answer the sub questions:

Sub questions

Question Number : 364 Question Id : 640653698368 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

If the expected lifetime of a radio is 130 weeks, then find the value of a .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

110

Question Number : 365 Question Id : 640653698369 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 conditional probability that the battery will last for more than 140 weeks given that it has already worked for more than 130 weeks?

Options :

6406532332417. ✘ $\frac{1}{4}$

6406532332418. ✓ $\frac{1}{2}$

6406532332419. ✗ $\frac{3}{4}$

6406532332420. ✗ $\frac{1}{4}$

Question Id : 640653698371 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 : (366 to 367)

Question Label : Comprehension

A telecom company is assessing the potential issues with its latest smartphone model. There is a probability of 0.35 for a software glitch, probability of 0.25 for battery issues, and 0.40 for defects in some other component.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 366 Question Id : 640653698372 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 probability that the issue is the software glitch or the battery, if the probability of having both issues simultaneously is 0.12?

Options :

6406532332425. ✓ 0.48

6406532332426. ✘ 0.60

6406532332427. ✘ 0.09

6406532332428. ✘ 0.20

Question Number : 367 Question Id : 640653698373 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 probability that there is no issue with either the software or the battery in the smartphone? 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 :

0.50 to 0.54

Sub-Section Number : 8

Sub-Section Id : 640653103463

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698381 Question Type : COMPREHENSION Sub Question Shuffling

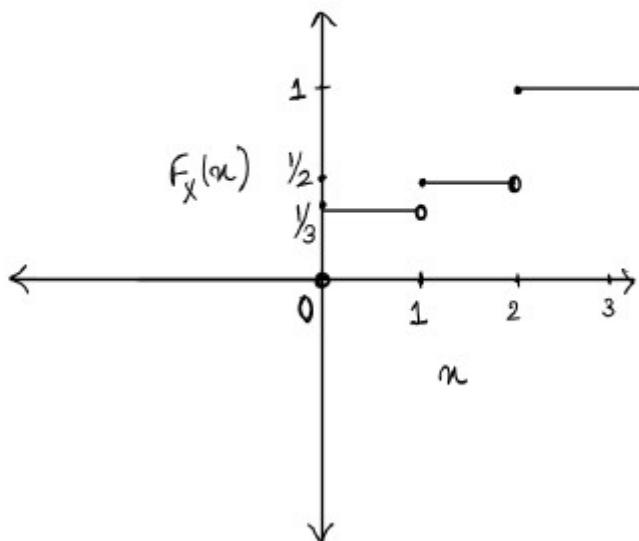
Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

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

Question Numbers : (368 to 369)

Question Label : Comprehension

Let X be a discrete random variable with the following CDF:



Based on the above data, answer the given subquestions.

Sub questions

Question Number : 368 Question Id : 640653698382 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

Find the value of $P(X = 1)$. 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 :

0.14 to 0.20

Question Number : 369 Question Id : 640653698383 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 $P(X \geq 0 | X < 1)$.

Enter the answer correct to two decimal places.

Options :

6406532332447. ✘ 0

6406532332448. ✓ 1

6406532332449. ✘ 0.5

6406532332450. ✘ 0.33

Statistics2

Section Id :	64065349289
Section Number :	15
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	12
Number of Questions to be attempted :	12
Section Marks :	40
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653103464
Question Shuffling Allowed :	No

Is Section Default? :

null

Question Number : 370 Question Id : 640653698384 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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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 :

6406532332451. ✓ YES

6406532332452. ✗ NO

Question Number : 371 Question Id : 640653698385 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)	${}^n C_k p^k (1-p)^{n-k},$ $k = 0, 1, \dots, n$	$\begin{cases} 0 & x < 0 \\ \sum_{i=0}^k {}^n C_i p^i (1-p)^{n-i} & k \leq x < k+1 \\ & k = 0, 1, \dots, n \\ 1 & x \geq n \end{cases}$	np	$np(1-p)$
Geometric(p)	$(1-p)^{k-1} p,$ $k = 1, \dots, \infty$	$\begin{cases} 0 & x < 0 \\ 1 - (1-p)^k & k \leq x < k+1 \\ & k = 1, \dots, \infty \end{cases}$	$\frac{1}{p}$	$\frac{1-p}{p^2}$
Poisson(λ)	$\frac{e^{-\lambda} \lambda^k}{k!},$ $k = 0, 1, \dots, \infty$	$\begin{cases} 0 & x < 0 \\ e^{-\lambda} \sum_{i=0}^k \frac{\lambda^i}{i!} & k \leq x < k+1 \\ & k = 0, 1, \dots, \infty \end{cases}$	λ	λ

Continuous random variables:

Distribution	PDF ($f_X(x)$)	CDF ($F_X(x)$)	$E[X]$	$\text{Var}(X)$
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)	$\frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)} x^{\alpha-1} (1-x)^{\beta-1}$		$\frac{\alpha}{\alpha+\beta}$	$\frac{\alpha\beta}{(\alpha+\beta)^2(\alpha+\beta+1)}$

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

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

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

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

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

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

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

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

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

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

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

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

Procedure: For one parameter θ

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

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

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

8. Maximum likelihood (ML) estimation:

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

9. Bayesian estimation: Let $X_1, \dots, X_n \sim$ i.i.d. X , parameter Θ .

Prior distribution of Θ : $\Theta \sim f_\Theta(\theta)$.

Samples, $S : (X_1 = x_1, \dots, X_n = x_n)$

Posterior: $\Theta | (X_1 = x_1, \dots, X_n = x_n)$

Bayes' rule: Posterior \propto Prior \times Likelihood

Posterior density $\propto f_\Theta(\theta) \times P(X_1 = x_1, \dots, X_n = x_n | \Theta = \theta)$

10. Normal samples with unknown mean and known variance:

$X_1, \dots, X_n \sim$ i.i.d. Normal(M, σ^2).

Prior $M \sim$ Normal(μ_0, σ_0^2).

Posterior mean: $\hat{\mu} = \bar{X} \left(\frac{n\sigma_0^2}{n\sigma_0^2 + \sigma^2} \right) + \mu_0 \left(\frac{\sigma^2}{n\sigma_0^2 + \sigma^2} \right)$

11. Hypothesis Testing

- Test for mean

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

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

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

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

- χ^2 -test for variance:

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

- Two samples z -test for means:

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

- Two samples F -test for variances

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

Use the following values if required:

$$(0.9)^8 = 0.430467, (0.9)^9 = 0.38742, (0.9)^{10} = 0.348678$$

Options :

6406532332453. ✓ Useful Data has been mentioned above.

6406532332454. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 640653103465

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 372 Question Id : 640653698386 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 100 samples $X_1, X_2, \dots, X_{100} \sim \text{iid Normal}(\mu, 9)$. Let the null and alternative hypothesis be $H_0 : \mu = -3$ and $H_A : \mu = 3$. Suppose $T = \frac{X_1 + X_2 + \dots + X_{100}}{100}$. Consider a test that rejects H_0 if $T > c$ for some constant c . What is power of the test in terms of ' c '?

Options :

6406532332455. ❌ $F_Z \left(\frac{10}{3}(c - 3) \right)$

6406532332456. ✓ $1 - F_Z \left(\frac{10}{3}(c - 3) \right)$

6406532332457. ✗ $F_Z \left(\frac{10}{3}(c + 3) \right)$

6406532332458. ✗ $1 - F_Z \left(\frac{10}{3}(c + 3) \right)$

Sub-Section Number : 3

Sub-Section Id : 640653103466

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 373 Question Id : 640653698387 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

Waiting time (in minutes) in a hospital is said to follow the exponential distribution with parameter λ . The waiting timings (in minutes) from a random sample of 5 patients are as follows:

10, 8, 10, 8, 14

Find the estimate of λ by using method of moments. Enter the answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.1

Question Number : 374 Question Id : 640653698389 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

A random variable X has the following probability mass function:

X	0	1	2	3	4
$P(X = x)$	p_1	$1/4$	$3/8$	$1/4$	p_5

If $E(X) = 2$, then find the value of p_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 :

0.03 to 0.09

Sub-Section Number : 4

Sub-Section Id : 640653103467

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 375 Question Id : 640653698388 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Suppose $X_1, X_2, \dots, X_{n_1} \sim \text{iid Normal}(\mu_1, \sigma_1^2)$ and $Y_1, Y_2, \dots, Y_{n_2} \sim \text{iid Normal}(\mu_2, \sigma_2^2)$ are independent samples. The sample means of these samples are denoted as \bar{X} and \bar{Y} , and their respective sample variances are S_X^2 and S_Y^2 . Choose the correct option(s) from the following.

Options :

$$\overline{X} - \overline{Y} \sim N \left(\mu_1 - \mu_2, \frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2} \right)$$

6406532332460. ✖

$$6406532332461. \checkmark \quad \frac{(n_1 - 1)S_X^2}{\sigma_1^2} \sim \chi_{n_1-1}^2$$

$$6406532332462. \checkmark \quad \frac{(S_X^2/\sigma_1^2)}{(S_Y^2/\sigma_2^2)} \sim F(n_1 - 1, n_2 - 1)$$

$$6406532332463. \textcolor{red}{✖} \quad \frac{(S_X^2/\sigma_1^2)}{(S_Y^2/\sigma_2^2)} \sim F(n_1, n_2)$$

Question Number : 376 Question Id : 640653698390 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Suppose X_1, X_2 and X_3 are i.i.d. samples from a distribution X with an unknown mean μ and variance σ^2 . Let $\hat{\mu}_1 = X_1 + X_2 - X_3$ and $\hat{\mu}_2 = 2X_1 - 4X_2 + 3X_3$ be two estimators of μ . Which of the following option(s) is(are) correct?

Options :

6406532332465. ✓ Bias($\hat{\mu}_1, \mu$) = 0

6406532332466. ✖ Bias($\hat{\mu}_2, \mu$) \neq 0

6406532332467. ✓ Var($\hat{\mu}_1$) < Var($\hat{\mu}_2$)

6406532332468. ✖ Var($\hat{\mu}_2$) < Var($\hat{\mu}_1$)

Sub-Section Id : 640653103468

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653698391 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 : (377 to 378)

Question Label : Comprehension

Let X be a discrete random variable such that $X \in \{0, 1, 2\}$ and

$$P(X = 0) = \frac{\theta}{3}, P(X = 1) = 1 - \theta,$$

where θ is an unknown constant. Consider a random sample $(2, 1, 1, 0, 0, 2, 1, 2, 0, 2)$ from X .

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 377 Question Id : 640653698392 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

Find the method of moments estimate of θ for the given sample. 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 :

0.27 to 0.33

Question Number : 378 Question Id : 640653698393 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Find the maximum likelihood estimate of θ for the given sample. 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 :

0.67 to 0.73

Question Id : 640653698394 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 : (379 to 380)

Question Label : Comprehension

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

$$M_X(\lambda) = \frac{1}{8}e^{-4\lambda} + \frac{1}{6}e^{-2\lambda} + \frac{1}{6}e^{2\lambda} + \frac{1}{8}e^{4\lambda} + \frac{5}{12}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 379 Question Id : 640653698395 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 PMF of X ?

Options :

x	-4	-2	0	2	4
$f_X(x)$	1/8	1/6	5/12	1/6	1/8

6406532332471. ✓

x	-4	-2	1	2	4
$f_X(x)$	1/8	1/6	5/12	1/6	1/8

6406532332472. ✗

x	-4	-2	0	2	4
$f_X(x)$	1/8	1/6	5/12	1/8	1/6

6406532332473. ✗

x	-4	-2	1	2	4
$f_X(x)$	1/8	1/6	5/12	1/8	1/6

6406532332474. ✗

Question Number : 380 Question Id : 640653698396 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 $\text{Var}(X)$. 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 :

5.30 to 5.36

Question Id : 640653698397 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 : (381 to 382)

Question Label : Comprehension

A tech company asserts that the probability of a randomly selected software update being bug-free is 0.90. It seems too high to a user and he decides to investigate. The user randomly selects 10 software updates and checks whether they are bug-free. If fewer than 8 updates are bug-free (out of those 10), the user will reject the claim; otherwise, the claim will be accepted.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 381 Question Id : 640653698398 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Define null hypothesis and alternative hypothesis.

Options :

6406532332476. ❌ $H_0 : p = 0.90, H_A : p > 0.90$

6406532332477. ❌ $H_0 : p = 0.90, H_A : p \neq 0.90$

6406532332478. ✓ $H_0 : p = 0.90, H_A : p < 0.90$

6406532332479. ❌ $H_0 : p \neq 0.90, H_A : p = 0.90$

Question Number : 382 Question Id : 640653698399 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 significance level of the test. 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 :

0.04 to 0.10

Question Id : 640653698400 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 : (383 to 384)

Question Label : Comprehension

The number of accidents in a certain city is modeled by a Poisson (λ) distribution. The observed number of accidents over a period of 10 days are 3, 4, 2, 2, 1, 6, 4, 2, 1, 3. Assume the prior distribution of λ to be Gamma(5, 1).

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 383 Question Id : 640653698401 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Find the posterior distribution of λ .

Options :

6406532332481. ✘ Gamma(28,11)

6406532332482. ✘ Beta(34, 11)

6406532332483. ✘ Gamma(32,10)

6406532332484. ✓ Gamma(33,11)

Question Number : 384 Question Id : 640653698402 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

Find the posterior mean.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Id : 640653698403 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 : (385 to 386)

Question Label : Comprehension

Suppose the lifetime (in weeks) of a radio follows a continuous uniform distribution $[a, 150]$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 385 Question Id : 640653698404 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

If the expected lifetime of a radio is 130 weeks, then find the value of a .

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

110

Question Number : 386 Question Id : 640653698405 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 conditional probability that the battery will last for more than 140 weeks given that it has already worked for more than 130 weeks?

Options :

6406532332487. ✘ $\frac{1}{4}$

6406532332488. ✓ $\frac{1}{2}$

6406532332489. ✘ $\frac{3}{4}$

6406532332490. ✘ $\frac{1}{4}$