

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 FN EXAM FDD2 24 Dec 2023
Subject Name :	2023 Dec24: IIT M FN EXAM FDD2
Creation Date :	2023-12-20 18:39:05
Duration :	180
Total Marks :	1065
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 : 64065316259

Group Maximum Duration : 0

Group Minimum Duration : 90

Show Attended Group? : No

Edit Attended Group? : No

Break time : 0

Group Marks : 1065

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 : 64065349215

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 :	640653102900
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 1 Question Id : 640653696187 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 :

6406532325614. ✓ YES

6406532325615. * NO

Sub-Section Number : 2
Sub-Section Id : 640653102901
Question Shuffling Allowed : Yes
Is Section Default? : null

Question Number : 2 Question Id : 640653696188 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** as shown 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 1: Students

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

Table 2: 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 3: 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 (C001, Comp. Sci.) and (C002, Maths) are deleted from table **Departments** then how many tuples will be deleted 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 : 3 Question Id : 640653696197 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 nested loop join for the two relations, instructor and department. Assuming the worst-case memory availability and instructor as the outer relation, the details are as follows:

- Total number of block transfers: 140660
- Total number of seeks required: 2600
- Number of records in the outer relation: 2000

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 :

70

Question Number : 4 Question Id : 640653696199 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 five transactions T1, T2, T3, T4, T5:

S: R1(A); W3(A); W3(B); R5(B); R1(C); R4(A); W4(C); R5(D); W4(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 :

5

Sub-Section Number : 3

Sub-Section Id : 640653102902

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 5 Question Id : 640653696194 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: Raid 3 architecture consists of byte-level striping and it cannot service multiple requests simultaneously.

S2: Raid 4 architecture facilitates recovery of at most 1 disk failure

S3: Raid 5 has a dedicated disk for parity blocks

Choose the correct option.

Options :

6406532325637. ✓ Statement S1 and S2 are correct.

6406532325638. ✗ Only Statement S1 is correct

6406532325639. ✗ Only statement S2 is correct

6406532325640. ✗ Statement S1 and S3 are correct

Sub-Section Number : 4

Sub-Section Id : 640653102903

Question Shuffling Allowed : Yes

Is Section Default? :

null

Question Number : 6 Question Id : 640653696189 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) >= 6
```

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 :

6406532325617. ✓ Names of the 4 youngest students

6406532325618. ✗ Names of the 4 oldest students

6406532325619. ✗ Names of the 5 youngest students

6406532325620. ✗ Name of the fourth oldest student

Question Number : 7 Question Id : 640653696192 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 table Employee as 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	L4
008	Piper	Female	L3

Table 4: 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 females with income level 'L1'?

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

Options :

6406532325629. ✘ 00101101 AND 00010001

6406532325630. ✘ 00101101 OR 10100100

6406532325631. ✓ 00101101 AND 10100100

6406532325632. ✘ 11010010 OR 00010001

Question Number : 8 Question Id : 640653696195 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 11th day of the month after the backup has been completed, how many backup sets have to be loaded for a full recovery?

Options :

6406532325641. ✘ 5

6406532325642. ✘ 4

6406532325643. ✘ 7

6406532325644. ✓ 6

Question Number : 9 Question Id : 640653696196 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the given log records at an instance of time:

Table 5: Log records

$\langle T_0 \text{ start} \rangle$
$\langle T_0, A, 500, 700 \rangle$
$\langle T_1 \text{ start} \rangle$
$\langle T_1, B, 900, 450 \rangle$
$\langle T_0, C, 1000, 1200 \rangle$
$\langle T_2 \text{ start} \rangle$
$\langle T_2, D, 460, 320 \rangle$
$\langle \text{Commit } T_0 \rangle$
$\langle \text{Checkpoint } L \rangle$
$\langle T_1, D, 460, 560 \rangle$
$\langle \text{Commit } T_1 \rangle$
$\langle T_2, B, 450, 600 \rangle$

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 :

6406532325645. ✘ A = 700, B = 600, C = 1200, D = 560

6406532325646. ✓ A = 700, B = 450, C = 1200, D = 560

6406532325647. ✘ A = 500, B = 450, C = 1000, D = 560

6406532325648. ✘ A = 500, B = 450, C = 1200, D = 320

Question Number : 10 Question Id : 640653696198 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

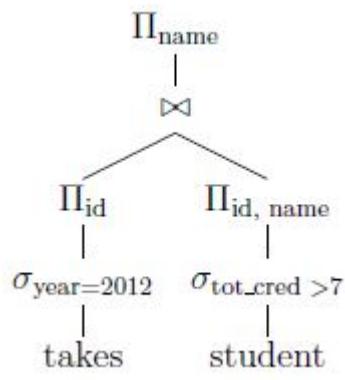
Consider the given relations:

student(id, name, dept_name, tot_cred)

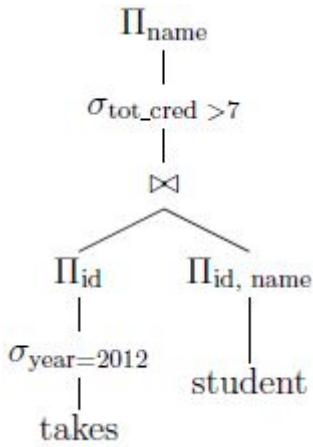
takes(id, course_id, year, grade)

Identify the most optimized expression tree from the given options that find the name of students whose tot_cred is greater than 7 and the year is 2012.

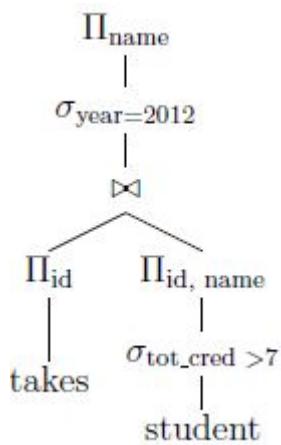
Options :



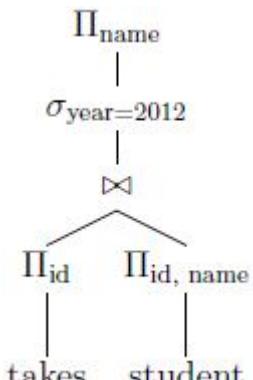
6406532325650. ✓



6406532325651. ✗



6406532325652. ✗



6406532325653. ✗

Question Number : 11 Question Id : 640653696207 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 leaf nodes of the constructed binary search tree.

Choose the correct option.

Options :

6406532325679. ✓ 15, 25, 60,90

6406532325680. ✗ 15, 25,90

6406532325681. ✗ 10,27,103, 20,86

6406532325682. ✗ 10,27,103

Sub-Section Number : 5

Sub-Section Id : 640653102904

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 12 Question Id : 640653696190 Question Type : MCQ Is Question

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 relation Items:

Items(item_name, item_type, brand, price)

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

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

Options :

6406532325621. ✘ Names of all food items from brand Amul that have lower prices than all beverage items from brand Keventer

6406532325622. ✓ Names of all food items from brand Amul that have higher prices than all beverage items from brand Keventer

6406532325623. ✘ Names of all food items from the brand Keventer that have higher prices than all beverage items from the brand Amul

6406532325624. ✘ Names of all beverage items from brand Amul that have lower prices than all food items from brand Keventer

Question Number : 13 Question Id : 640653696193 Question Type : MCQ Is Question

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 a given sequence. The tree is initially empty.

15, 10, 8, 20, 9, 6, 22

How many node splits will be required to perform these insertions?

Options :

6406532325633. ✓ 5

6406532325634. ✘ 4

6406532325635. ✘ 6

6406532325636. ✘ 3

Question Number : 14 Question Id : 640653696201 Question Type : MCQ Is Question

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 $\text{CustomerLogs}(Name, Items, Restaurant, Date)$ with the following data values.

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

If multivalued dependency ($Name \rightarrow\!\! \rightarrow \{Items, Date\}$) exists in the above CustomerLogs relation, then what are the values of A, B, C, D, E?

Options :

6406532325659. ✘ A = Tea, B = Your's cafe, C = Our's cafe, D = 21-10-21, E = 19-10-21

6406532325660. ✘ A = Coffee, B = Your's cafe, C = Our's cafe, D = 21-10-21, E = 19-10-21

6406532325661. ✓ A = Coffee, B = Our's cafe, C = Your's cafe, D = 19-10-21 , E = 21-10-21

6406532325662. ✘ A = Tea, B = Our's cafe, C = Your's cafe, D = 19-10-21, E = 21-10-21

Question Number : 15 Question Id : 640653696202 Question Type : MCQ Is Question

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

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

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 :

6406532325663. ✘ D1 is a lossless decomposition and D2 is a lossy decomposition.

6406532325664. ✓ *D1* is a lossy decomposition and *D2* is a lossless decomposition.

6406532325665. ✗ *D1* and *D2* both are lossless decompositions.

6406532325666. ✗ *D1* and *D2* both are lossy decompositions.

Sub-Section Number : 6

Sub-Section Id : 640653102905

Question Shuffling Allowed : Yes

Is Section Default? : null

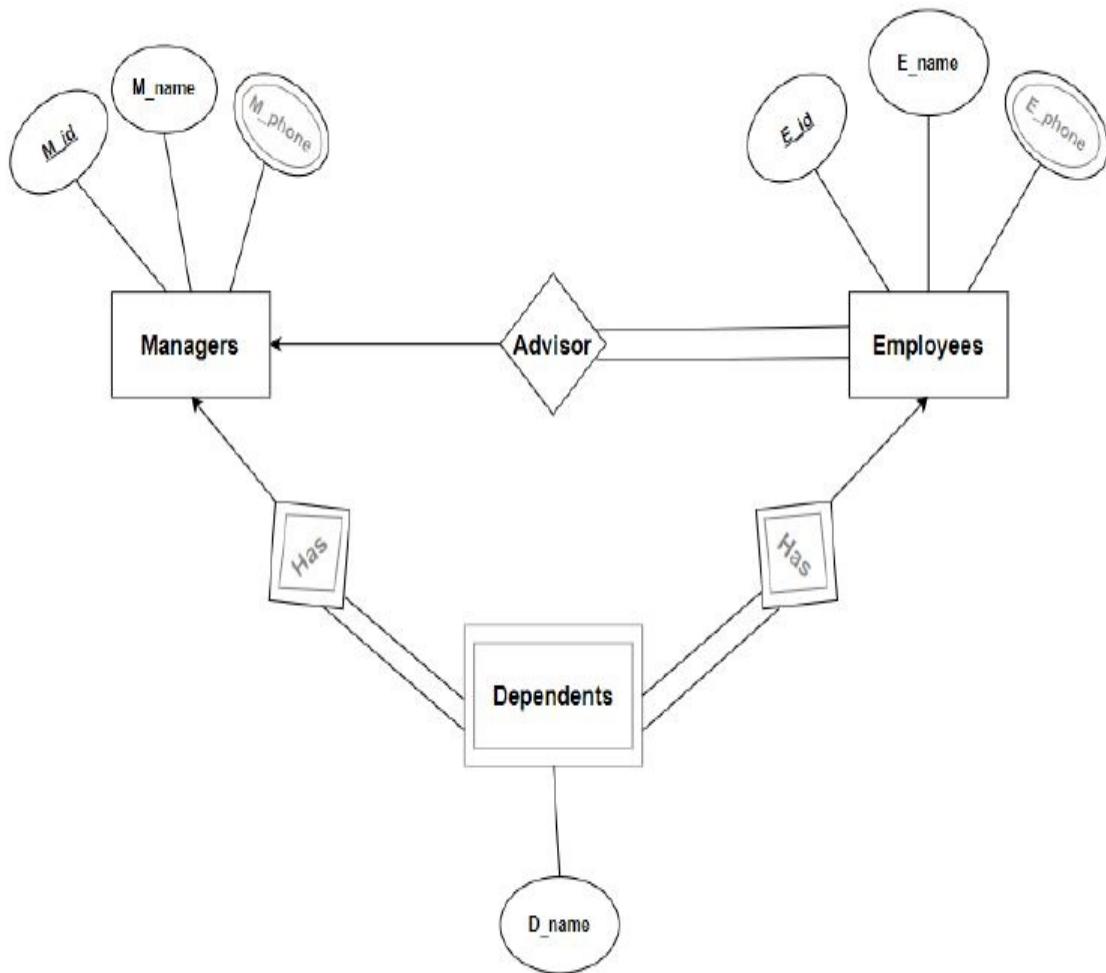
Question Number : 16 Question Id : 640653696191 Question Type : MSQ Is Question

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:



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

Options :

6406532325625. ✓ Minimum 5 tables are required to convert the given ER diagram into the relational model

6406532325626. ✗ Every manager has at least one dependent

6406532325627. ✗ Every manager is appointed as an advisor for some employee

6406532325628. ✓ A dependent can be related to at most one manager

Question Number : 17 Question Id : 640653696200 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** as given below:

S:W2(A), R3(A), W3(A), W2(B), W2(C), W1(C)

Which of the following options is/are correct?

Options :

6406532325655. ✓ Schedule **S** is conflict serializable.

6406532325656. ✓ Schedule **S** can be two-phase lockable.

6406532325657. ✗ Schedule **S** is not conflict serializable.

6406532325658. ✗ Schedule **S** can not be two-phase lockable.

Sub-Section Number : 7

Sub-Section Id : 640653102906

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 18 Question Id : 640653696203 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following SQL statement to create table Customer.

```
CREATE TABLE Customer (
    custid int NOT NULL,
    name varchar(30) NOT NULL,
    city varchar(30) NOT NULL,
    country varchar(30) NOT NULL,
    postcode varchar(20) NOT NULL,
    PRIMARY KEY (custid) )
```

Which among the following functional dependencies set will not be applicable to the table Customer?

Options :

6406532325667. ✓

$\mathcal{F} = \{name \rightarrow custid,$
 $name \rightarrow city,$
 $city \rightarrow postcode\}$

$\mathcal{F} = \{custid \rightarrow name,$
 $name \rightarrow city, country,$

6406532325668. ✖ $city \rightarrow postcode\}$

$\mathcal{F} = \{name \rightarrow custid,$
 $custid, name \rightarrow city, country,$

6406532325669. ✓ $city \rightarrow postcode\}$

$\mathcal{F} = \{custid \rightarrow name,$
 $name \rightarrow custid,$
 $name \rightarrow city,$
 $name \rightarrow country,$

6406532325670. ✖ $city \rightarrow postcode\}$

Sub-Section Number : 8

Sub-Section Id : 640653102907

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696204 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 : (19 to 20)

Question Label : Comprehension

Consider the following table 7 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 7: Cricket_stats

Sub questions

Question Number : 19 Question Id : 640653696205 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 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 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) and
(select avg(runs) from cricket_stats) > 50
GROUP BY opposition
```

6406532325671. ✓

6406532325672. ✗

```
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)
GROUP BY opposition
```

```
SELECT opposition, AVG(runs) AS average_runs, COUNT(*) AS matches_played
FROM cricket_stats
6406532325673. ✘ WHERE 4s > (select sum(6s) from cricket_stats) and AVG(runs) > 50
```

```
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
```

6406532325674. ✓ HAVING AVG(runs) > 50

Question Number : 20 Question Id : 640653696206 Question Type : MCQ Is Question

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 Not out. Which of the following SQL queries is used to update the runs scored and dismissal to "Not out" against Australia on 19 Nov 2023?

Options :

```
Update cricket_stats
set runs = 154, dismissal = 'Not out'
6406532325675. ✓ where date = '19 Nov 2023'
```

```
Update cricket_stats
set runs = 154 and dismissal = 'Not out'
6406532325676. ✘ where date = '19 Nov 2023'
```

```
Update cricket_stats  
set runs = 154, dismissal = 'Not out'  
6406532325677. ✘ where opponent = 'Australia'
```

```
Update cricket_stats  
set runs = 154  
set dismissal = 'Not out'  
6406532325678. ✘ where opponent = 'Australia'
```

Sub-Section Number : 9

Sub-Section Id : 640653102908

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 21 Question Id : 640653696208 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 8.

id	name	dept_name	salary
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 8: **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 '%l%' 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 :	64065349216
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 :	640653102909
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 22 Question Id : 640653696209 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 :

6406532325684. ✓ YES

6406532325685. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653102910

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 23 Question Id : 640653696210 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             k = n
6             while (k > 1):
7                 total = total + 1
8                 k = k // 2
9     return total
```

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

Options :

6406532325686. ✗ $O(n^2)$

6406532325687. ✓ $O(n^2 \log n)$

6406532325688. ✗ $O(n \log n)$

6406532325689. ✗ $O(n^3)$

Question Number : 24 Question Id : 640653696211 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 **Insertion Sort** algorithm to sort the list in ascending order?

Options :

6406532325690. ✗ $O(n^2)$

6406532325691. ✗ $O(n \log n)$

6406532325692. ✗ $O(\log n)$

6406532325693. ✓ $O(n)$

Question Number : 25 Question Id : 640653696212 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 **selection sort** algorithm:

```
1 def selectionsort(L):
2     n = len(L)
3     if n < 1:
4         return(L)
5     for i in range(n):
6         minpos = i
7         for j in range(i+1,n):
8             if L[j] < L[minpos]:
9                 minpos = j
10            if(i != minpos):
11                (L[i],L[minpos]) = (L[minpos],L[i]) #swap operation
12    return(L)
```

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

Options :

6406532325694. ✓ 3

6406532325695. ✗ 4

6406532325696. ✗ 5

6406532325697. ✗ 6

Question Number : 26 Question Id : 640653696213 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 function `dosomething` given below:

```
1 def dosomething(Q,R):
2     if (not Q.isempty()):
3         v = Q.dequeue()
4         dosomething(Q,R)
5         R.enqueue(v)
```

Assume `Q` and `R` are two queues. `enqueue` and `dequeue` are usual queue operations and `isEmpty()` is a method that returns `True` if the queue is empty, otherwise `False`.

Let `Q = [1, 2, 3, 4, 5]` (where 5 is the last inserted element in the queue) and `R = []` initially. What is the state of `Q` and `R` after the above `doSomething(Q, R)` is executed?

Options :

6406532325698. ❌ `Q = [1, 2, 3, 4, 5] and R = [1, 2, 3, 4, 5]`

6406532325699. ❌ `Q = [] and R = [1, 2, 3, 4, 5]`

6406532325700. ✓ `Q = [] and R = [5, 4, 3, 2, 1]`

6406532325701. ❌ `Q = [1, 2, 3, 4, 5] and R = [5, 4, 3, 2, 1]`

Question Number : 27 Question Id : 640653696214 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 **43, 65, 62, 23, 42, and 54** 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 :

6406532325702. ✘ None, None, 62, 23, 43, 65, 42, 54, None, None

6406532325703. ✓ None, None, 62, 43, 23, 65, 42, 54, None, None

6406532325704. ✘ None, None, 62, 43, 23, 54, 42, 65, None, None

6406532325705. ✘ None, None, 62, 43, 23, 42, 54, 65, None, None

Question Number : 28 Question Id : 640653696215 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

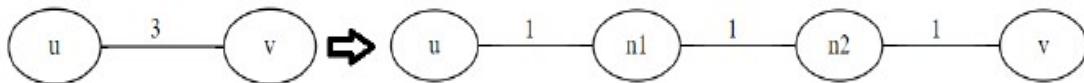
A simple undirected connected graph G has 19 vertices. The sum of the degrees of all the vertices in G is d . The number of vertices of odd degree in G is k . Which of these values are possible for d and k ?

Options :6406532325706. ✘ $d = 66, k = 9$ 6406532325707. ✘ $d = 63, k = 9$ 6406532325708. ✓ $d = 66, k = 8$ 6406532325709. ✘ $d = 63, k = 8$ **Question Number : 29 Question Id : 640653696218 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 :

6406532325717. ❌ This strategy will not solve the problem correctly.

6406532325718. ❌ This strategy will only work if the graph is acyclic.

6406532325719. ❌ This strategy will solve the problem correctly and is as efficient as Dijkstra's algorithm.

6406532325720. ✓ This strategy will solve the problem correctly, but is not as efficient as Dijkstra's algorithm.

Question Number : 30 Question Id : 640653696219 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 **Bellman-Ford algorithm** cannot be used if a graph has negative cycles. This is because:

Options :

6406532325721. ❌ The algorithm only runs for n iterations, where n is the number of vertices.

6406532325722. ✓ The notion of the shortest path is not well-defined if there are negative cycles.

6406532325723. ❌ Dealing with negative cycles requires examining all paths exhaustively, which takes exponential time.

6406532325724. ❖ To handle negative cycles, we need to compute all-pairs shortest paths.

Question Number : 31 Question Id : 640653696221 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 a binary tree has 136 nodes, what is the minimum and maximum possible height of the tree?

Consider that the height of a binary tree with one node is 1.

Options :

6406532325730. ❖ Minimum height: 7, Maximum height: 135

6406532325731. ❖ Minimum height: 7, Maximum height: 136

6406532325732. ❖ Minimum height: 8, Maximum height: 135

6406532325733. ✓ Minimum height: 8, Maximum height: 136

Question Number : 32 Question Id : 640653696222 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 max-heap [95, 70, 61, 43, 47, 24, 47, 12, 31, 39] built by repeatedly inserting values into an empty heap. Suppose the last value inserted was 95. What was the heap structure before this value was inserted?

Options :

6406532325734. ❖ [70, 47, 61, 39, 43, 24, 47, 12, 31]

6406532325735. ✓ [70, 47, 61, 43, 39, 24, 47, 12, 31]

6406532325736. ❖ [70, 61, 47, 39, 43, 24, 47, 12, 31]

6406532325737. ❖ [70, 47, 61, 43, 39, 24, 47, 31, 12]

Question Number : 33 Question Id : 640653696225 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 take a sequence of letters with the below frequencies.

{'i': 26, 'j': 21, 'k': 16, 'l': 30, 'm': 7}

How many bits are required to encode the letter j in the Huffman code?

Options :

6406532325740. ✘ 4

6406532325741. ✘ 3

6406532325742. ✓ 2

6406532325743. ✘ 1

Question Number : 34 Question Id : 640653696227 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 $L = [8, 9, 5, 4, 1, 3, 6, 11, 10, 19, 16, 6, 19, 18, 7, 20, 5, 76, 32, 2]$. What is the returned value of $\text{MoM}(L)$ using the list L ?

Options :

6406532325745. ✘ 18

6406532325746. ✘ 19

6406532325747. ✓ 16

6406532325748. ✘ 20

Question Number : 35 Question Id : 640653696228 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 take a list of integers $L = [2, 20, 6, 3, 5]$. Which of the below are the all inversion pairs of the list L ?

Options :

6406532325749. ✘ (20, 2), (20, 6), (20, 3), (20, 5), (6, 3)

6406532325750. ✓ (20, 6), (20, 3), (20, 5), (6, 3), (6, 5)

6406532325751. ✘ (20, 6), (20, 3), (20, 5), (6, 3), (3, 5)

6406532325752.

* (20, 2), (20, 3), (20, 5), (20, 6)

Question Number : 36 Question Id : 640653696229 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 **longest common substring** of two strings is a contiguous longest string that is a substring in both strings.

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 substring 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
..								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 substring for string S_1 and S_2 as $\max(DP)$ (maximum value in DP array).

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

Options :

$$6406532325753. *$$
$$DP[i, j] = \begin{cases} 1 + \max(DP[i + 1, j], DP[i, j + 1]), & \text{if } a_i = b_j \\ 0, & \text{if } a_i \neq b_j \end{cases}$$

6406532325754.

* $DP[i, j] = \begin{cases} DP[i + 1, j + 1], & \text{if } a_i = b_j \\ 0, & \text{if } a_i \neq b_j \end{cases}$

6406532325755. ✓ $DP[i, j] = \begin{cases} 1 + DP[i + 1, j + 1], & \text{if } a_i = b_j \\ 0, & \text{if } a_i \neq b_j \end{cases}$

6406532325756. * $DP[i, j] = \begin{cases} 1 + DP[i + 1, j + 1], & \text{if } a_i = b_j \\ 1 + \max(DP[i + 1, j], DP[i, j + 1]), & \text{if } a_i \neq b_j \end{cases}$

Question Number : 37 Question Id : 640653696231 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 **Rabin-Karp algorithm** using modulo arithmetic to match the pattern in base **10**. Taking modulo **q = 11**, how many **false positive** matches does the Rabin-Karp matcher encounter while searching pattern **31** in the text **4259312642531** ?

Options :

6406532325758. ✓ 4

6406532325759. * 5

6406532325760. * 6

6406532325761. * 7

Question Number : 38 Question Id : 640653696232 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 $p = \text{ABABAABA}$ returned by the given `kmp_fail(p)` function?

Options :

6406532325762. ❌ [0, 1, 1, 2, 0, 1, 2, 3]

6406532325763. ❌ [0, 0, 1, 2, 3, 0, 1, 2]

6406532325764. ❌ [0, 1, 1, 2, 3, 1, 2, 3]

6406532325765. ✓ [0, 0, 1, 2, 3, 1, 2, 3]

Question Number : 39 Question Id : 640653696234 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 :

6406532325771. ✘ 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 $2n$.

6406532325772. ✘ 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.

6406532325773. ✓ 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.

6406532325774. ✘ 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 : 640653102911

Question Shuffling Allowed : Yes

Is Section Default? : null

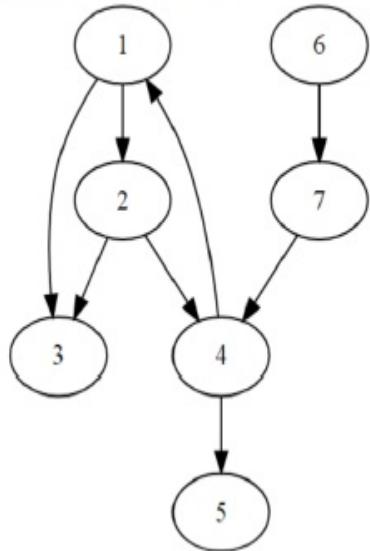
Question Number : 40 Question Id : 640653696216 Question Type : MSQ Is Question

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

In the given directed graph, removing one edge e makes it a directed acyclic graph(DAG). Which of the following can be the possible values of e ?



Options :

6406532325710. ❌ 1 → 3

6406532325711. ✓ 2 → 4

6406532325712. ❌ 7 → 4

6406532325713. ✓ 4 → 1

6406532325714. ✓ 1 → 2

6406532325715. ❌ None, this is already direct acyclic graph.

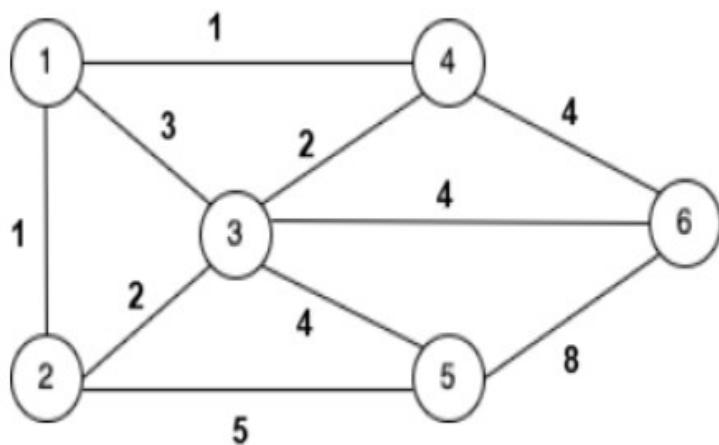
Question Number : 41 Question Id : 640653696220 Question Type : MSQ Is Question

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 graph



Which of the following can be the sequence of edges added, in that order, to create a minimum cost spanning tree using Kruskal's algorithm?

Options :

6406532325725. ✓ (1, 2), (1, 4), (2, 3), (3, 5), (4, 6)

6406532325726. ✓ (1, 2), (1, 4), (3, 4), (3, 5), (3, 6)

6406532325727. ✗ (1, 2), (2, 3), (3, 4), (3, 5), (4, 6)

6406532325728. ✗ (1, 2), (1, 4), (1, 3), (3, 6), (3, 5)

6406532325729. ✓ (1, 2), (1, 4), (2, 3), (4, 6), (3, 5)

Question Number : 42 Question Id : 640653696233 Question Type : MSQ Is Question

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

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

A plant manufactures two types of products A and B and sells them at a profit of Rs. 5 per item on type A and Rs. 3 per item on type B . Each product is processed on two machines G and H . One item of type A requires one minute of processing time on G and two minutes on H ; One item of type B requires one minute on G and one minute on H . The machine G is available for not more than 5 hours 40 minutes, while machine H is available for 7 hours 20 minutes during any working day. Let X_1 be the number of items produced of type A and X_2 be the number of items produced of type B .

The objective function to maximize the total profit $Z = 5X_1 + 3X_2$

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

Options :

6406532325766. ✘ $X_1 + X_2 \leq 340$

6406532325767. ✓ $X_1 + 2X_2 \leq 440$

6406532325768. ✘ $X_1 \geq 0, X_2 \geq 0$

6406532325769. ✘ $2X_1 + X_2 \leq 440$

6406532325770. ✓ $X_1 + X_2 \geq 340$

Sub-Section Number : 4

Sub-Section Id : 640653102912

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 43 Question Id : 640653696217 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 house is being rewired. The house has **10** rooms named from **A** to **J**. To avoid wires getting entangled and creating short circuits, the electricians have been asked to observe the following rules.

- Room A must be rewired before room D.
- Room B must be rewired before room F.
- Room C must be rewired before room E.
- Room D must be rewired before room F.
- Room E must be rewired before room F.
- Room F must be rewired before rooms G, H, and I.
- Room G must be rewired before room H.
- Room H must be rewired before rooms I and J.
- Room I must be rewired before room J.

It takes one full day to rewire a room. There are enough electricians to rewire as many rooms as can be rewired in parallel, keeping in mind the constraints above. What is the minimum number of days required to complete the job?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

7

Question Number : 44 Question Id : 640653696223 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 post-order traversal of a binary search tree is 1, 3, 4, 5, 2, 7, 8, 6.

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

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

11

Question Number : 45 Question Id : 640653696224 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's take a sequence of elements **10, 6, 5, 12, 15, and 3** and insert these elements into an empty AVL tree in the given order. What would be the sum of elements stored in the leaf nodes of the Final AVL tree?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

28

Question Number : 46 Question Id : 640653696226 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	6	12
3	2	8
4	11	15
5	3	7
6	5	10
7	9	14
8	13	16

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 :

4

Question Number : 47 Question Id : 640653696230 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 at stone 5 from stone 0 for the following sequence of heights for 6 stones.

30, 10, 60, 10, 60, 50

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

40

AppDev1

Section Id : 64065349217

Section Number : 3

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 30

Number of Questions to be attempted : 30

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 :	640653102913
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 48 Question Id : 640653696235 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 :

6406532325775. ✓ YES

6406532325776. ✘ NO

Sub-Section Number :	2
Sub-Section Id :	640653102914
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 49 Question Id : 640653696236 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the given URL below.

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

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

Options :

Protocol: https

Domain: seek

Sub-Domain: onlinedegree.iitm.ac.in

Path: /courses

6406532325777. ✗ Parameters: ns_23t3_cs2003?type=lesson&tab=courses

Protocol: https

Domain: seek

Sub-Domain: onlinedegree.iitm.ac.in/courses

Path: /ns_23t3_cs2003

6406532325778. ✗ Parameters: ?type=lesson&tab=courses

Protocol: https

Domain: onlinedegree.iitm.ac.in

Sub-Domain: seek

Path: /courses/ns_23t3_cs2003

6406532325779. ✓ Parameters: ?type=lesson&tab=courses

Protocol: https

Domain: onlinedegree.iitm.ac.in/courses

Sub-Domain: seek

Path: /ns_23t3_cs2003

6406532325780. ✗ Parameters: ?type=lesson&tab=courses

Question Number : 50 Question Id : 640653696237 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 two different classes and an ID, then for the same attribute, it will always acquire styling from the latest style in order.

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 acquire styling from the ID selector.

Options :

6406532325781. ✘ Both statements 1 and 2 are correct

6406532325782. ✓ Both statements 1 and 2 are incorrect

6406532325783. ✘ Statement 1 is correct but statement 2 is incorrect

6406532325784. ✘ Statement 2 is correct but statement 1 is incorrect

Question Number : 51 Question Id : 640653696238 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[0]} {sys.argv[1]}'')
```

File2: two.py

```
import sys
print(f'{sys.argv[3]} {sys.argv[2]}'')
```

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

Options :

6406532325785. ✘

one.py two.py

one.py two.py

two.py one.py

6406532325786. ✓ one.py two.py

two.py one.py

6406532325787. ✗ two.py one.py

one.py two.py

6406532325788. ✗ two.py one.py

Question Number : 52 Question Id : 640653696246 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 primary purpose of curl?

Options :

6406532325813. ✗ Web server configuration

6406532325814. ✓ Making requests to the web server

6406532325815. ✗ Database management

6406532325816. ✗ HTML parsing

Question Number : 53 Question Id : 640653696247 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 template inheritance in Jinja2 used for?

Options :

6406532325817. ✘ To establish a database connection

6406532325818. ✘ To create a new database table

6406532325819. ✓ To define a base template with a common structure and placeholders that can be extended by child templates

6406532325820. ✘ To insert CSS styles

Question Number : 54 Question Id : 640653696248 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following is a common method to achieve data persistence in web applications?

Options :

6406532325821. ✘ Storing data in volatile cache

6406532325822. ✘ Saving data to temporary files

6406532325823. ✓ Writing data to a database

6406532325824. ✘ Using data stored in RAM

Question Number : 55 Question Id : 640653696258 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 helps us to create custom HTML elements?

Options :

6406532325861.

* SVG

6406532325862. ✓ Web Components

6406532325863. * Web API

6406532325864. * None of these

Sub-Section Number : 3

Sub-Section Id : 640653102915

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 56 Question Id : 640653696242 Question Type : MCQ Is Question

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;
            display: inline-block;
        }
        span{
            border: 1px solid pink;
        }
    </style>
</head>
<body>
    <div>Div 1</div>
    <div>Div 2</div>
    <span>Span 1</span>
    <span>Span 2</span>
</body>
</html>
```

Options :

6406532325797. ✘ Div 1 Div 2 Span 1 Span 2

6406532325798. ✓ Div 1 Div 2 Span 1 Span 2

6406532325799. ✘ Div 1 Div 2 Span 1 Span 2

6406532325800. ✘ Div 1 Div 2 Span 1 Span 2

Question Number : 57 Question Id : 640653696250 Question Type : MCQ Is Question

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 flask application.

```
from flask_sqlalchemy import SQLAlchemy
from flask import Flask

app = Flask(__name__)
app.config['SQLALCHEMY_DATABASE_URI'] = 'sqlite:///testdb.sqlite3'
db = SQLAlchemy(app)
app.app_context().push()

class Material(db.Model):
    m_id = db.Column('m_id', db.Integer, primary_key=True)
    name = db.Column('name', db.String(100), unique=True)

db.create_all()
material1 = Material(name='Steel')
db.session.add(material1)
material2 = Material(name='Iron')
material3 = Material(name='Aluminium')
db.session.add(material2)
db.session.commit()
db.session.add(material3)

all_material = Material.query.all()
print([(x.m_id, x.name) for x in all_material])
```

If you run the flask application using a terminal. What will be the output in the terminal?

Options :

[(1, 'Steel'), (2, 'Iron')] will be displayed in the terminal and two records will be added in the “testdb” database.

[(1, 'Steel'), (2, 'Iron'), (3, 'Aluminium')] will be displayed in the terminal and three records will be added in the “testdb” database.

[(1, 'Steel'), (2, 'Iron'), (3, 'Aluminium')] will be displayed in the terminal and two records will be added in the “testdb” database.

[(1, 'Steel', 2, 'Iron', 3, 'Aluminium')] will be displayed in the terminal and two records will be added in the “testdb” database.

Question Number : 58 Question Id : 640653696251 Question Type : MCQ Is Question

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 function func, and a set of test cases given below.

Filename: test_file.py

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

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

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

    def test_case3(self):
        assert func(4,2) == 21

class Test_class1():
    def test_case1(self):
        assert func(5,2) == 27

    def case_test2(self):
        assert func(4,3) == 25
```

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

```
pytest test_file.py -k Test_class
```

Options :

6406532325833. ✘ == 3 failed, 2 passed in 0.17s ===

6406532325834. ✘ == 2 failed, 1 passed, 2 deselected in 0.04s ===

6406532325835. ✘ == 1 failed, 1 passed, 1 deselected in 0.04s ===

6406532325836. ✓

== 2 failed, 1 passed in 0.17s ==

Question Number : 59 Question Id : 640653696252 Question Type : MCQ Is Question 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% condition coverage automatically implies 100% branch coverage.

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

Options :

6406532325837. ❌ Both statement 1 and 2 are correct.

6406532325838. ✓ Both statement 1 and 2 are incorrect.

6406532325839. ❌ Statement 1 is correct but, statement 2 is incorrect.

6406532325840. ❌ Statement 2 is correct but, statement 1 is incorrect.

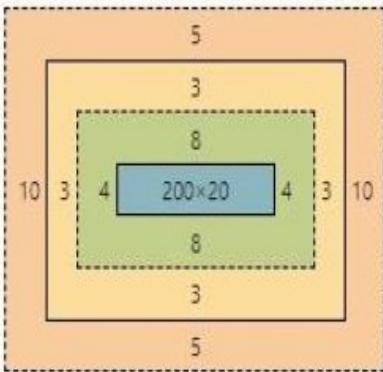
Question Number : 60 Question Id : 640653696253 Question Type : MCQ Is Question

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 box model of an element <div> with Id = "box".



Which of the following CSS styling would correctly create the box model of the element given above?

Options :

```
#box {  
    width: 200px;  
    border: 3px solid red;  
    margin: 5px 10px;  
    padding: 8px 4px;  
}
```

6406532325841. ❌

```
#box {  
    width: 200px;  
    height: 20px;  
    border: 3px solid red;  
    margin: 5px 10px;  
    padding: 8px 4px;  
}
```

6406532325842. ✓

```
#box {  
    width: 200px;  
    height: 20px;  
    border: 3px solid red;  
    padding: 5px 10px;  
    margin: 8px 4px;  
}
```

6406532325843. ❌

6406532325844. ❌

```
#box {  
    width: 200px;  
    height: 20px;  
    border: 3px solid red;  
    margin: 10px 5px;  
    padding: 4px 8px;  
}
```

Question Number : 61 Question Id : 640653696254 Question Type : MCQ Is Question

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(12) == 144

@pytest.mark.marker2
def testcase_2():
    assert square(9) == 9

@pytest.mark.marker3
def testcase_3():
    assert square(3) == 27
```

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 :

6406532325845. ✘ pytest test_file.py -k marker1

6406532325846. ✘ pytest test_file.py -m marker3

6406532325847. ✓ pytest test_file.py -m marker2

6406532325848. ✘ pytest test_file.py -m marker1

**Question Number : 62 Question Id : 640653696255 Question Type : MCQ Is Question
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 172.16.254.10 would be
_____.

Options :

6406532325849. ✘ AC0A FE01

6406532325850. ✘ CA10 EF0A

6406532325851. ✘ AC01 0AEF

6406532325852. ✓ AC10 FE0A

**Question Number : 63 Question Id : 640653696256 Question Type : MCQ Is Question
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("singer.id"))
```

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

Options :

6406532325853. ✘ Many-to-Many

6406532325854. ✘ One-to-Many

6406532325855. ✘ One-to-One

6406532325856. ✓ The tables are not at all related

Question Number : 64 Question Id : 640653696257 Question Type : MCQ Is Question

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 git command to change the registered e-mail of a user using CLI?

Options :

6406532325857. ✘ git config email <new e-mail>

6406532325858. ✘ git config user.email <new e-mail>

6406532325859. ✘ git config --global email <new e-mail>

6406532325860. ✓ git config --global user.email <new e-mail>

Question Number : 65 Question Id : 640653696261 Question Type : MCQ Is Question

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 one-line python code snippet.

Filename: application.py

```
print(__name__)
```

If we run the above file in a terminal using “python application.py”, what will be the output?

Options :

6406532325873. ✘ application

6406532325874. ✘ __application__

6406532325875. ✘ main

6406532325876. ✓ __main__

Question Number : 66 Question Id : 640653696269 Question Type : MCQ Is Question

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 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

6406532325901. ✘ 200

6406532325902. ✘

404
200
200
200
200

404
404
200
401

6406532325903. ✓ 200

404
200
404
200

6406532325904. ✗ 200

Sub-Section Number : 4

Sub-Section Id : 640653102916

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 67 Question Id : 640653696244 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.

Filename: 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 1 2 1	1) Number 1: 1, Number 2: 2, Output : 3
b) python arg.py 1 2 2	2) Number 1: 3, Number 2: 2, Output : 1
c) python arg.py 3 2 4	3) Number 1: 1, Number 2: 2, Output : 2
d) python arg.py 3 2 3	4) Number 1: 3, Number 2: 2, Output : 1

Options :

6406532325805. ❌ a - 4, b - 1, c - 2, d - 3

6406532325806. ✓ a - 3, b - 1, c - 4, d - 2

6406532325807. ❌ a - 4, b - 1, c - 3, d - 2

6406532325808. ❌ a - 1, b - 3, c - 2, d - 4

Question Number : 68 Question Id : 640653696245 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 :

6406532325809. *

```
{% 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('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>  
6406532325810. ✘ {% endfor %}
```

6406532325811. ✓

```
{% 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 %}
```

```
{% 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 %}
```

6406532325812. *

Question Number : 69 Question Id : 640653696259 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_4 = [x(4) for x in powers]

def testcase_1():
    assert 12 in powers_of_4

def testcase_2():
    assert 64 in powers_of_4

def testcase_3():
    assert 256 in powers_of_4
```

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

Options :

6406532325865. ✘ ===== 1 failed, 2 passed in 0.02s =====

6406532325866. ✘ ===== 3 passed in 0.02s =====

6406532325867. ✘ ===== 3 failed in 0.02s =====

6406532325868. ✓ ===== 2 failed, 1 passed in 0.02s =====

Question Number : 70 Question Id : 640653696262 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 :

6406532325877. ❌ Red for first five letters, turns green till 8th letter and turns red back again after next letter.

6406532325878. ❌ Green for first five letters, turns red till 8th letter and turns green back again after next letter.

6406532325879. ✓ Red for first five letters, and remain green after that.

6406532325880. ❌ Green for first five letters, and remain red after that.

Sub-Section Number :

Sub-Section Id : 640653102917

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 71 Question Id : 640653696243 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

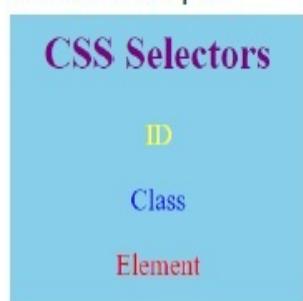
Question Label : Multiple Select Question

An HTML code is given below, 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: gray; 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: green ;}  
.one{color: yellow;}  
.two{color: blue;}  
.three{color: red;}
```

6406532325801. ✘

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

6406532325802. ✓

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

6406532325803. ✘

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

6406532325804. ✓

Question Number : 72 Question Id : 640653696249 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.

app.py

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

@app.route('/home/<path:url_path>')
def course(url_path):
    return 'The path is: ' + url_path

@app.route('/home/details/<student_id>/<course_id>')
def home(student_id, course_id):
    return f'The student-id and course-id are {student_id} and {course_id} respectively.'

@app.route('/home/student/<student_id>/<course_id>')
def details(student_id, course_id):
    details = {'course_id': course_id, 'student_id': student_id}
    return details

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/home/M101/CS2003> browser will render;
6406532325825. ✘ The student-id and course-id are M101 and CS2003 respectively.

For URL, <http://127.0.0.1:5000/home/student/M101/CS2003> browser will render
{
 "course_id": "CS2003",
 "student_id": "M101"
6406532325826. ✓ }

For URL <http://127.0.0.1:5000/home/details/M101/CS2003> browser will render;
6406532325827. ✓ The student-id and course-id are M101 and CS2003 respectively.

For URL, <http://127.0.0.1:5000/home/M101/CS2003> browser will render;
6406532325828. ✓ The path is: M101/CS2003

Question Number : 73 Question Id : 640653696267 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 :

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

[5]
[6]

6406532325893. ✓

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

[5]
[5, 6]

6406532325894. ✗

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

[5]
[6]

6406532325895. ✗

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

[5]

[5, 6]

6406532325896. ✓

Question Number : 74 Question Id : 640653696268 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;
6406532325897. ✓ **List of modules: ['python', 'react', 'node']**

For the URL, <http://127.0.0.1:5000/home/modules>, the browser will render;
6406532325898. ✗ **Incorrect Path**

For the URL, <http://127.0.0.1:5000/get/vuejs>, the browser will render;
6406532325899. ✓ **Cannot find module**

For the URL, <http://127.0.0.1:5000/get/react/>, the browser will render;
6406532325900. ✘ One module found: react.

Sub-Section Number :	6
Sub-Section Id :	640653102918
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 75 Question Id : 640653696260 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 view function definition given below.

```
@app.route('/login', methods=['GET', 'POST'])
def login():
    if request.method == 'GET':
        return render_template("login.html")
    if request.method == 'POST':
        #== POST logic ==
        return render_template("profile.html")
```

Which of the following view function definitions would work the same as that of one given above?

Options :

```
@app.route('/login', methods=['GET', 'POST'])
def login():
    if request.method == 'POST':
        #== POST logic ==
        return render_template("profile.html")
    return render_template("login.html")
```

6406532325869. ✓

```
@app.get('/login')
def login_page():
    return render_template("login.html")

@app.post('/login')
def login_verify():
    #== POST Logic ==
    return render_template("profile.html")
```

6406532325870. ✓

```
@app.route('/login', methods=['GET', 'POST'])
def login():
    return render_template("login.html")
    if request.method == 'POST':
        #== POST Logic ==
        return render_template("profile.html")
```

6406532325871. ✘

6406532325872. ✘ None of these

Sub-Section Number : 7

Sub-Section Id : 640653102919

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696239 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 : (76 to 77)

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 600 kms, 900 kms and 1200 kms respectively, answer the given subquestions [Consider speed of light in air to be 3×10^8 m/s]

Sub questions

Question Number : 76 Question Id : 640653696240 Question Type : MCQ Is Question

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 B per second?

Options :

6406532325789. ✘ 166

6406532325790. ✘ 100

6406532325791. ✓ 56

6406532325792. ✘ 111

Question Number : 77 Question Id : 640653696241 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 round trip time (RTT) in milliseconds for server B?

Options :

6406532325793. ✘ 10

6406532325794. ✓ 6

6406532325795. ✘ 18

6406532325796. ✘ 5

Sub-Section Number : 8

Sub-Section Id : 640653102920

Question Shuffling Allowed : No

Is Section Default? :

null

Question Id : 640653696263 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 : (78 to 80)

Question Label : Comprehension

Consider the following resource "TestAPI" created using flask-restful which is running locally on <http://127.0.0.1:5000> and answer the given subquestions.

```
parser = reqparse.RequestParser()
parser.add_argument('movie')
parser.add_argument('genre')

r_fields = {"film":fields.String(attribute = 'movie')}

class TestAPI(Resource):
# =====
#           GET-FUNCTION
# =====
# =====
#           POST-FUNCTION
# =====
    def post(self, genre):
        return {'Genre': genre}
# =====
# @marshal_with(r_fields)
    def put(self):
        this_film = parser.parse_args()
        return this_film

api.add_resource(TestAPI, "/api/v1", "/api/v1/<genre>")
```

Sub questions

Question Number : 78 Question Id : 640653696264 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Correct Marks : 3

Question Label : Multiple Choice Question

If the curl request shown below.

```
curl http://127.0.0.1:5000/api/v1 -X GET -d "{\"movie\" : \"X-men\", \"genre\": \"Action\"}" -H "Content-Type: application/json"
```

retrieves the movie only with status 200 OK,
what will come in place of GET-FUNCTION
in the code?

Options :

```
def get(self):  
    return {'Movie': movie}
```

6406532325881. ✘

```
def get(self, movie):  
    return {'Movie': movie}
```

6406532325882. ✘

```
def get(self):  
    args = parser.parse_args()  
    return {'Movie': args['movie']}
```

6406532325883. ✓

```
def get(self):  
    args = parser.parse_args()  
    return args
```

6406532325884. ✘

Question Number : 79 Question Id : 640653696265 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

If the curl request shown below

```
curl http://127.0.0.1:5000/api/v1/fiction -X POST
```

retrieves the genre only with status 200 OK,

what will come in place of POST-FUNCTION

in the code?

Options :

```
def get(self):  
    return {'Genre': genre}
```

6406532325885. ✘

```
def get(self, movie):  
    return {'Genre': genre}
```

6406532325886. ✓

```
def get(self):  
    args = parser.parse_args()  
    return {'Genre': args['genre']}
```

6406532325887. ✘

```
def get(self):  
    args = parser.parse_args()  
    return args
```

6406532325888. ✘

Question Number : 80 Question Id : 640653696266 Question Type : MCQ Is Question

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 response from the server for the request:

```
curl http://127.0.0.1:5000/api/v1 -X PUT -d "{\"movie\" : \"X-men\",  
\"genre\": \"Action\"}" -H "Content-Type: application/json"
```

Options :

6406532325889. ✘

```
{  
    "Movie": "X-men",  
    "Genre": "Action"  
}
```

```
{  
    "Movie": "X-men"  
}
```

6406532325890. ✖

```
{  
    "Genre": "Action"  
}
```

6406532325891. ✖

6406532325892. ✓ None of these

MLF

Section Id :	64065349218
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 :	640653102921
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 81 Question Id : 640653696270 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 :

6406532325905. ✓ YES

6406532325906. ✖ NO

Question Number : 82 Question Id : 640653696271 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 ($f_X(k)$)	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 :

6406532325907. ✓ Useful Data has been mentioned above.

6406532325908. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 640653102922

Question Shuffling Allowed : Yes

Is Section Default? :

null

Question Number : 83 Question Id : 640653696272 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 input data points:

x	y
[2, 3]	5
[-1, 1]	2
[4, 2]	7
[0, -2]	1
[-3, 5]	4

Suppose we fit a linear model $f(\mathbf{x}) = x_1 + 2x_2$, where $\mathbf{x} = (x_1, x_2)$. Compute the value of the loss function L for this dataset which is defined as $L = \frac{1}{n} \sum_{i=1}^n (f(\mathbf{x}^i) - y^i)^2$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

9

Question Number : 84 Question Id : 640653696275 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 $X \sim \text{Normal}(2, 5)$ and $Y \sim \text{Normal}(5, 9)$. Define $Z = 3X - 2Y$. Find the value of $P(Z > 8)$. Enter the answer correct to three decimal places.

Hint: Use the following values of F_Z if required:

- $F_Z(1.33) = 0.90824$
- $F_Z(-1.33) = 0.09176$
- $F_Z(2.088) = 0.98169$
- $F_Z(-2.088) = 0.01831$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.089 to 0.095

Question Number : 85 Question Id : 640653696276 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

A company has scheduled the interviews for job applicants, and 60 people have confirmed their interview slots. Each applicant attends the interview with a probability $p = 5/6$. Let X denote the number of people who actually attend the interview. Using the Chebyshev's inequality, find a lower bound on $P\{|X - 50| \leq 6\}$. 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 :

0.74 to 0.79

Question Number : 86 Question Id : 640653696277 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

The failure rate λ for a new model of high power laser is to be estimated.

Let $U_1, \dots, U_n \sim \text{i.i.d. Exp}(\lambda)$, where each of U_i denote the observed lifetime of the i -th laser operating at high power. Suppose we observe $(U_1, U_2, U_3, U_4, U_5) = (2, 5, 3, 1, 8)$, find the maximum likelihood estimate of λ . Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.24 to 0.28

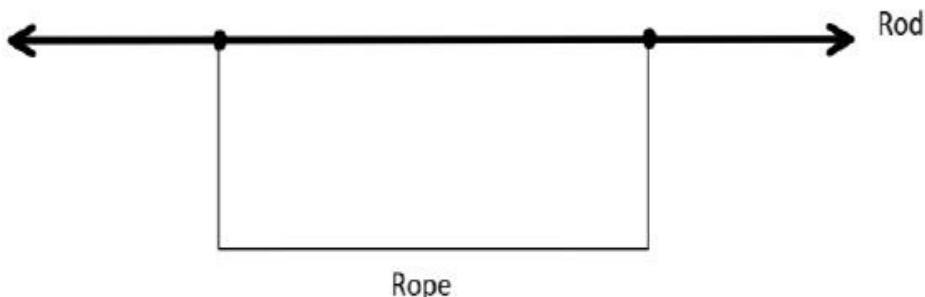
Question Number : 87 Question Id : 640653696287 Question Type : SA Calculator : None

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

Correct Marks : 3

Question Label : Short Answer Question

Given a rod of infinite length and a rope of length 600 m whose two ends are attached to the rod in such a way that they can slide freely along the rod.



What is the area (in km^2) of the largest rectangle that can be formed using the rope? 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 :

0.020 to 0.030

Sub-Section Number : 3

Sub-Section Id : 640653102923

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 88 **Question Id :** 640653696273 **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 functions is/are continuous?

Options :

6406532325910. ✓ $f(x) = \begin{cases} \frac{\sin x}{x} & x \neq 0 \\ 1 & x = 0 \end{cases}$

6406532325911. ✓ $f(x) = \frac{1}{x}$ on $\mathbb{R} \setminus \{0\}$

6406532325912. ✘ $f(x) = \begin{cases} 1 & \text{if } x \text{ is rational} \\ 0 & \text{otherwise} \end{cases}, x \in [0, 1]$

6406532325913. ✓ $f(x) = \begin{cases} x^2 + 3 & x \geq 3 \\ 3x + 3 & x \leq 3 \end{cases}$

Question Number : 89 Question Id : 640653696278 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 :

6406532325918. ✓ A^k is positive definite, for all $k \geq 1$.

6406532325919. ✓ Each of the diagonal entry of A will be positive.

6406532325920. ✗ rA is positive definite, $r \in \mathbb{R}$.

6406532325921. ✓ A^{-1} is positive definite.

Sub-Section Number : 4

Sub-Section Id : 640653102924

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 90 Question Id : 640653696274 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

$$f(x, y) = \begin{cases} 18x^2y^2 & x, y \geq 0, x + y \leq 1 \\ 0 & \text{otherwise} \end{cases}$$

Find the conditional expectation $E(X | Y = 1/2)$. 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 :

0.370 to 0.380

Sub-Section Number : 5

Sub-Section Id : 640653102925

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 91 **Question Id :** 640653696286 **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 two convex functions $f(x) = \frac{1}{x}$, $x > 0$ and $g(x) = 1 + |x|, x \in \mathbb{R}$.
Which among the following functions are convex?

Options :

6406532325940. ❌ *fog*

6406532325941. ✓ *gof*

6406532325942. ✓ *h : (0, \infty) \rightarrow \mathbb{R}* defined by *h(x) = f(x) + g(x)* is convex.

6406532325943. ❌ *h : (0, \infty) \rightarrow \mathbb{R}* defined by *h(x) = f(x) + g(x)* is not convex.

Sub-Section Number : 6

Sub-Section Id : 640653102926

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 92 Question Id : 640653696279 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 true for an $n \times n$ matrix A ?

Options :

6406532325922. ✘ Each eigenvalue of A is also an eigenvalue of A^2 .

6406532325923. ✘ If A is diagonalizable, then the columns of A are linearly independent.

6406532325924. ✓ A number c is an eigenvalue of A iff the equation $(A - cI)x = 0$ has a nontrivial solution.

6406532325925. ✘ If A has n linearly independent eigenvectors, then A is invertible.

Question Number : 93 Question Id : 640653696280 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 $A = \begin{pmatrix} 1 & 3 & 4 \\ 2 & 3 & 5 \\ 0 & 1 & 1 \end{pmatrix}$. Find the nullspace of A .

Options :

6406532325926. ✘

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

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

6406532325927. ✓

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

6406532325928. ✗

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

6406532325929. ✗

Question Number : 94 Question Id : 640653696284 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 factory manufactures two products A and B . The objective is to maximize the profit while meeting certain production constraints. To manufacture one unit of A , 2 machine hours and 1 labour hours are required, while one unit of B requires 2 machine hours and 3 labor hours. In a month, 200 machine hours and 140 labour hours are available. The profit per unit of A is Rs. 60 and the profit per unit of B is Rs. 45. Let the number of units of A produced per month be y_1 and the number of units of B produced per month be y_2 . Then, choose the correct optimization problem from the following:

Options :

Maximize: $y_1 + y_2$

6406532325935. ✗ Subject to: $2y_1 + 2y_2 \leq 200, y_1 + 3y_2 \leq 140, y_1, y_2 \geq 0$

6406532325936. ✓

Maximize: $60y_1 + 45y_2$

Subject to: $2y_1 + 2y_2 \leq 200, y_1 + 3y_2 \leq 140, y_1, y_2 \geq 0$

Maximize: $60y_1 + 45y_2$

Subject to: $2y_1 + 2y_2 \geq 200, y_1 + 3y_2 \geq 140, y_1, y_2 \geq 0$

6406532325937. *

Maximize: $y_1 + y_2$

Subject to: $2y_1 + 2y_2 \geq 200, y_1 + 3y_2 \geq 140, y_1, y_2 \geq 0$

6406532325938. *

Sub-Section Number :

7

Sub-Section Id :

640653102927

Question Shuffling Allowed :

No

Is Section Default? :

null

Question Id : 640653696281 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:

$$X_1 = \begin{bmatrix} -1 \\ -1 \end{bmatrix}, \quad X_2 = \begin{bmatrix} 1 \\ 1 \end{bmatrix}, \quad X_3 = \begin{bmatrix} 3 \\ 3 \end{bmatrix}$$

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 : 640653696282 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 :

6406532325930. ✘ $\frac{1}{3} \begin{bmatrix} 10 & 10 \\ 10 & 10 \end{bmatrix}$

6406532325931. ✘ $\begin{bmatrix} 10 & 10 \\ 10 & 10 \end{bmatrix}$

6406532325932. ✓ $\frac{1}{3} \begin{bmatrix} 8 & 8 \\ 8 & 8 \end{bmatrix}$

6406532325933. ✘ $\begin{bmatrix} 8 & 8 \\ 8 & 8 \end{bmatrix}$

Question Number : 96 Question Id : 640653696283 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? 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 5.37

Sub-Section Number : 8

Sub-Section Id : 640653102928

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 97 Question Id : 640653696285 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 maximum value of the function, $f(x, y) = x + y$ subject to the constraint $x^2 + y^2 = 50$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

10

Java

Section Id : 64065349219

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 :	640653102929
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 98 Question Id : 640653696288 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 :

6406532325945. ✓ YES

6406532325946. ✖ NO

Sub-Section Number :	2
Sub-Section Id :	640653102930
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 99 Question Id : 640653696289 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

Consider the Java code given below.

```
import java.util.*;
import java.util.stream.*;
class Player {
    private String name;
    int point;
    //Constructor to initialize instance variables
    public String toString() {
        return name;
    }
}
public class Test {
    public static void main(String[] args) {
        var pArr = new ArrayList<Player>();
        pArr.add(new Player("Sharan", 150));
        pArr.add(new Player("Virat", 500));
        pArr.add(new Player("Rahul", 100));
        pArr.add(new Player("Sanju", 250));
        Map<Boolean, List<Player>> playMap;
        playMap = pArr.stream()
            .collect(Collectors.partitioningBy(p -> p.point >= 250));
        System.out.println(playMap.get(false));
    }
}
```

Choose the correct option.

Options :

6406532325947. ❌ This program generates the output: [Virat, Sanju]

6406532325948. ❌ This program generates the output: [Virat]

6406532325949. ✓ This program generates the output: [Sharan, Rahul]

6406532325950. ❌ This program generates the output: [Sharan, Rahul, Sanju]

Question Number : 100 Question Id : 640653696294 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 Doctor implements Cloneable{
    private String name;
    private String[] qualification ;
    public Doctor(String n, String[] q) {
        name = n;
        qualification = q;
    }
    //method setName(String name) to initialize name
    //method setQualification(int indx,String q) to initialize
    //qualification at a particular index

    //method getName() to return name
    //method getQualification(int indx) to return qualification
    //at a particular index
    public Object clone() throws CloneNotSupportedException{
        return super.clone();
    }
}

public class Testclone {
    public static void main(String[] args) throws CloneNotSupportedException{
        String[] q = {"MBBS", "MD", "M.Ch"};
        Doctor d1 = new Doctor("Mathew", q);
        Doctor d2 = (Doctor)d1.clone();
        Doctor d3 = d1;
        d2.setQualification(1, "MS");
        d3.setName("John");
        System.out.println(d1.getName() + " " + d1.getQualification(1));
        System.out.println(d2.getName() + " " + d2.getQualification(1));
        System.out.println(d3.getName() + " " + d3.getQualification(1));
    }
}
```

Choose the correct option.

Options :

6406532325968. *

This code generates the output:

John MD
Mathew MS
John MD

This code generates the output:

Mathew MD
Mathew MS

6406532325969. ✘ John MD

This code generates the output:

John MS
Mathew MS

6406532325970. ✓ John MS

This code generates the output:

Mathew MS
Mathew MS

6406532325971. ✘ John MS

Question Number : 101 Question Id : 640653696304 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

Method `Stream.iterate(e, f)` returns an infinite sequential ordered `Stream` produced by iterative application of a function `f` to an initial element `e`, producing a `Stream` consisting of `e, f(e), f(f(e)), ...`

Based on the above information, consider the code given below, and answer the question that follows.

```
import java.util.stream.*;
public class Test {
public static void main(String[] args) {
    Stream.iterate(10, n -> n - 1)
        .map(n -> n * 3)
        .filter(n -> n % 5 == 0)
        .limit(4)
        .forEach(x -> System.out.print(x + " "));
}
}
```

What will the output be?

Options :

6406532326008. ✘ 10 5 0 -5

6406532326009. ✘ 30 27 24 21

6406532326010. ✓ 30 15 0 -15

6406532326011. ✘ 0 -15 -30 -45

Sub-Section Number : 3

Sub-Section Id : 640653102931

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 102 Question Id : 640653696302 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 Java code given below.

```

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

```

Which of the following is true about the given code?

Options :

6406532326000. ❌ This program may generate ConcurrentModificationException.

This program generates the output:

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

6406532326001. ✓ D => 4

6406532326002. ❌ This program results in a deadlock.

This program generates the output:

A => 1

B => 2

6406532326003. ❌ C => 3

Question Number : 103 Question Id : 640653696311 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 Java program given below.

```

import javax.swing.*;
import java.awt.*;
public class GUITest extends JFrame {
    JPanel pnlLbl, pnlTxt, pnlBtn;
    JLabel lblId, lblPwd;
    JTextField txtId, txtPwd;
    JButton btn;
    public GUITest() {
        lblId = new JLabel("Enter id:");
        lblPwd = new JLabel("Enter password:");
        txtId = new JTextField(10);
        txtPwd = new JTextField(10);
        btn = new JButton("Submit");
        pnlLbl = new JPanel();
        //add lblId and txtId to pnlLbl
        pnlTxt = new JPanel();
        //add lblPwd and txtPwd to pnlTxt
        pnlBtn = new JPanel();
        //add btn to pnlBtn

        //CODE BLOCK

        setVisible(true);
        setSize(300,200);
    }
    public static void main(String[] args) {
        new GUITest();
    }
}

```

Choose the correct option to be filled in place of CODE BLOCK such that the above program produces the GUI given below.



Figure 1

Options :

add(pnlLbl, "Center");
 add(pnlTxt, "North");
6406532326037. ✖ add(pnlBtn, "South");

```
    add(pnlLbl, "North");
    add(pnlTxt, "South");
6406532326038. ✘ add(pnlBtn, "Center");
```

```
    add(pnlLbl, "North");
    add(pnlTxt, "Center");
6406532326039. ✓ add(pnlBtn, "South");
```

```
    add(pnlLbl, "South");
    add(pnlTxt, "Center");
6406532326040. ✘ add(pnlBtn, "North");
```

Sub-Section Number : 4

Sub-Section Id : 640653102932

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 104 Question Id : 640653696290 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class InsufficientFundsException extends Exception {  
    public InsufficientFundsException(String str) {  
        super(str);  
    }  
}  
class Account {  
    private double balance;  
    // Constructor to initialize the balance  
    public void withdraw(double amount) throws InsufficientFundsException {  
        if (amount > balance) {  
            throw new InsufficientFundsException("Insufficient funds to withdraw");  
        } else {  
            balance -= amount;  
        }  
    }  
}  
public class Test {  
    public static void main(String[] args) {  
        var a1 = new Account(1000.0);  
        var a2 = new Account(500.0);  
        try {  
            a1.withdraw(1200.0);  
            a2.withdraw(700.0);  
        } catch (InsufficientFundsException e) {  
            System.out.println(e.getMessage());  
        }  
    }  
}
```

Choose the correct option.

Options :

This program generates the output:

6406532325951. ✓ Insufficient funds to withdraw

This program generates the output:

6406532325952. ✗ Error: InsufficientFundsException

This program generates the output:

Insufficient funds to withdraw

6406532325953. ✗ Insufficient funds to withdraw

6406532325954. * This program generates no output.

Question Number : 105 Question Id : 640653696291 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 FinalMarks{
    public static void main(String[] args) {
        Map<String, Integer> sem1 = new TreeMap<String, Integer>();
        sem1.put("Geography", 80);
        sem1.put("Mathematics", 100);
        sem1.put("Science", 95);
        sem1.put("Chemistry", 85);

        Map<String, Integer> sem2 = new TreeMap<String, Integer>();
        sem2.put("Politics", 70);
        sem2.put("Mathematics", 90);
        sem2.put("Science", 100);
        sem2.put("Chemistry", 85);

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

        for(Map.Entry<String, Integer> e : sem1.entrySet())
            aggregateMarks.put(e.getKey(), e.getValue());

        for(Map.Entry<String, Integer> e : sem2.entrySet())
            aggregateMarks.merge(e.getKey(), e.getValue(), (x, y) -> y + x); //LINE 1

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

Choose the correct option.

Options :

6406532325955.

✖ Compile time error at LINE 1 because of the presence of invalid key

This program generates the output:

6406532325956. ✓ {Chemistry=170, Geography=80, Mathematics=190, Politics=70, Science=195}

This program generates the output:

6406532325957. ✖ {Geography=80, Mathematics=190, Science=195, Chemistry=170, Politics=70}

This program generates the output:

6406532325958. ✖ {Chemistry=170, Mathematics=190, Science=195}

Question Number : 106 Question Id : 640653696292 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 Monument{
    public String getState(String name) {
        String answer;
        switch(name) {
            case "Taj Mahal": answer = "India";
                               break;
            case "Machu Picchu": answer = "Peru";
                               break;
            default: answer = null;
                      break;
        }
        return answer;
    }
}
public class OptionalTest {
    public static void main(String[] args){
        Optional<String> op = Optional.ofNullable(new Monument()
                                              .getState("Statue of Liberty"));
        op.ifPresent(n -> System.out.println(n.toUpperCase()));
    }
}
```

Choose the correct option.

Options :

6406532325959. ✓ This program does not generate any output.

6406532325960. ✗ This program generates a `NullPointerException`.

6406532325961. ✗ This program generates the output: `NULL`

6406532325962. ✗ This program generates the output: `INDIA`

6406532325963. ✗ This program generates the output: `PERU`

Question Number : 107 Question Id : 640653696293 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class Faculty{  
    private String name;  
    public Faculty(String n){  
        this.name = n;  
    }  
    public Faculty(Faculty f){  
        this.name = f.name;  
    }  
    public void setName(String n){  
        name = n;  
    }  
    public String getName(){  
        return name;  
    }  
}  
public class Test{  
    public static void main(String[] args){  
        Faculty f1 = new Faculty("Sundaran");  
        Faculty f2 = f1;  
        Faculty f3 = new Faculty(f1);  
        f1.setName("Krishnan");  
        System.out.println("f2.name : " + f2.getName());  
        System.out.println("f3.name : " + f3.getName());  
    }  
}
```

What will the output be?

Options :

- f2.name : Krishnan
- 6406532325964. ✓ f3.name : Sundaran

f2.name : Sundaran

6406532325965. ✘ f3.name : Sundaran

f2.name : Sundaran

6406532325966. ✘ f3.name : Krishnan

f2.name : Krishnan

6406532325967. ✘ f3.name : Krishnan

Question Number : 108 Question Id : 640653696295 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 CustomSequence extends Thread {
    private int start;
    public CustomSequence(int s) {
        start = s;
    }
    public void run() {
        for (int i = start; i <= start + 9; i++) {
            System.out.print(i + " ");
            try {
                sleep(300);
            } catch (InterruptedException e) {
                e.printStackTrace();
            }
        }
    }
}
public class Test{
    public static void main(String[] args) throws InterruptedException {
        Thread th1 = new CustomSequence(1);
        Thread th2 = new CustomSequence(11);
        Thread th3 = new CustomSequence(21);

        th1.start();
        th1.join();
        th2.start();
        th2.join();
        th3.start();
    }
}

```

Choose the correct option.

Options :

6406532325972. ✘ It may print 1 to 10, 11 to 20, and 21 to 30 in an interleaved manner.

6406532325973. ✘ It prints 21 to 30 first, followed by 1 to 10, and 11 to 20 in an interleaved manner.

6406532325974. ✘ It may print 1 to 10 and 11 to 20, in an interleaved manner, followed by 21 to 30.

6406532325975. ✓ It prints 1 to 10 first, followed by 11 to 20, and followed by 21 to 30.

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

Time : 0

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the Java code given below.

```
interface Displayable {  
    public default void display() {  
        System.out.println("Prints documents");  
    }  
}  
class Printer implements Displayable { // LINE 1  
}  
class Scanner implements Displayable {  
    public void display() {  
        System.out.println("Scans documents and prints");  
    }  
}  
public class Test {  
    public static void main(String[] args) {  
        Displayable d1 = new Printer();  
        d1.display(); // LINE 2  
        Displayable d2 = new Scanner();  
        d2.display();  
    }  
}
```

Choose the correct option.

Options :

6406532325976. ❌ Compiler error at LINE 1 because class Printer is not abstract

This program generates output:

Prints documents

6406532325977. ✓ Scans documents and prints

This program generates output:

Prints documents

6406532325978. ❌ Prints documents

LINE 2 generates runtime error because method `display()` is not defined for
6406532325979. ❌ class Printer

Question Number : 110 Question Id : 640653696297 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 Sports {  
    public void rules() {  
        System.out.println("Follow the rules");  
    }  
    public void play() {  
        System.out.println("Playing");  
    }  
}  
class Indoor extends Sports {  
    public void play() {  
        System.out.println("Playing indoor");  
    }  
    public void score() {  
        System.out.println("Scored a point");  
    }  
}  
class Basketball extends Indoor {  
    public void score() {  
        System.out.println("Goal in basketball");  
    }  
}  
public class Test {  
    public static void main(String[] args) {  
        Sports sport = new Basketball();  
        sport.rules();  
        sport.play();  
        sport.score();          //LINE 1  
    }  
}
```

Choose the correct option.

Options :

This code generates the output:

Follow the rules

Playing indoor

6406532325980. ✘ Goal in basketball

This code generates the output:

Follow the rules

Playing

6406532325981. ✘ Scored a point

6406532325982. ✓ LINE 1 generates compilation error.

This code generates the output:

Follow the rules

Playing indoor

6406532325983. ✘ Scored a point

Question Number : 111 Question Id : 640653696298 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 Product {
    private int productId;
    private double price;
    public Product(int id, double p) {
        productId = id;
        price = p;
    }
    public final double discount() {
        return 0.1 * price;
    }
}
class PremiumProduct extends Product {
    public PremiumProduct(int id, double p) {
        super(id, p);
    }
    public final double discount() {      //LINE 1
        return 0.2 * price;           //LINE 2
    }
}
public class Test {
    public static void main(String[] args) {
        Product p1 = new PremiumProduct(101, 500.0);   //LINE 3
        PremiumProduct pp1 = new Product(202, 700.0); //LINE 4
        p1.discount();
        pp1.discount();
    }
}

```

Which of the following statements is FALSE?

Options :

LINE 1 generates a compilation error because the method `discount()` cannot
6406532325984. ❌ be overridden.

LINE 2 generates a compilation error because instance variable `price` cannot
6406532325985. ❌ be accessed in class `PremiumProduct`.

LINE 3 generates a compilation error because a variable of type `Product` cannot
6406532325986. ✓ refer to an object of type `PremiumProduct`.

LINE 4 generates a compilation error because a variable of type `PremiumProduct`
6406532325987. ❌ cannot refer to an object of type `Product`.

Question Number : 112 Question Id : 640653696299 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.

```
// ...
Integer i = sc.nextInt();
if(i < 0)
    throw new RuntimeException("Input is a negative integer");
// ...
```

Which among the following code blocks can replace the given code in order to generate a *customized assertion error* as shown below?

Exception in thread "main" java.lang.AssertionError: Input is a negative integer
at PositiveAssert.main(PositiveAssert.java:<line number>)

Options :

```
try {
    Integer i = sc.nextInt();
    assert i >= 0;
}
catch(RuntimeException e) {
    System.out.println("Input is a negative integer");
6406532325988. ✘ }
```

```
Integer i = sc.nextInt();
assert i >= 0;
if (i < 0)
    System.out.println("Input is a negative integer");
6406532325989. ✘
6406532325990. ✘
```

```
Integer i = sc.nextInt();
try {
    assert i >= 0;
}
catch (AssertionError e) {
    System.out.println("Input is a negative integer")
}
```

```
Integer i = sc.nextInt();
6406532325991. ✓ assert i >= 0 : "Input is a negative integer";
```

Question Number : 113 Question Id : 640653696300 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.

```

interface Communication {
    void connect();
}

class Device {
    public WiredCommunication getCommunication1() {
        return new WiredCommunication();
    }
    public WirelessCommunication getCommunication2() {
        return new WirelessCommunication();
    }
    private class WiredCommunication implements Communication {
        public void connect() {
            System.out.println("Wired connection established");
        }
    }
    private class WirelessCommunication extends WiredCommunication {
        public void connect() {
            System.out.println("Wireless connection established");
        }
    }
}
public class Test {
    public static void main(String[] args) {
        Device d = new Device();
        //CODE BLOCK
        obj1.connect();
        obj2.connect();
    }
}

```

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

Wired connection established
 Wireless connection established

Options :

6406532325992. ✘ Communication obj1 = new WiredCommunication();
 Communication obj2 = new WirelessCommunication();

6406532325993. ✘ WiredCommunication obj1 = new WiredCommunication();
 WirelessCommunication obj2 = new WirelessCommunication();

6406532325994. ✘ WiredCommunication obj1 = d.getCommunication1();
 WirelessCommunication obj2 = d.getCommunication2();

6406532325995.

```
Communication obj1 = d.getCommunication1();
✓ Communication obj2 = d.getCommunication2();
```

Question Number : 114 Question Id : 640653696301 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

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.

What is your name?

```
public class Test {
    public static void main(String[] args) {
        try {
            var out = new FileOutputStream("file1.txt", true);
            var dout = new DataOutputStream(out);
            dout.writeBytes(", Where are u from?");
            dout.close();
            var out2 = new FileOutputStream("file2.txt", false);
            var dout2 = new DataOutputStream(out2);
            dout2.writeBytes(", Where are u from?");
            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:
 , Where are u from?
file2.txt:

6406532325996. ✘ What is your name?, Where are u from?

file1.txt and file2.txt

6406532325997. ✘ What is your name?, Where are u from?

file1.txt:

What is your name?, Where are u from?

file2.txt:

6406532325998. ✓ , Where are u from?

file1.txt and file2.txt

6406532325999. ✘ , Where are u from?

Question Number : 115 Question Id : 640653696306 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 5 in the given code, which method's activation record is at the top of the stack of activation records?

Options :

6406532326016. ✘ main

6406532326017. ✓ methodOne

6406532326018. ✘ methodTwo

6406532326019. ✘ methodThree

Question Number : 116 Question Id : 640653696307 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.io.*;
class IDCard implements Serializable {
    private String cardNo = "*****";
    private transient int accessCode = 1000;
    private String issueDate = "00/00";
    public IDCard(String cno, int a, String i) {
        cardNo = cno;
        accessCode = a;
        issueDate = i;
    }
    public String toString() {
        return cardNo + ", " + accessCode + ", " + issueDate;
    }
}
public class Test {
    public static void main(String[] args) throws Exception {
        var fos = new FileOutputStream("idcard.txt");
        var os = new ObjectOutputStream(fos);
        os.writeObject(new IDCard("ID123456", 9999, "11/23"));
        var fis = new FileInputStream("idcard.txt");
        var ois = new ObjectInputStream(fis);
        IDCard card = (IDCard) ois.readObject();
        System.out.println(card);
    }
}
```

What will the output be?

Options :

6406532326020. ✘ null, 0, null

6406532326021. ✓ ID123456, 0, 11/23

6406532326022. ✘ ID123456, 1000, 11/23

6406532326023. ✘ ID123456, 9999, 11/23

6406532326024. ✘ ******, 1000, 00/00

Question Number : 117 Question Id : 640653696308 Question Type : MCQ Is Question

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

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class Exponential {  
    private int base;  
    public Exponential(int base) {  
        this.base = base;  
    }  
    public int power(int exponent) {  
        assert exponent >= 0;      // LINE 1  
        if (exponent == 0)  
            return 1;  
        assert base > 0;          // LINE 2  
        return base * power(exponent - 1);  
    }  
}  
class AssertionTest {  
    public static void main(String[] args) {  
        Exponential obj1 = new Exponential(2);  
        Exponential obj2 = new Exponential(-3);  
        int result1 = obj1.power(4);  
        assert result1 > 0;      //LINE 3  
        System.out.println(result1);  
        int result2 = obj2.power(3);  
        assert result2 > 0;      //LINE 4  
        System.out.println(result2);  
    }  
}
```

Choose the correct option when the program is executed as:

java -ea AssertionTest

Options :

This program generates the output:

16

6406532326025. * -27

This program throws `AssertionError` at LINE 1 after printing the value:

6406532326026. ✘ 16

This program throws `AssertionError` at LINE 2 after printing the value:

6406532326027. ✓ 16

This program throws `AssertionError` at LINE 4 after printing the value:

6406532326028. ✘ 16

Sub-Section Number : 5

Sub-Section Id : 640653102933

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 118 Question Id : 640653696303 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.

```

class Hotel {
    int available = 1;
    public synchronized void bookRoom(int n, String name) {
        if (available >= n) {
            available = available - n;
            System.out.println(name + " booked " + n + " room");
        } else {
            System.out.println(name + " cannot book " + n + " room");
        }
    }
}

class RoomBooking implements Runnable {
    private Hotel h;
    private String name;
    private int n_rooms;
    public RoomBooking(Hotel h, String n, int r) {
        // constructor
    }
    public void run() {
        h.bookRoom(n_rooms, name);
    }
}

public class Test {
    public static void main(String[] args) {
        Hotel obj = new Hotel();
        RoomBooking rb1 = new RoomBooking(obj, "Karthik", 1);
        RoomBooking rb2 = new RoomBooking(obj, "Mrinal", 1);
        Thread t1 = new Thread(rb1);
        Thread t2 = new Thread(rb2);
        t1.start();
        t2.start();
    }
}

```

Which of the following options is/are possible result/s of the above code?

Options :

Karthik booked 1 room
 6406532326004. ✓ Mrinal cannot book 1 room

Karthik booked 1 room
 6406532326005. ✗ Mrinal booked 1 room

Mrinal booked 1 room
6406532326006. ✓ Karthik cannot book 1 room

Mrinal cannot book 1 room
6406532326007. ✗ Karthik cannot book 1 room

Question Number : 119 Question Id : 640653696309 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.

```
import java.util.*;
public class Test {
    public static void main(String[] args) {
        var list = new ArrayList<String>();
        list.add("Apple");
        list.add("Mango");
        list.add("Orange");
        list.add("Pomegranate");
        // CODE BLOCK
        for(String str:list) {
            set1.add(str);
            set2.add(str);
        }
        for(String str:set1)
            System.out.print(str+" ");
        System.out.println();
        for(String str:set2)
            System.out.print(str+" ");
    }
}
```

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

Apple Mango Orange Pomegranate

Apple Mango Orange Pomegranate

Options :

var set1 = new HashSet<String>();
6406532326029. ❌ var set2 = new TreeSet<String>();

var set1 = new LinkedHashSet<String>();
6406532326030. ✓ var set2 = new TreeSet<String>();

var set1 = new TreeSet<String>();
6406532326031. ✓ var set2 = new TreeSet<String>();

var set1 = new LinkedHashSet<String>();
6406532326032. ❌ var set2 = new HashSet<String>();

Question Number : 120 Question Id : 640653696310 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.

```

abstract class Spectacles {
    public abstract void wear();
}

class ReadingGlasses extends Spectacles {
    public void wear() {
        System.out.println("Wearing Reading Glasses");
    }
}

class SunGlasses extends Spectacles {
    public void wear() {
        System.out.println("Wearing Sunglasses");
    }
}

class SpecsList {
    private Object[] sArr = {new ReadingGlasses(), new SunGlasses()};
    public void trySpecs() {
        for (int i = 0; i < sArr.length; i++) {
            //LINE-1
        }
    }
}

public class Test {
    public static void main(String[] args) {
        SpecsList c = new SpecsList();
        c.trySpecs();
    }
}

```

Identify the appropriate option(s) to fill in place of LINE 1 such that the output is:

Wearing Reading Glasses
 Wearing Sunglasses

Options :

6406532326033. ✘ ((ReadingGlasses)sArr[i]).wear();

6406532326034. ✘ ((SunGlasses)sArr[i]).wear();

6406532326035. ✘ sArr[i].wear();

6406532326036. ✓ ((Spectacles)sArr[i]).wear();

Sub-Section Number :	6
Sub-Section Id :	640653102934
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 121 Question Id : 640653696305 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 Java code given below that prints the animal with highest weight. From among the options, identify the appropriate function header for the function printHeaviestAnimal that takes as input an array of Animal objects and prints the heaviest animal among them.

```

import java.util.*;
abstract class Animal {
    public abstract double getWeight();
}
class Dog extends Animal {
    // getWeight() method that returns weight of the dog
}
class Cat extends Animal {
    // getWeight() method that returns weight of the cat
}

public class WeightComparison {
    // LINE 1: FUNCTION HEADER
    {
        //invokes method getWeight()
        //to print the value of highest weight
    }
    public static void main(String[] args) {
        Animal[] a = { new Dog(), new Cat() };
        printHeaviestAnimal(a);
    }
}

```

Choose the correct option(s).

Options :

6406532326012. ✓ public static void printHeaviestAnimal(Animal[] a)

6406532326013. ✗ public static void printHeaviestAnimal(T[] a)

6406532326014. ✓ public static <T extends Animal> void printHeaviestAnimal(T[] a)

6406532326015. ✗ public static void printHeaviestAnimal(<?> a)

AppDev2

Section Id : 64065349220

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 : 640653102935

Question Shuffling Allowed : No

Is Section Default? : null

Question Number : 122 Question Id : 640653696312 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 :

6406532326041. ✓ YES

6406532326042. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653102936

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 123 Question Id : 640653696313 Question Type : MSQ Is Question

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

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements is/are correct.

Options :

6406532326043. ✓ SMTP is a mail delivery protocol.

6406532326044. ✗ SMTP is a protocol to retrieve email from an email server.

6406532326045. ❌ IMAP is a mail delivery protocol.

6406532326046. ✓ IMAP is a protocol to retrieve email from an email server.

Question Number : 124 Question Id : 640653696314 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 :

6406532326047. ✓ CDN is an acronym for Content Delivery Network.

6406532326048. ✓ CDN is a group of servers that helps in fast delivery of web contents.

6406532326049. ✓ Web content is generally delivered from the closest server to the client in the network.

6406532326050. ❌ None of these.

Question Number : 125 Question Id : 640653696327 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 javascript language?

Options :

6406532326099. ✓ Replit.com is an example of a javascript engine.

6406532326100. ❌ The language supports the concept of first class functions.

6406532326101. ✓ The language does not allow the implementation of user defined higher order functions.

6406532326102. ✘ The language can be used for DOM manipulation.

Question Number : 126 Question Id : 640653696329 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) can be used to ensure that the displayed state and system state are kept in sync at all times?

Options :

6406532326108. ✓ Ajax requests on each UI change

6406532326109. ✘ Periodic reloading of web-page

6406532326110. ✘ Vue bindings to update data reactively

6406532326111. ✓ Pure static pages with all updates rendered from server

Question Number : 127 Question Id : 640653696335 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 an application is loaded from an origin "<https://xyz.com>". Which of the following origins will result in a CORS error, while making a fetch call, by default?

Options :

6406532326137. ✘ <https://xyz.com>

6406532326138. ✓ <https://abc.xyz.com>

6406532326139. ✘ <https://xyz.com/page1>

6406532326140. ✓ <https://xyz6.com>

Question Number : 128 Question Id : 640653696338 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 webhooks?

Options :

6406532326149. ✓ A webhook uses HTTP protocol.

6406532326150. ✗ A webhook uses web socket protocol.

6406532326151. ✗ A webhook receiver must be deployed on the same origin as the webhook initiator.

6406532326152. ✓ A webhook is supposed to be used for machine to machine communication.

Sub-Section Number : 3

Sub-Section Id : 640653102937

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 129 Question Id : 640653696315 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 :

6406532326051. ✓ XSS attack is an exploit where an attacker attaches a malicious code into a website.

6406532326052. ✓ XSS can be used to steal the user's cookie.

6406532326053. ✓ XSS is a client side injection attack.

6406532326054. ✓ It can be avoided by validating the user's input.

Question Number : 130 Question Id : 640653696337 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 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 true?

Options :

6406532326145. ❌ With point-to-point communication, the number of connection links will grow as $O(n)$.

6406532326146. ✓ With point-to-point communication, the number of connection links will grow as $O(n^2)$.

6406532326147. ✓ With the use of a central message broker, the number of connection links will grow as $O(n)$.

6406532326148. ❌ With the use of a central message broker, the number of connection links will grow as $O(n^2)$.

Question Number : 131 Question Id : 640653696339 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 :

6406532326153. ✓ A webhook is the same as short polling.

6406532326154. ✗ The short polling can be used to know the state of an asynchronous task, and trigger an action if the task gets completed.

6406532326155. ✓ The long polling cannot be achieved using HTTP protocol.

6406532326156. ✗ Long Polling can be used to achieve real time communication.

Question Number : 132 Question Id : 640653696340 Question Type : MSQ Is Question

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

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

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

Options :

6406532326157. ✗ It is recommended to cache the social networking apps feed responses for a longer duration.

6406532326158. ✓ Caching is primarily done to reduce the load from the origin server.

6406532326159. ✓ The shared cache is meant to serve responses to the multiple users.

6406532326160. ✗ A browser cannot cache JavaScript corresponding to a web page.

Question Number : 133 Question Id : 640653696341 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 :

6406532326161. ✓ CORS stands for Cross Origin Resource Sharing.

6406532326162. ✓ The CORS reduces chances of malicious code by explicitly saying which URLs can be originators of data.

6406532326163. ✓ CSRF stands for Cross Site Request Forgery.

6406532326164. ❌ None of these.

Sub-Section Number : 4

Sub-Section Id : 640653102938

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 134 Question Id : 640653696316 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.

```

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(30)
}

getData().then(
  (data) => {
    console.log(data)
  },
  (err) => {
    console.log(err)
  }
)

```

What will be logged on to console, if executed?

Options :

6406532326055. ✘ Go Up

6406532326056. ✘ Go Down

6406532326057. ✓ Number Too Large

6406532326058. ✘ None of these

Question Number : 135 Question Id : 640653696319 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
    } 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 :

6406532326067. ✘ NaN

6406532326068. ✘ 500

6406532326069. ✓ 2500

6406532326070. ✘ Some Error

Question Number : 136 Question Id : 640653696321 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="increaseCount(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 = []
      }
    },
    increaseCount(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" 10 times and then clicks on the button "Buy". What will be logged on to console?

Options :

6406532326075. ✓ Success

6406532326076. ✗ Failure

6406532326077. ✗ NaN

6406532326078. ✗ None of these

Question Number : 137 Question Id : 640653696323 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/#/>"?

Options :

6406532326083. ✘ This is dashboard of User

6406532326084. ✘ Dashboard

6406532326085. ✘ Error

6406532326086. ✓ Result Not Found

Question Number : 138 Question Id : 640653696325 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=120)
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 :

6406532326091. ✘ 0 seconds

6406532326092. ✓ 30 seconds

6406532326093. ✗ 120 seconds

6406532326094. ✗ None of these

Question Number : 139 Question Id : 640653696331 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);
        }
    }, 2000)
}).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 :

6406532326116. ✗ Resolved []

Minimum Time Taken: 12 seconds

6406532326117. ✘ Resolved [] May 2023

Minimum Time Taken: 10 seconds

6406532326118. ✘ Rejected [May 2023] May 2023

Minimum Time Taken: 12 seconds

6406532326119. ✘ Rejected [May 2023]

Minimum Time Taken: 10 seconds

6406532326120. ✓ Resolved [] May 2023

Minimum Time Taken: 12 seconds

6406532326121. ✘ Rejected [] May 2023

Minimum Time Taken: 10 seconds

Question Number : 140 Question Id : 640653696332 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 :

6406532326122. ❗ The app will show an error in the console

6406532326123. ✘ Default, Default

6406532326124. ✘ IIT, Madras

6406532326125. ✓ IIT, IIT

6406532326126. ✘ Madras, IIT

6406532326127. ✘ None of these

Question Number : 141 Question Id : 640653696333 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)
 })

6406532326128. *

code1: actions
 code2: state.students.forEach(student=>{
 if(student.mark > 50)
 below_average.toppers.push(student)
 })

6406532326129. *

```
code1: actions  
code2: context.students.forEach(student=>{  
    if(student.marks < 55)  
        context.below_average.push(student)  
})
```

6406532326130. ✘

```
code1: mutations  
code2: state.students.forEach(student=>{  
    if(student.marks > 50)  
        state.below_average.push(student)  
})
```

6406532326131. ✓

Sub-Section Number : 5

Sub-Section Id : 640653102939

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 142 Question Id : 640653696317 Question Type : MCQ Is Question

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 'url' returns an HTML response for a get request with 200 status code. What will be logged on to console, if the code is executed?

Options :

6406532326059. ✘ Response is not json

6406532326060. ✓ Network Error

6406532326061. ✘ 200

6406532326062. ✘ None of these

Question Number : 143 Question Id : 640653696318 Question Type : MCQ Is Question

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. Suppose the 'url' returns a JSON response with 404 status code. What will be logged on to console?

```
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)
})
```

Options :

6406532326063. ✘ Response is not json

6406532326064. ✘ Network Error

6406532326065. ✓ 404

6406532326066. ✘ None of these

Question Number : 144 Question Id : 640653696320 Question Type : MCQ Is Question

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 :

6406532326071. ✓ NaN

6406532326072. ✗ 500

6406532326073. ✗ 2500

6406532326074. ✗ Some Error

Question Number : 145 Question Id : 640653696322 Question Type : MCQ Is Question

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"

Suppose the application is running on "<http://127.0.0.1:8080/>". Suppose the user clicks on "Increese count" button associated with the item name "Apple" 10 times then clicks on "Add To Cart" and then clicks on the button "Buy". What will be logged on to console?

```

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="increaseCount(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 = []
      }
    },
    increaseCount(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>

```

Options :

6406532326079. ✨ Success

6406532326080. ✓ Failure

6406532326081. ✘ NaN

6406532326082. ✘ None of these

Question Number : 146 Question Id : 640653696324 Question Type : MCQ Is Question 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 Vue application mentioned. What will be rendered by the browser for the URL "<http://127.0.0.1:8080/#/dashboard/2>"?

```
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>
```

Options :

6406532326087. ❌ This is dashboard of User

6406532326088. ✓ This is dashboard of 2

6406532326089. ❌ Dashboard

6406532326090. ❌ Result Not Found

Question Number : 147 Question Id : 640653696326 Question Type : MCQ Is Question

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 flask application mentioned. 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?

```
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=120)
def home():
    sleep(30)
    return "hello world"

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

Options :

6406532326095. ✓ 0 seconds

6406532326096. ✗ 30 seconds

6406532326097. ✘ 120 seconds

6406532326098. ✘ None of these

Question Number : 148 Question Id : 640653696328 Question Type : MCQ Is Question

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.

```
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.call(obj1);
```

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

Options :

6406532326103. ✘ Function Invoked !!

2

6406532326104. ✘ Function Invoked !!

3

6406532326105. ✘ Function Invoked !!

1

6406532326106. ✓ Function Invoked !!

Error

6406532326107. ✖ Error

Question Number : 149 Question Id : 640653696334 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

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

index.html:

```
<div id = "app">
  <my-comp>
    <template v-slot:first = "slotProps">
      This is from {{slotProps.user.name1}} template
    </template>

    <template v-slot:default = "slotProps">
      This is from {{slotProps.user.name3}} template
    </template>

    <template v-slot:second = "slotProps">
      This is from {{slotProps.user.name2}} template
    </template>
  </my-comp>
</div>
<script src = "app.js"> </script>
```

app.js:

```
Vue.component("myComp", {
  template : `<div>
    <p>
      <slot name = "first" v-bind:user="user">
      </slot>
    </p>
    <p>
      <slot v-bind:user="user">
      </slot>
    </p>
  </div>
`,

  data : function () {
    return {
      user : {
        'name1' : "Rashmi's",
        'name2' : "Akshay's",
        'name3' : "Sumit's",
      }
    }
  }
})

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

Options :

6406532326132. ✨ This is from template

This is from template

6406532326133. ✨ This is from Rashmi's template

This is from Akshay's template

This is from Sumit's template

6406532326134. ✓ This is from Rashmi's template

This is from Sumit's template

6406532326135. ✖ This is from Rashmi's template

This is from Sumit's template

This is from Akshay's template

6406532326136. ✖ This is from template

This is from template

This is from template

Question Number : 150 Question Id : 640653696336 Question Type : MCQ Is Question

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)*2000);  
}
```

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

6406532326141. ✖ Minimum Time Taken: 6 seconds

0

1

2

6406532326142. ✖ Minimum Time Taken: 12 seconds

3
3
3

6406532326143. ✓ Minimum Time Taken: 12 seconds

3
3
3

6406532326144. ✗ Minimum Time Taken: 6 seconds

Question Number : 151 Question Id : 640653696342 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Suppose an attacker embeds a malicious link in an email or website, causing the victim's browser to unknowingly submit a form that performs an action (e.g., deleting the user's account) on the target site where the victim is authenticated. Which type of attack is this?

Options :

6406532326165. ✗ Denial Of Service Attack

6406532326166. ✓ CSRF Attack

6406532326167. ✗ Flooding Attack

6406532326168. ✗ None of these

Question Number : 152 Question Id : 640653696343 Question Type : MCQ Is Question

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 :

6406532326169. ✖ First

Second

Third

2

6406532326170. ✖ First

Error

6406532326171. ✖ First

Third

Second

undefined

6406532326172. ✓ First

Third

Second

2

6406532326173. ✖ The output cannot be predicted

Sub-Section Number : 6

Sub-Section Id : 640653102940

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 153 Question Id : 640653696330 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

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

Options :

6406532326112. ❌ v-for = “value in obj”

6406532326113. ❌ v-for = “(value, name) in obj”

6406532326114. ❌ v-for = “(value, name, index) in obj”

6406532326115. ✓ All of these.

Question Number : 154 Question Id : 640653696344 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 :

6406532326174. ✓ A celery system may consist of multiple brokers.

6406532326175. ❌ Redis must be used as a message broker for Celery.

6406532326176. ❌ The framework does not support periodic scheduling of tasks.

6406532326177. ❌ All of these.

MLT

Section Id :	64065349221
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 :	640653102941
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 155 Question Id : 640653696345 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 :

6406532326178. ✓ YES

6406532326179. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653102942

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 156 Question Id : 640653696346 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 $\mathcal{D} = \{(-1, 1), (0, 1), (1, 1)\}$. What is the first principal component (i.e., the direction corresponding to the largest eigenvalue of the covariance matrix) for the above dataset?

Options :

6406532326180. ✓ $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$

6406532326181. ✗ $\begin{pmatrix} 0 \\ 1 \end{pmatrix}$

6406532326182. ✗ $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$

6406532326183. ✓ $\begin{pmatrix} -1 \\ 0 \end{pmatrix}$

Sub-Section Number :

3

Sub-Section Id : 640653102943

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696347 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

Common Data:

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 10 samples in the dataset and each sample contains 100 features. Assume that the datapoints x_4 to x_{10} are all linear combination of linearly independent data points (x_1, x_2, x_3) .

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 157 Question Id : 640653696348 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 :

6406532326184. ✘ 1

6406532326185. ✘ 2

6406532326186. ✓ 3

6406532326187. ✗ 5

6406532326188. ✗ 10

6406532326189. ✗ 100

Question Number : 158 Question Id : 640653696349 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

6406532326190. ✓ given by linear PCA

Kernel PCA takes a lesser number of computations than linear PCA to find

6406532326191. ✓ the principal directions

The eigenvectors of the kernel matrix K are pointing in the same direction as

6406532326192. ✗ the eigenvectors of the covariance matrix C

Kernel PCA takes more computations than linear PCA to find the principal

6406532326193. ✗ directions

Sub-Section Number :	4
Sub-Section Id :	640653102944
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 159 Question Id : 640653696350 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

Given the dataset $\{2, 5, 8, 11, 15, 18, 22, 25\}$, apply Lloyd's algorithm with $k = 3$ and initial cluster centers at 5, 15, and 25. What is the total sum of the final cluster centers when the algorithm converges?

(Enter your answer correctly to two decimal places)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

43.10 to 43.20

Sub-Section Number :	5
Sub-Section Id :	640653102945
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 160 Question Id : 640653696351 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:

$$\begin{aligned}\pi_1 &= 0.3, \pi_2 = 0.7 \\ \mu_1 &= 2, \sigma_1^2 = 1 \\ \mu_2 &= 3, \sigma_2^2 = 1\end{aligned}$$

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 :

0.32 to 0.38

Sub-Section Number : 6

Sub-Section Id : 640653102946

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 161 **Question Id :** 640653696352 **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 training set $\{X, y\}$, where $X \in \mathbb{R}^{d \times n}$ and the target $y \in \mathbb{R}^n$.

Suppose a team decided to use linear regression model, $h = w^T X$ where $w \in \mathbb{R}^{d \times 1}$ that minimizes the objective function $L(w)$ given below

$$L(w) = \sum_{i=1}^n (w^T x_i - y_i)^2$$

Suppose we obtain $w = w^*$ such that $L(w^*) = \sum_{i=1}^n (w^{*T} x_i - y_i)^2 = 0$. Choose the following correct statements

Options :

6406532326196. ✓ The target vector y is in the column space of X

6406532326197. ✗ The target vector y is perpendicular to the column space of X

6406532326198. ✗ for any value $w \neq w^*$, the loss $L(w) < 0$

6406532326199. ✓ for any value $w \neq w^*$, the loss $L(w) > 0$

had we used gradient descent algorithm with appropriate learning rate η to find the w^* , then the algorithm would have converged after some finite number

6406532326200. ✓ of iterations

Sub-Section Number : 7

Sub-Section Id : 640653102947

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 162 Question Id : 640653696353 Question Type : MCQ Is Question

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

Correct Marks : 6

Question Label : Multiple Choice Question

Consider a Ridge Regression scenario where the feature vector \mathbf{x} is given by $\mathbf{x} = [x_1, x_2, x_3, x_4]$, and the weight vector is determined using the formula:

$$\mathbf{w}_\lambda = (\mathbf{X}^T \mathbf{X} + \lambda \mathbf{I})^{-1} \mathbf{X}^T \mathbf{y}$$

Here, \mathbf{X} is the design matrix, \mathbf{y} is the target vector, and λ is the regularization parameter.

Suppose we obtain the weight vector $\mathbf{w}_{\lambda=4} = [2, 5, 7, 9]$ when λ is set to 4. If we increase λ to 8, which of the following is most likely to be the updated weight vector?

Options :

6406532326201. ❌ [2, 6, 9, 12]

6406532326202. ❌ [2, 4, 7, 10]

6406532326203. ❌ [3, 5, 8, 11]

6406532326204. ✓ [1, 3, 6, 8]

Sub-Section Number : 8

Sub-Section Id : 640653102948

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 163 Question Id : 640653696354 Question Type : SA Calculator : None

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

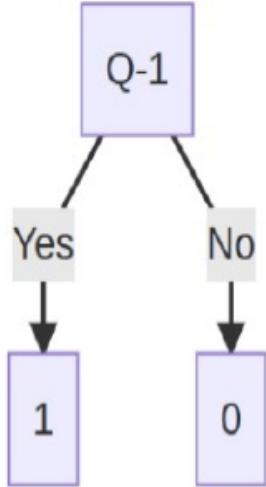
Correct Marks : 6

Question Label : Short Answer Question

Consider the following training dataset for a binary classification task:

X	y
4	1
20	0
16	0
-8	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 :

12

Sub-Section Number : 9

Sub-Section Id : 640653102949

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 164 **Question Id :** 640653696355 **Question Type :** MCQ **Is Question**

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

Correct Marks : 5

Question Label : Multiple Choice Question

A Gaussian naive Bayes model is trained on a given dataset. For an unseen data point x , the following two values are calculated as

$$P(x|y = 0) = 0.1$$
$$P(x|y = 1) = 0.9$$

What will be the predicted label of x ?

Options :

6406532326206. ✘ 0

6406532326207. ✘ 1

6406532326208. ✓ Insufficient information to make a prediction.

Question Number : 165 Question Id : 640653696356 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 5

Question Label : Multiple Choice Question

Consider the following 2D dataset with points in \mathbb{R}^2 :

x_1	x_2	y
1	2	-1
2	3	-1
-1	0	-1
4	1	1
3	-1	1
0	1	-1
-2	-2	1
-3	1	1

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 :

6406532326209. ✘ Yes, it will converge.

6406532326210. ✓ No, it will never converge.

6406532326211. * Insufficient data

Sub-Section Number :	10
Sub-Section Id :	640653102950
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 166 Question Id : 640653696357 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 weight vector is $\begin{bmatrix} 1/2 \\ 2/3 \end{bmatrix}$.

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 0.60 and 0 otherwise. What is the predicted label for the test data-point $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$?

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 :

1

Sub-Section Number :	11
Sub-Section Id :	640653102951
Question Shuffling Allowed :	No
Is Section Default? :	null

Sub-Section Number :	11
Sub-Section Id :	640653102951
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653696358 Question Type : COMPREHENSION Sub Question Shuffling

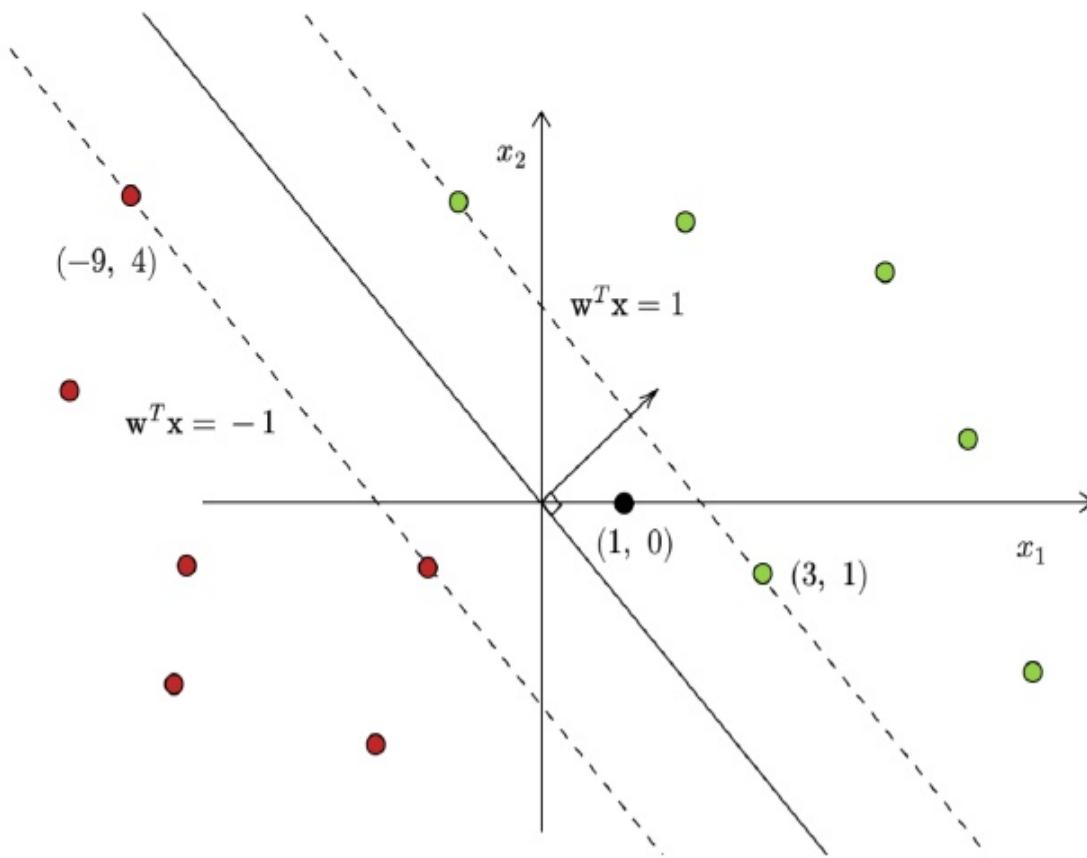
Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

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

Question Numbers : (167 to 168)

Question Label : Comprehension

Consider a 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 : 167 Question Id : 640653696359 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 :

6406532326213. ✓ $5x_1 + 6x_2 = 0$

6406532326214. ✗ $7x_1 + 6x_2 = 0$

6406532326215. ✓ $\frac{5}{2}x_1 + 3x_2 = 0$

6406532326216. ✗ $\frac{35}{2}x_1 + 21x_2 = 0$

Question Number : 168 Question Id : 640653696360 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?

(Hint: Calculate width using formulae $\frac{2}{\|w\|}$).

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 :

5.32 to 5.44

Sub-Section Number :

12

Sub-Section Id :	640653102952
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 169 Question Id : 640653696361 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 problem 6406532326218.  is 0.

6406532326219.  For a dataset with n data-points, there are n constraints for soft-margin SVM.

A smaller value of C allows for a larger margin, potentially leading to less 6406532326220.  misclassifications on the training data.

6406532326221.  For a dataset with n data-points, there are $2n$ constraints for soft-margin SVM.

Question Number : 170 Question Id : 640653696362 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 :

6406532326222. ✘ Overfitting models have high bias and low variance.

6406532326223. ✘ Underfitting models have low bias and high variance.

6406532326224. ✓ Generally, weak learners in the random forest tend to overfit.

6406532326225. ✓ 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.

6406532326226. ✓ 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 : 640653102953

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 171 Question Id : 640653696363 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

We have trained four models in the same dataset with different hyperparameters. In the following table, we have recorded the training and testing errors for each of the models.

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 :

6406532326227. ✘ Model 4 tends to overfit.

6406532326228. ✓ Model 4 tends to underfit.

6406532326229. ✘ Model 1 tends to underfit.

6406532326230. ✓ Model 1 tends to overfit.

Question Number : 172 Question Id : 640653696364 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 classification problems with labels $y \in \{+1, -1\}$. Suppose we want to use the Gradient Descent-based algorithms to find the parameters of a classification model that minimize the loss. Then, which of the following loss functions is (are) suitable
Note: $\text{sign}()$ denotes a sign function.

Options :

6406532326231. ✓ $L(w) = \sum_i (w^T x_i - y_i)^2$

6406532326232. ✘ $L(w) = \sum_i (\text{sign}(w^T x_i) - y_i)$

6406532326233. ✓ $L(w) = \sum_i \max(0, (1 - y_i w^T x_i))$

$$L(w) = \sum_i \max(0, y_i w^T x_i)$$

6406532326234. ✓

Sub-Section Number :	14
Sub-Section Id :	640653102954
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 173 Question Id : 640653696365 Question Type : SA Calculator : None

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

Correct Marks : 6

Question Label : Short Answer Question

Suppose we have a dataset with 100 samples. Each samples $x_i \in \mathbb{R}^{50}$. Suppose further we use a neural network model with three hidden layers. The first hidden layer contains 80 neurons. How many parameters does the first layer of neural networks have? Assume each neuron in the network has bias (a learnable parameter) associated with it

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4081

MLP

Section Id :	64065349222
Section Number :	8
Section type :	Online
Mandatory or Optional :	Mandatory

Number of Questions :	38
Number of Questions to be attempted :	38
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 :	640653102955
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 174 Question Id : 640653696366 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 :

6406532326236. ✓ YES

6406532326237. ✗ NO

Sub-Section Id : 640653102956

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 175 Question Id : 640653696367 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 using Pandas:

```
import pandas as pd

# Assume a DataFrame df is already loaded with appropriate data.

grouped_data = df.groupby('Category')['Price'].mean()
```

What does the groupby operation in the code achieve?

Options :

6406532326238. ❌ It calculates the total price for each category.

6406532326239. ✓ It calculates the average price for each category.

6406532326240. ❌ It groups the data by the 'Category' column.

6406532326241. ❌ It filters out rows where the 'Price' column is zero.

Question Number : 176 Question Id : 640653696369 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 = [[-3, 1],  
        [-3, 1],  
        [ 3, 5],  
        [ 3, 5]]  
  
from sklearn.preprocessing import StandardScaler  
ss = StandardScaler()  
print(ss.fit_transform(data))
```

Which of the following option represents the print output :

Options :

6406532326246. ✘ `[[0, -1],
[0, -1],
[1, 1],
[1, 1]]`

6406532326247. ✘ `[[-0.5, -2],
[-0.5, -2],
[1, 2],
[1, 2]]`

6406532326248. ✘ `[[0, 1],
[0, 1],
[0, 1],
[0, 1]]`

6406532326249. ✓ `[[-1, -1],
[-1, -1],
[1, 1],
[1, 1]]`

Question Number : 177 Question Id : 640653696372 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 metrics indicate higher their value, better the regression model's performance?

Options :

6406532326260. ✘ RMSE

6406532326261. ✓ R2

6406532326262. ✘ Mean absolute error

6406532326263. ✘ Mean squared error

Question Number : 178 Question Id : 640653696373 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 variations of gradient descent can be implemented with SGDClassifier?

Options :

6406532326264. ✓ stochastic gradient descent

6406532326265. ✘ mini gradient descent

6406532326266. ✘ full batch gradient descent

6406532326267. ✘ None of these

Question Number : 179 Question Id : 640653696377 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 :

6406532326281. ✘ Ridge regression is designed to handle class imbalance of the dataset.

6406532326282. ✘ The regularization term in Ridge regression is added to the sum of absolute residuals.

6406532326283. ✓ Increasing the value of the regularization parameter (alpha) in Ridge regression makes the model less sensitive to high-magnitude coefficients.

6406532326284. ✘ Ridge regression is equivalent to Lasso regression when the regularization parameter (alpha) is set to zero.

Question Number : 180 Question Id : 640653696383 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 method is used to estimate the probabilities in SGD-Classifier with suitable loss?

Options :

6406532326295. ✓ predict_proba

6406532326296. ✘ predict_prob

6406532326297. ✘ --predict_proba

6406532326298. ✘ --predict_prob

Question Number : 181 Question Id : 640653696387 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 :

6406532326312. ❌ Faster to compute the list of neighbors on scaled data.

6406532326313. ✓ k-nearest neighbors is based on computing some distances. Features need to be normalized to contribute approximately equally to the distance computation.

6406532326314. ❌ Scaling the data has a negligible effect on k-nearest neighbor's performance, but it enhances the interpretability of the model.

6406532326315. ❌ This is irrelevant. One could use k-nearest neighbors without normalizing the dataset and get a very similar cross-validation score.

Question Number : 182 Question Id : 640653696388 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 :

6406532326316. ❌ The maximum number of documents considered during vectorization.

6406532326317. ✓ The maximum number of features (words) to be extracted based on term frequency.

6406532326318. ❌ The maximum number of randomly selected features (words).

6406532326319. ❌ The maximum number of characters allowed in each document.

Question Number : 183 Question Id : 640653696397 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Which of these may NOT help in handling overfitting in decision trees?

Options :

6406532326346. ✘ Increasing the value of min_samples_split

6406532326347. ✘ Increasing the value of the pruning parameter

6406532326348. ✘ Increasing the value of min_samples_leaf

6406532326349. ✓ Increasing the depth of the tree

Question Number : 184 Question Id : 640653696399 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following is/are Clustering Method.

Options :

6406532326355. ✘ Connectivity-based Clustering

6406532326356. ✘ Centroids-based Clustering

6406532326357. ✘ Density-based Clustering

6406532326358. ✓ All of them

Question Number : 185 Question Id : 640653696400 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 working with a large image and want to group similarly coloured segments in the image together. No other information is provided with the image. Which of the following techniques will you use to accomplish the task?

Options :

6406532326359. ✘ Supervised learning

6406532326360. ✓ Unsupervised learning

6406532326361. ✘ Reinforcement learning

6406532326362. ✘ None of these

Question Number : 186 Question Id : 640653696404 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 X and y as the training dataset. What will be the output of the following code?

```
from sklearn.neural_network import MLPRegressor
rs = MLPRegressor(activation= 'logistic', random_state=1)
rs.fit(X, y)
print(rs.out_activation_)
```

Options :

6406532326376. ✘ logistic

6406532326377. ✘ relu

6406532326378. ✓ identity

6406532326379. ✘ tanh

Sub-Section Number : 3

Sub-Section Id : 640653102957

Question Shuffling Allowed : Yes

Is Section Default? :

null

Question Number : 187 Question Id : 640653696370 Question Type : MCQ Is Question

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 =[[4, 8, 3],[7, 4, 0],[6, np.nan, 5],[3, 2, 2],[np.nan, 6, 5]]
si = SimpleImputer(missing_values= np.nan,strategy="mean" )
si.fit(data)
print(si.statistics_)
```

Options :

6406532326250. ✘ [5, 5, 3.75]

6406532326251. ✓ [5, 5, 3]

6406532326252. ✘ [4, 4, 3]

6406532326253. ✘ [4, 4, 3.75]

Question Number : 188 Question Id : 640653696376 Question Type : MCQ Is Question

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:

```
pipeline = Pipeline([
    ('scaler', StandardScaler()),
    ('classifier', SVC())])

param_grid = {'scaler__with_mean': [True, False],
              'classifier__C': [0.1, 1, 10],
              'classifier__kernel': ['linear', 'rbf'],
              'classifier__gamma': [0.1, 1, 10]}

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 training feature matrix and label vector, respectively. Which of the following statements about the given code is correct?

Options :

The `grid_search.score(X_train, y_train)` will give the accuracy on the test dataset by the 4 folds in which model gives the best parameters.
6406532326277. ❌

The `scaler__with_mean` hyperparameter is being tuned for the Standard-Scaler.
6406532326278. ✓

The pipeline always uses a radial basis function ('rbf') as the kernel for the SVC classifier.
6406532326279. ❌

A total of 18 combinations of hyperparameters were tried during the Grid-SearchCV.
6406532326280. ❌

Question Number : 189 Question Id : 640653696384 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following code snippets represent correct methods to obtain cross validated performance measure using LeaveOneOut?

Options :

```
from sklearn.model_selection import cross_val_score
from sklearn.model_selection import LeaveOneOut
from sklearn.linear_model import linear_regression

lin_reg = linear_regression()
loocv = LeaveOneOut()
score = cross_val_score(lin_reg, X, y, cv=loocv)
```

6406532326299. ✓

```
from sklearn.linear_model import SGDRegressor
linear_regressor = SGDRegressor(loss='squared_error',
                                 early_stopping=True,
                                 max_iter=500,
                                 tol=1e-3,
                                 validation_fraction=0.2,
                                 n_iter_no_change=5)
```

6406532326300. ✗

```
from sklearn.linear_model import linear_regression
from sklearn.model_selection import cross_val_score
from sklearn.model_selection import ShuffleSplit
from sklearn.model_selection import LeaveOneOut
lin_reg = linear_regression()
shuffle_split = ShuffleSplit(n_splits=5, test_size=0.2,
                             random_state=42)
score = cross_val_score(lin_reg, X, y, cv=loocv)
```

6406532326301. ✗

```
from sklearn.model_selection import cross_validate
from sklearn.model_selection import ShuffleSplit
from sklearn.model_implementation import LeaveOneOut
cv = ShuffleSplit(n_splits=40, test_size=0.3, random_state=0)
cv_results = cross_validate(regressor, data,
                           target, cv=cv,
                           scoring="loocv_neg_mean_absolute_error")
```

6406532326302. ✗

6406532326303. ✗ None of these

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 we want to train a neural network using MLPRegressor on the training data (X, y) . Data has 5 features and single output for each sample. If the estimator has one hidden layer and a total of 71 parameters (weights including bias) are learnt, what will be the correct value for the missing attribute in the following code?

```
from sklearn.neural_network import MLPRegressor  
est = MLPRegressor(hidden_layer_sizes=....., random_state=1)  
est.fit(X, y)
```

Options :

6406532326363. ✘ (71)

6406532326364. ✘ (71, 1)

6406532326365. ✓ (10)

6406532326366. ✘ (10, 2)

Question Number : 191 Question Id : 640653696402 Question Type : MCQ Is Question

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 building an 'MLPClassifier' for a dataset with a large number of features. The goal is to predict whether a patient is going to have parkinson disease in next 12 months. You're trying to decide the appropriate number of neurons in the hidden layers of the neural network. Which statement about adjusting the **hidden_layer_sizes** parameter is correct?

Options :

6406532326367. ✘ Increasing the number of neurons in hidden layers will always lead to better model performance.

6406532326368. ✘ Decreasing the number of neurons in hidden layers reduces the model's

capacity to capture complex patterns.

6406532326369. ✖ The number of neurons in hidden layers does not significantly affect the model's performance.

6406532326370. ✓ Finding the optimal number of neurons is a trial-and-error process and may require experimentation.

Question Number : 192 Question Id : 640653696403 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following code snippet can correctly plot the elbow graph for feature matrix X (k value is taken from 1 to 10)?

Options :

```
from sklearn.cluster import KMeans
cs = []
for i in range(1, 11):
    kmeans = KMeans(n_clusters = i, random_state = 10)
    kmeans.fit(X)
    cs.insert(kmeans.inertia_)
plt.plot(range(1, 11), cs)
plt.title('The Elbow Method')
plt.xlabel('Number of clusters (k)')
plt.ylabel('CS')
plt.show()
```

6406532326371. ✖

```
from sklearn.cluster import KMeans
cs = []
for i in range(1, 10):
    kmeans = KMeans(n_clusters = i, random_state = 10)
    kmeans.fit(X)
    cs.insert(kmeans.inertia_)
plt.plot(range(1, 10), cs)
plt.title('The Elbow Method')
plt.xlabel('Number of clusters')
plt.ylabel('CS')
plt.show()
```

6406532326372. ✖

```
from sklearn.cluster import KMeans
cs = []
for i in range(1, 11):
    kmeans = KMeans(n_clusters = i, random_state = 10)
    kmeans.fit(X)
    cs.append(kmeans.inertia_)
plt.plot(range(1, 11), cs)
plt.title('The Elbow Method')
plt.xlabel('Number of clusters')
plt.ylabel('CS')
plt.show()
```

6406532326373. ✓

```
from sklearn.cluster import KMeans
cs = []
for i in range(1, 10):
    kmeans = KMeans(n_clusters = 1, random_state = 10)
    kmeans.fit(X)
    cs.append(kmeans.inertia_)
plt.plot(range(1, 11), cs)
plt.title('The Elbow Method')
plt.xlabel('Number of clusters')
plt.ylabel('CS')
plt.show()
```

6406532326374. ✘

6406532326375. ✘ None of these

Question Number : 193 Question Id : 640653696405 Question Type : MCQ Is Question

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 binary classification task using the 'MLPClassifier' to predict whether a customer will make a purchase based on their browsing behavior. You're concerned about underfitting due to the complexity of the data. You decide to increase the 'alpha' parameter to control underfitting. The following code snippet shows the application of 'MLPClassifier':

```
from sklearn.neural_network import MLPClassifier
import numpy as np

data = np.array([[10, 3], [20, 5], [5, 1], [15, 4], [8, 2]])

# Corresponding target labels (0: No Purchase, 1: Purchase)
target = np.array([0, 1, 0, 1, 0])

# Initialize MLPClassifier with alpha parameter
clf = MLPClassifier(alpha=0.001, random_state=42)
clf.fit(data, target)

# Predict class labels
predicted_labels = clf.predict(data)
```

By setting/changing the 'alpha' parameter to 0.01, how are you affecting the neural network model's behavior?

Options :

6406532326380. ❌ Increasing the model's complexity to fit the training data more closely.

6406532326381. ❌ Adding a stronger regularization term to the loss function, discouraging complex models.

6406532326382. ✓ Making the model more capable to learn more complex behaviour.

6406532326383. ❌ Adjusting the learning rate to control convergence speed.

Sub-Section Number : 4

Sub-Section Id : 640653102958

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 194 Question Id : 640653696395 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 code produces an output of 0.9125. How is the output expected to change if we increase the max_depth value?:

```
from sklearn.datasets import load_wine
from sklearn.tree import DecisionTreeClassifier
from sklearn.model_selection import train_test_split
X,y = load_wine(as_frame = True, return_X_y = True)

X_train,X_test,y_train,y_test = train_test_split(X,
                                                y,
                                                test_size = 0.10,
                                                random_state = 12)

clf = DecisionTreeClassifier(max_depth = 2,
                             min_samples_split = 2,
                             min_samples_leaf=3,
                             random_state = 81)

clf.fit(X_train, y_train)
print(clf.score(X_train, y_train))
```

Options :

6406532326338. ✓ Output score is likely to increase.

6406532326339. ✗ Output score is likely to decrease.

6406532326340. ✗ Output score may increase or decrease.

6406532326341. ✗ Output score will remain the same.

Question Number : 195 Question Id : 640653696396 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])
[0.4,0.6]
>>> eclf.named_estimators_['sgd'].predict_proba(X[0:1])
[0.25,0.75]
>>> 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 :

6406532326342. ✘ 0

6406532326343. ✓ 1

6406532326344. ✘ 2

6406532326345. ✘ 3

Question Number : 196 Question Id : 640653696398 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 :

6406532326350. ✘ Above code uses bootstrapping to generate samples for each base classifier.
6406532326351. ✘ model will be tested on out of the bags samples.
6406532326352. ✘ Due to weights='distance', each base KNN classifier will treat all neighbors equally in terms of voting power.
6406532326353. ✘ The ensemble will consist of 3 base KNN classifiers.
6406532326354. ✓ None of these

Sub-Section Number : 5

Sub-Section Id : 640653102959

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 197 Question Id : 640653696368 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a dataset representing various attributes of red wine, loaded into a Pandas DataFrame named data using the following code:

```
data_url = '''https://archive.ics.uci.edu/ml/machine-learning-databases/  
wine-quality/winequality-red.csv'''  
data = pd.read_csv(data_url, sep=";")
```

Suppose we are interested in extracting the value of the chlorides attribute for the third sample in the dataset (2nd by index). Which of the following expressions correctly achieves this? chlorides is at the 4th index of columns.

Options :

6406532326242. ✓ data.chlorides[2]

6406532326243. ✓ data['chlorides'][2]

6406532326244. ✗ data[2][4]

6406532326245. ✓ data.iloc[2, 4]

Question Number : 198 Question Id : 640653696374 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following Python code snippet that demonstrates the use of SGDClassifier from scikit-learn:

```
clf = SGDClassifier(loss="hinge",  
                     penalty="l2",  
                     max_iter=500,  
                     warm_start=True)  
clf.fit(X_train,y_train)
```

Choose the correct statements:

Options :

6406532326268. ✗ It applies lasso penalty.

6406532326269. ✓ The training may terminate after 499 iterations or lesser

6406532326270. ✘ the classifier represents a perceptron model

6406532326271. ✓ The classifier's model parameters will initialized with parameters learnt from previous call to fit() function, if the same object is trained/fitted multiple times on new data.

Question Number : 199 Question Id : 640653696375 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 observations warrant use of SGD model?

Options :

6406532326272. ✓ The data set size is 1000 GB.

6406532326273. ✘ The model has to be trained in non-iterative manner.

6406532326274. ✘ The model must be a decision tree.

6406532326275. ✓ The model must be a logistic regressor.

6406532326276. ✘ None of these

Question Number : 200 Question Id : 640653696390 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 using a KNeighborsClassifier in scikit-learn, consider the following scenarios. Select all correct statements:

Options :

6406532326321. ✓ Increasing the value of n_neighbors generally leads to underfitting.

6406532326322. ✘ Decreasing the value of n_neighbors generally leads to overfitting.

Choosing a small value for `n_neighbors` may result in a model that is sensitive to noisy data.
6406532326323. ✓

Increasing the value of `n_neighbors` always improves the model's ability to generalize to new, unseen data.
6406532326324. ✗

Question Number : 201 Question Id : 640653696392 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 :

6406532326329. ✓ 'poly',

6406532326330. ✗ 'lasso'

6406532326331. ✓ 'rbf',

6406532326332. ✗ 'scale'

Sub-Section Number : 6

Sub-Section Id : 640653102960

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 202 Question Id : 640653696371 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.
- arrow pointing towards right is code continuation to another line.

```
>>> from sklearn.feature_selection import SelectKBest, chi2
>>> from sklearn.datasets import load_wine
>>> X,y = load_wine(return_X_y=True,as_frame=True)
>>> print(X.shape)
(178, 13)

>>> print(X.columns)
['alcohol', 'malic_acid', 'ash', 'alcalinity_of_ash', 'magnesium',
 → 'total_phenols', 'flavanoids', 'nonflavanoid_phenols',
 → 'proanthocyanins', 'color_intensity', 'hue',
 → 'od280/od315_of_diluted_wines', 'proline']

>>> skb = SelectKBest(chi2, k=3)
>>> X_selected = skb.fit_transform(X, y)

>>> print(skb.scores_)
[5.44, 28.06, 0.74, 29.38, 45.02, 15.62, 63.33, 1.81, 9.36, 109.01, 5.18,
 → 23.38, 16540.06]

>>> print(skb.pvalues_)
[6.56e-02, 8.03e-07, 0.68, 4.16e-07, 1.66e-10, 4.05e-04, 1.76e-14, 0.40,
 → 9.24e-03, 2.12e-24, 0.074, 8.33e-06, 0]

>>> print(skb.pvalues_.argsort())
[12, 9, 6, 4, 3, 1, 11, 5, 8, 0, 10, 7, 2]
```

Which of the following feature(s) will be selected in X_selected from X ?

Options :

6406532326254. ✘ malic_acid

6406532326255. ✘ magnesium

6406532326256. ✓ flavanoids

6406532326257. ✘ proanthocyanins

6406532326258. ✓ color_intensity

6406532326259. ✓ proline

Question Number : 203 Question Id : 640653696378 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-4, 1e0),
    'penalty': ['l1', 'l2', 'elasticnet'],
    'epsilon': loguniform(1e-4, 1e-1),}

random_search = RandomizedSearchCV(sgd_regressor,
    param_distributions=param_dist, n_iter=10, 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 :

The `n_iter` parameter in `RandomizedSearchCV` controls the number of hyper-
6406532326285. ✓ parameter combinations to try.

6406532326286. ✘ The actual number of combinations tried in the fit operation is 20.

The hyperparameter search space for the `alpha` parameter follows a log-uniform
6406532326287. ✓ distribution.

6406532326288. ✓ The scoring metric used for the search is the negative mean squared error.

Question Number : 204 Question Id : 640653696385 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 following code:

```
import numpy as np
from sklearn.model_selection import KFold

X = np.array([47, 31, 18, 95, 85, 77])
kf = KFold(n_splits=3)
for train, test in kf.split(X):
    print(X[train])
```

Which of the following options can not be printed?

Options :

6406532326304. ✓ [47, 31, 18, 95, 77]

6406532326305. ✓ [47, 31, 18]

6406532326306. ✓ [31, 41, 18, 95, 85, 77]

6406532326307. ✓ [31, 41, 85, 31]

6406532326308. ✗ [18, 95, 85, 77]

6406532326309. ✗ [47, 31, 18, 85]

6406532326310. ✗ None of these

Question Number : 205 Question Id : 640653696391 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 using 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? Select all correct statements:

Options :

6406532326325. ❌ Smaller values of C result in a more complex decision boundary.

6406532326326. ✓ Larger values of C result in a more complex decision boundary.

6406532326327. ❌ The decision boundary becomes simpler with increasing values of C.

6406532326328. ✓ Very large values of C may lead to overfitting.

Sub-Section Number : 7

Sub-Section Id : 640653102961

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 206 Question Id : 640653696393 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 :

6406532326333. ✓ Number of samples at node N = 10. If it is split, it will result in 2 nodes in the left child and 8 nodes in the right child.

6406532326334. ✗ Number of samples at node N = 6. If it is split, it will result in 3 nodes in the left child and 3 nodes in the right child.

6406532326335. ✗ 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.

6406532326336. ✓ 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 : 8

Sub-Section Id : 640653102962

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 207 Question Id : 640653696382 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 LogisticRegression

>>> X, y = load_iris(return_X_y=True)
>>> clf = LogisticRegression(random_state=0).fit(X, y)

>>> print(y[70:80])
[1 0 1 0 1 1 1 0 0 1]

>>> print(clf.predict(X[70:80, :]))
[0 1 1 0 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 :

0.6

Question Number : 208 Question Id : 640653696386 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 = [1,1,1,1,1,1,1,1,2,2,2]

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 :

1

Sub-Section Number : 9

Sub-Section Id : 640653102963

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 209 Question Id : 640653696389 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, 0]  
  
knn = KNeighborsClassifier(n_neighbors=3)  
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 :

2

Sub-Section Number : 10

Sub-Section Id : 640653102964

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 210 **Question Id :** 640653696394 **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 DecisionTreeClassifier models will be trained internally?

```
from sklearn.ensemble import RandomForestClassifier  
from sklearn.model_selection import GridSearchCV  
param_grid = [{'max_depth':range(1, 20, 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 :

500

Sub-Section Number : 11

Sub-Section Id : 640653102965

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696379 **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

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	19	Black	74
1	19	Blue	75
2	19	Red	85
3	24	Black	70
4	24	Blue	70
5	24	Red	89
6	30	Black	78
7	30	Blue	76
8	30	Red	90

Target column: Accidents_per_1000_Driver

```
>>> import pandas as pd
>>> from sklearn.preprocessing import OneHotEncoder
>>> from sklearn.linear_model import LinearRegression

>>> data = pd.DataFrame([[19, 'Black', 74],
...                      [19, 'Blue', 75],
...                      [19, 'Red', 85],
...                      [24, 'Black', 70],
...                      [24, 'Blue', 70],
...                      [24, 'Red', 89],
...                      [30, 'Black', 78],
...                      [30, 'Blue', 76],
...                      [30, 'Red', 90]],
...                      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_)
[0.32, -4.55, -4.88, 9.44]

>>> print(lr.intercept_)
70.75
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 211 Question Id : 640653696380 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

How many Accidents per 1000 Driver happens for Age 25 and driving blue car ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

73 to 75

Question Number : 212 Question Id : 640653696381 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

To improve the given model which of the following preprocessing step you suggest?

Options :

6406532326290. ✓ StandardScaler()

6406532326291. ✗ OrdinalEncoder()

6406532326292. ✓ MinMaxScaler()

6406532326293. ✗ LabelEncoder()

BDM

Section Id : 64065349223

Section Number : 9

Section type : Online

Mandatory or Optional :	Mandatory
Number of Questions :	19
Number of Questions to be attempted :	19
Section Marks :	30
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 :	640653102966
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 213 Question Id : 640653696406 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "[DIPLOMA LEVEL : BUSINESS DATA MANAGEMENT \(COMPUTER BASED EXAM\)](#)"

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

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

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

Options :

6406532326384. ✓ YES

6406532326385. ✘ NO

Sub-Section Number :	2
Sub-Section Id :	640653102967
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 214 Question Id : 640653696407 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 primary function of the circular flow of income in a market economy?

Options :

6406532326386. ❌ Redistributing wealth equally among all citizens

6406532326387. ❌ Regulating the government's fiscal policy

6406532326388. ✓ Showing the flow of goods, services, and money between households and firms

6406532326389. ❌ Controlling inflation rates in the market

Question Number : 215 Question Id : 640653696408 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 model represents a system where both government and private firms operate together in economic activities?

Options :

6406532326390. ❌ Centralized economic model

6406532326391. ✓ Hybrid economic model

6406532326392.

* Market-based economic model

6406532326393. * Decentralized economic model

Question Number : 216 Question Id : 640653696410 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 function of the "PivotTable" feature in Excel?

Options :

6406532326398. * To perform complex calculations on selected data

6406532326399. ✓ To generate summary reports from large datasets

6406532326400. * To create advanced graphs and charts

6406532326401. * To split a worksheet into multiple panes for easier viewing

Question Number : 217 Question Id : 640653696411 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 accurately describes an advanced feature or limitation of VLOOKUP in Excel?

Options :

6406532326402. * VLOOKUP can handle multiple lookup values simultaneously within a single formula.

6406532326403. * VLOOKUP can perform approximate matches only when sorted in descending order.

6406532326404. ❌ VLOOKUP is restricted to search within a single worksheet and cannot reference data from other workbooks.

6406532326405. ✓ VLOOKUP requires the lookup column to be on the leftmost side of the lookup range for accurate results.

Question Number : 218 Question Id : 640653696412 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 best describes the Economic Census conducted by the government?

Options :

6406532326406. ❌ It is infrequent, covering every household in the country.

6406532326407. ❌ Conducted every five years to capture data from all households.

6406532326408. ❌ A sampling-based survey done every year to gather household information.

6406532326409. ✓ Conducted once every ten years, capturing data from every single household.

Question Number : 219 Question Id : 640653696413 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

When would you most likely use a bar graph in Excel?

Options :

6406532326410. ✓ To display the frequency distribution of categorical data

6406532326411. ❌ To represent changes over time

6406532326412. ❌ To illustrate the parts of a whole

6406532326413. ❌ To show relationships between variables

Question Number : 220 Question Id : 640653696414 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 primary objective of stock management in e-commerce chiefly focuses on:

Options :

6406532326414. ❌ Maximizing stockouts and overstock situations

6406532326415. ❌ Curbing customer satisfaction

6406532326416. ❌ Augmenting shipping costs

6406532326417. ✓ Mitigating stockouts and overstock predicaments

Question Number : 221 Question Id : 640653696415 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 context of HR channel effectiveness calculation, what key metric measures the cost incurred to attract and hire a single candidate through a specific recruitment channel?

Options :

6406532326418. ❌ Time-to-Fill (TTF) ratio

6406532326419. ❌ Candidate Attrition rate

6406532326420. ✓ Cost-per-Hire (CPH)

6406532326421. ❌ Employee Engagement Index (EEI)

Question Number : 222 Question Id : 640653696416 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 best defines credit risk analysis?

Options :

6406532326422. ❌ Evaluating the potential financial loss due to market fluctuations

6406532326423. ✓ Assessing the possibility of default by borrowers

6406532326424. ❌ Determining the profitability of an investment

6406532326425. ❌ Analyzing currency exchange rates for international transactions

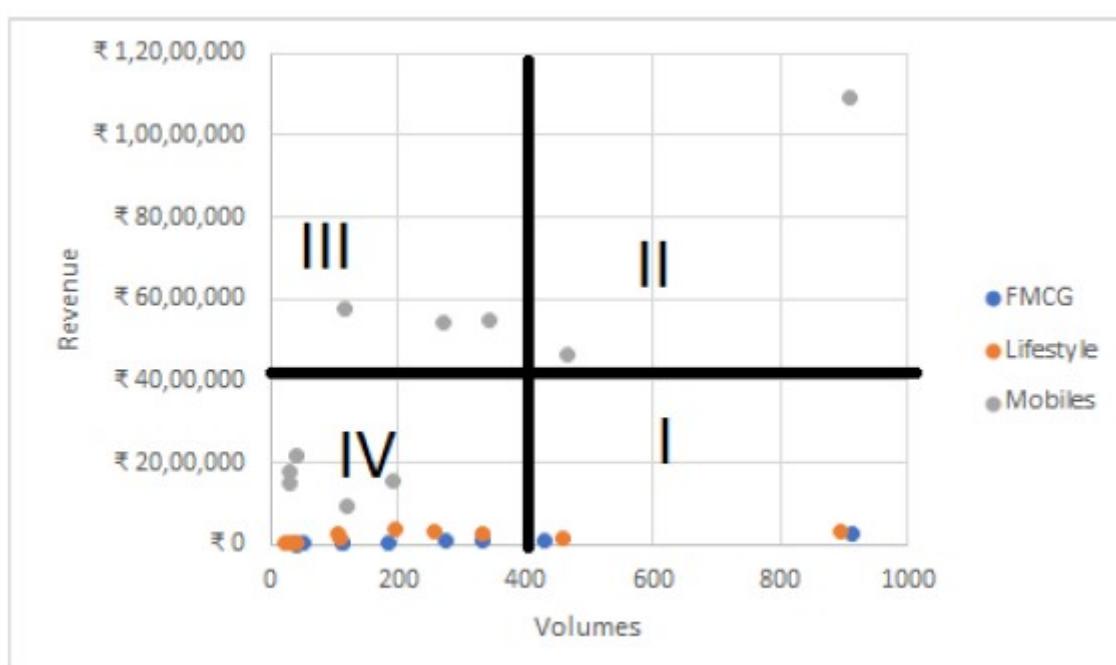
Question Number : 223 Question Id : 640653696420 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

From the Figure, which quadrant products will be placed in the secure area?



Options :

6406532326435. ✘ I & III

6406532326436. ✓ III & II

6406532326437. ✘ III & IV

6406532326438. ✘ Only II

Sub-Section Number : 3

Sub-Section Id : 640653102968

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 224 Question Id : 640653696422 Question Type : MCQ Is Question

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

Correct Marks : 2

Question Label : Multiple Choice Question

Given the weights for skills, experience, and availability as 40%, 30%, and 30% respectively, and the provided candidate data, what is the ranking order of candidates from the highest to lowest based on their total normalized scores?

Availability is lower the better and Skills and Years are greater the better

Candidate	Skills (Out of 10)	Years of Experience	Availability (in months)
Candidate A	8	5	2
Candidate B	7	4	3
Candidate C	9	6	1
Candidate D	6	3	4
Candidate E	8	4	2

Options :

6406532326440. ✓ Candidate C > Candidate A > Candidate E > Candidate B > Candidate D

6406532326441. ✘ Candidate C > Candidate A > Candidate B > Candidate E > Candidate D

6406532326442. ✘ Candidate C > Candidate B > Candidate D > Candidate E > Candidate A

6406532326443. ✘ Candidate C > Candidate E > Candidate B > Candidate A > Candidate D

Sub-Section Number : 4

Sub-Section Id : 640653102969

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 225 Question Id : 640653696423 Question Type : MCQ Is Question

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 provided dataset for credit risk analysis, which is the correct sequence of customers when we consider risk levels being low to high?

Customer ID	Income (USD)	Loan Amount (USD)	Payment History	Credit Score
1	60000	5000	Good	720
2	45000	3000	Fair	650
3	75000	8000	Poor	680
4	52000	6000	Good	700
5	68000	7500	Poor	670

Options :

6406532326444. ✘ 2,5,3,4,1

6406532326445. ✘ 1,4,2,3,5

6406532326446. ✘ 3,5,1,2,4

6406532326447. ✓ 1,4,3,5,2

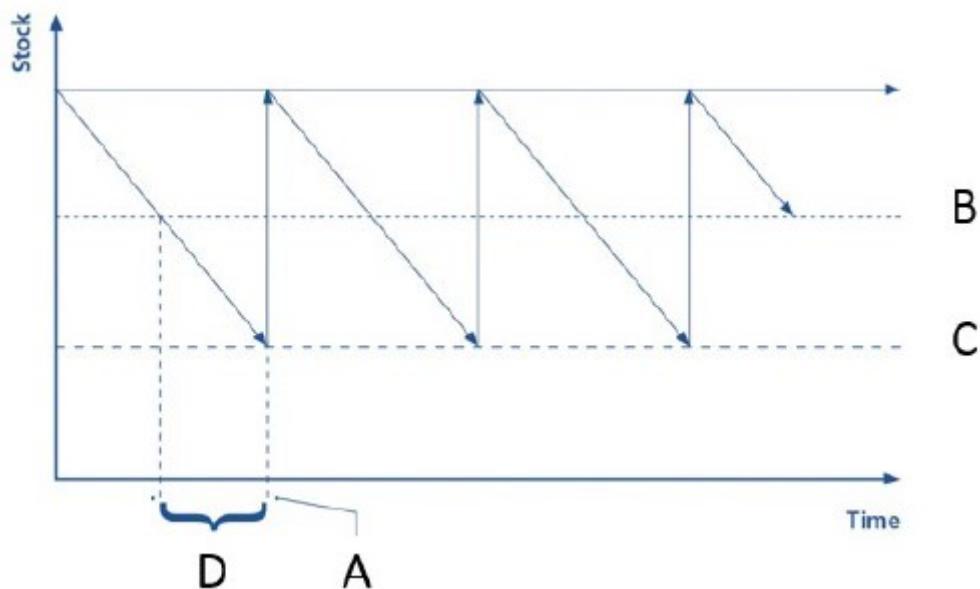
Question Number : 226 Question Id : 640653696424 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

Identify the labels for the following Reorder Point Graph correctly



Options :

6406532326448. ✘ A - Safety Stock; B - Lead Time, C - Reorder Point, D - Physical Receipt of Order

6406532326449. ✘ A - Lead Time; B - Reorder Point; C - Physical Receipt of Order ; D - Safety Stock

6406532326450. ✘ A - Lead Time; B - Safety Stock, C - Reorder Point, D - Physical Receipt of Order

6406532326451. ✓ A – Physical Receipt of Order; B – Reorder Point; C – Safety Stock ; D – Lead Time

Sub-Section Number : 5

Sub-Section Id : 640653102970

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 227 Question Id : 640653696409 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

What can be inferred about the relationship between income and the demand for goods with fixed prices? [Select all that apply]

Options :

6406532326394. ✓ Demand might increase for some goods

6406532326395. ✓ Demand might decrease for some goods

6406532326396. ✗ Demand will increase for all goods

6406532326397. ✗ Demand will decrease for all goods

Sub-Section Number : 6

Sub-Section Id : 640653102971

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 228 Question Id : 640653696430 Question Type : MSQ Is Question

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

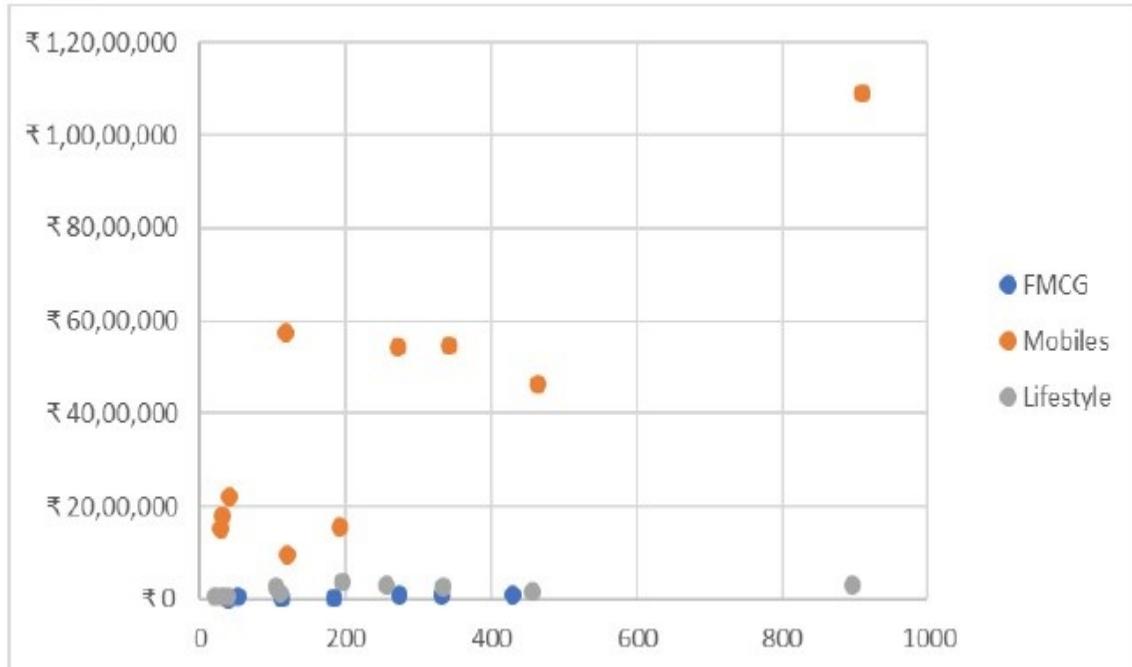
Time : 0

Correct Marks : 2 Max. Selectable Options : 0

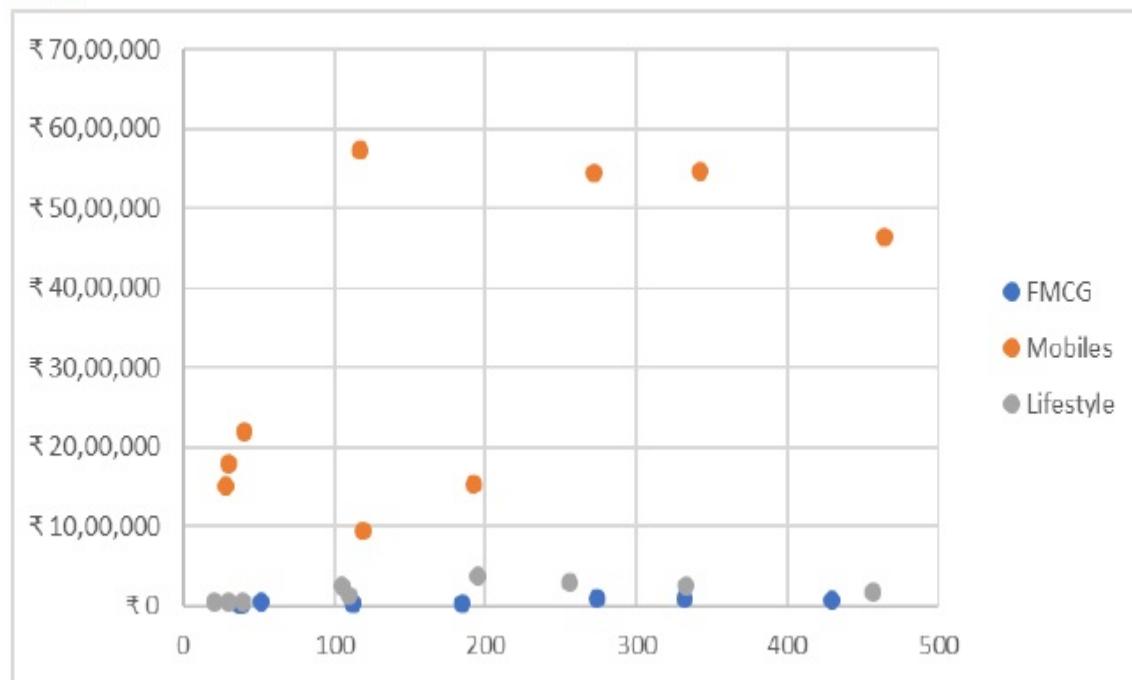
Question Label : Multiple Select Question

What brings about the change in the following scatter plots?

Before:



After:



Options :

6406532326468. ✖ Formatting Legend

6406532326469. ✖ Increasing Data Points

6406532326470. ✓ Reducing the axis range

6406532326471. ✓ Eliminating the Outliers

Sub-Section Number :

7

Sub-Section Id :

640653102972

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 229 Question Id : 640653696421 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

Given the following data points, calculate the OEE and write in the text box

Hint :

OEE = Availability x Performance x Quality

- Planned Production Hours (PPH): 600
- Lost Time (LOT): 50
- Designed Assembly Speed from Equipment (DA) per Hour: 250
- Actual Assembly Speed from Equipment (AA) per Hour: 220
- Total Units Assembled (TU): 12000
- Defective Units (DU): 600

Write the number portion of the percentage.

Eg. if your calculations result in 0.2856 as the answer, please enter **28.56** and not 28.56%, or 0.2586

Answer Space: _____ %

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

75.80 to 77.00

Sub-Section Number : 8

Sub-Section Id : 640653102973

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696417 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 : (230 to 231)

Question Label : Comprehension

Based on the following data, answer the given subquestions.

Product	Price	Volume	Sales
A	₹ 200.00	120	₹ 24,000
B	₹ 40.00	275	₹ 11,000
C	₹ 80.00	190	₹ 15,200
D	₹ 120.00	240	₹ 28,800
E	₹ 175.00	220	₹ 38,500
F	₹ 90.00	140	₹ 12,600
G	₹ 180.00	290	₹ 52,200
H	₹ 175.00	200	₹ 35,000
I	₹ 150.00	230	₹ 34,500
J	₹ 120.00	120	₹ 14,400
			₹ 2,66,200

Sub questions

Question Number : 230 Question Id : 640653696418 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 terms of revenue generated, does this data follow the Pareto Principle?

Options :

6406532326426. ✘ No, because the revenue generated by the first 2 products does not contribute to 80% of the total revenue

6406532326427. ✓ No, because the top 20% percent products don't generate most of the revenue

for the company

6406532326428. ✘ Yes,because the revenue generated by the first 2 products - A&B contribute to 80% of the total revenue

6406532326429. ✘ Yes, because one single product in itself provides more than 80% revenue

6406532326430. ✘ No, because just one single product in itself provides more than 80% revenue

Question Number : 231 Question Id : 640653696419 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 company has to define its star products and concentrate on improving sales and prices of a pair of products based on their past performance - which ones should they be?

Options :

6406532326431. ✘ Products F&B

6406532326432. ✘ Products D&J

6406532326433. ✘ Products C&J

6406532326434. ✓ Products E&G

Sub-Section Number : 9

Sub-Section Id : 640653102974

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696425 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 : (232 to 235)

Question Label : Comprehension

Consider an e-commerce platform that recently conducted an A/B test to evaluate the effectiveness of a new website layout (A - Control, B - Variation). The dataset contains the following columns:

User_ID: Unique identifier for each user.

Group: A or B denoting the user's assigned group (Control or Variation).

Time_Spent: Time spent on the website in minutes.

Conversion: Binary variable (0 or 1) indicating whether the user made a purchase (1 for yes, 0 for no).

Device_Type: Categorical variable denoting the device used (Desktop, Mobile, Tablet).

Age_Group: Categorical variable indicating the user's age range (18-25, 26-35, 36-45, 46+).

User_ID	Group	Time_Spent	Conversion	Device_Type	Age_Group
1	A	10	1	Desktop	26-35
2	A	8	0	Mobile	18-25
3	B	15	1	Desktop	36-45
4	A	12	0	Tablet	46+
5	B	18	1	Mobile	26-35
6	B	7	0	Desktop	18-25
7	A	9	1	Mobile	36-45
8	B	20	0	Tablet	26-35
9	A	11	1	Desktop	46+
10	B	13	0	Mobile	18-25

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 232 Question Id : 640653696426 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 A/B test showed no statistically significant difference in conversion rates between Groups A

and B. What could be a possible reason for this outcome?

Options :

6406532326452. ✘ Inadequate sample size for Group A

6406532326453. ✘ Inconsistent distribution of device types across the groups

6406532326454. ✘ High variation in time spent on the website within each group

6406532326455. ✓ Similar conversion rates across different age groups in both groups

Question Number : 233 Question Id : 640653696427 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 age group(s) displayed a statistically significant difference in conversion rates between Groups A and B?

Options :

6406532326456. ✘ 18-25 years old in Group A

6406532326457. ✘ 26-35 years old in Group A

6406532326458. ✓ 36-45 years old in Group B

6406532326459. ✘ 46+ years old in both groups

Question Number : 234 Question Id : 640653696428 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 average time spent on the website for Group B is higher than Group A, what inference can be made regarding the new website layout?

Options :

6406532326460. ✖ The new layout is more effective for younger users

6406532326461. ✖ The new layout is likely causing user confusion

6406532326462. ✖ The new layout is less engaging for mobile users

6406532326463. ✓ The new layout might be driving more engagement (but not necessarily conversions)

Question Number : 235 Question Id : 640653696429 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 can be inferred from the conversion rates of the 26-35 age group in Groups A and B?

Options :

6406532326464. ✖ Group A has a higher conversion rate due to the new layout

6406532326465. ✖ Group B has a higher conversion rate due to the new layout

6406532326466. ✓ The new layout doesn't significantly impact this age group's conversion

6406532326467. ✖ There's not enough data to draw conclusions for this age group

Business Analytics

Section Id : 64065349224

Section Number : 10

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 15

Number of Questions to be attempted : 15

Section Marks : 45

Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653102975
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 236 Question Id : 640653696431 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

THIS IS QUESTION PAPER FOR THE SUBJECT "[DIPLOMA LEVEL : BUSINESS ANALYTICS \(COMPUTER BASED EXAM\)](#)"

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

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

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

Options :

6406532326472. ✓ YES

6406532326473. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653102976
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 237 Question Id : 640653696452 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1

Question Label : Multiple Choice Question

For the summary statistics provided in Table-2, which of the following is true?

Parameter	Value
25 th Quantile	3
50 th Quantile	6
75 th Quantile	8
First Moment	12
Second Moment	4
Third Moment	2

Table-2

Options :

6406532326497. ✓ The distribution is right skewed

6406532326498. ✗ The distribution is symmetric

6406532326499. ✗ The distribution is left skewed

6406532326500. ✗ Cannot say without the skewness value

Sub-Section Number : 3

Sub-Section Id : 640653102977

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 238 Question Id : 640653696457 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

There are 4 business units. There are two outputs and one input under consideration. You are solving the optimization problem for business unit 3 and find that the efficiency is 0.8. You find that the dual variables corresponding to the constraints of business units 3 and 5 are non-zero and the dual variables corresponding to the constraints of other units are zero. The dual variables corresponding to the constraints of business units 3 and 5 are 0.35 and 0.45 respectively. You are given the following table where sales and number of leads are the two outputs. What is the Market Share in HCU 4?

Hint: Round off answers to 4 decimal places in every step of your calculation

	Total Profit (1000 \$)	Market Share (%)
DMU 3	15,000	55%
DMU 5	18,000	60%

Options :

6406532326518. ✘ 67.8125

6406532326519. ✘ 47.8125

6406532326520. ✘ 65.8128

6406532326521. ✓ 57.8125

Question Number : 239 Question Id : 640653696465 Question Type : MCQ Is Question

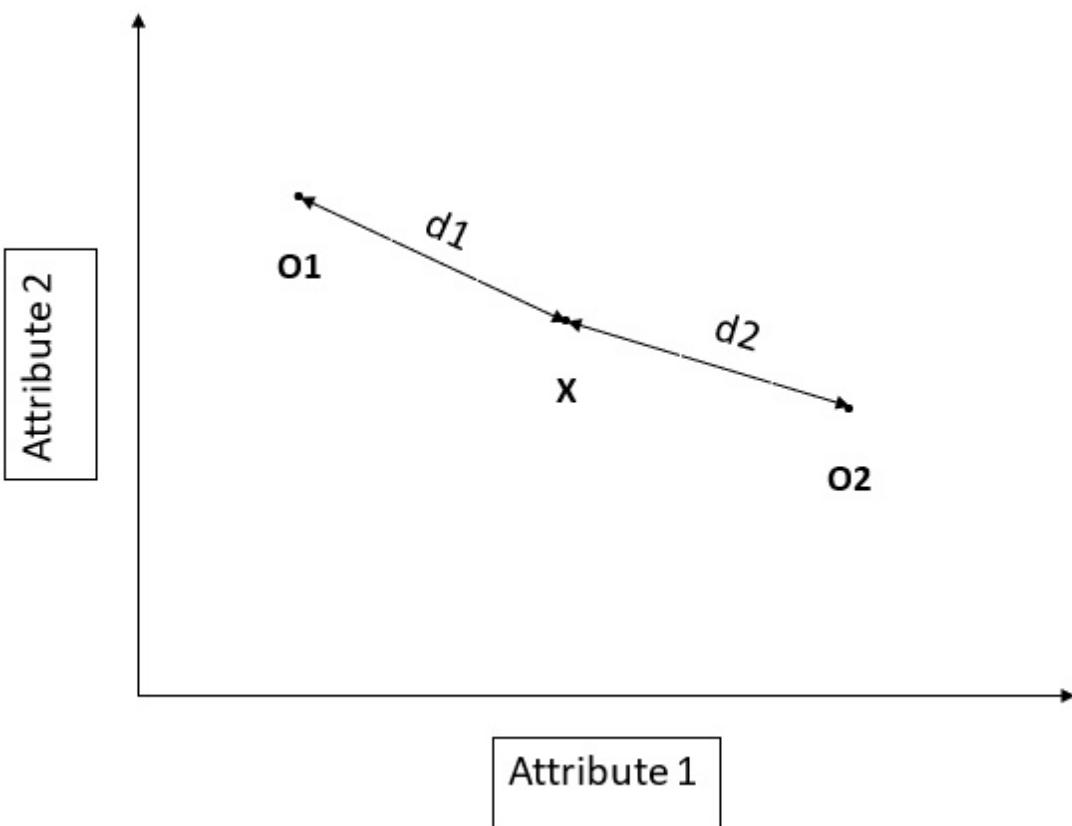
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction

Time : 0

Correct Marks : 2

Question Label : Multiple Choice Question

In the below diagram, the customer wants to decide between the products O1 & O2, and x denotes the coordinates of the ideal product. Which of the following are true?



Options :

6406532326531. ❌ Customers will prefer O2 when $d_1 < d_2$

6406532326532. ❌ Both Customers will prefer O2 when $d_1 < d_2$ and Customers will prefer O1 when $d_2 > d_1$

6406532326533. ✓ Customers will prefer O1 when $d_2 > d_1$

6406532326534. ❌ None of these

Sub-Section Number : 4

Sub-Section Id : 640653102978

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 240 Question Id : 640653696454 Question Type : MCQ Is Question

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

Correct Marks : 1.5

Question Label : Multiple Choice Question

Data Envelopment Analysis (DEA) is a method for:

Options :

6406532326506. ✘ Measuring a firm's quality performance by comparing it with other companies that are recognized as "best in class."

6406532326507. ✘ Determining the feasibility of technological innovations in service operations.

6406532326508. ✓ Comparing the efficiency of multiple service units that provide similar services.

6406532326509. ✘ Analyzing the gap between the service customer's expectations and perceptions.

Question Number : 241 Question Id : 640653696455 Question Type : MCQ Is Question

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

Correct Marks : 1.5

Question Label : Multiple Choice Question

Let Y_{jk} be the weight of the output O_{jk} and X_{jk} be the weight of the input I_{jk} . Which of the following is the correct objective function of the DEA if we solve it as LP?

Options :

6406532326510. ✘ Max $Y_{jk} * I_{jk}$

6406532326511. ✓ Max $Y_{jk} * O_{jk}$

6406532326512. ✘ Max $(1/Y_{jk}) * I_{jk}$

6406532326513. ✘ Max $- (Y_{jk} * I_{jk})$

Question Number : 242 Question Id : 640653696464 Question Type : MCQ Is Question

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

Correct Marks : 1.5

Question Label : Multiple Choice Question

If the attribute values in the conjoint analysis is a continuous variable and the data is collected in a pairwise order, then what approach can be used:

Options :

6406532326527. ❌ Regression or Statistical approach

6406532326528. ✓ Optimization approach

6406532326529. ❌ Both Regression or Statistical approach and Optimization approach

6406532326530. ❌ None of these

Question Number : 243 Question Id : 640653696466 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 1.5

Question Label : Multiple Choice Question

The part worth can be defined as:

Options :

6406532326535. ❌ Level utilities

6406532326536. ❌ The utility for that level of attribute

6406532326537. ❌ Utility for separate parts of the products

6406532326538. ❌ Both Level utilities and The utility for that level of attribute

6406532326539. ✓ All of these

Sub-Section Number : 5

Sub-Section Id : 640653102979

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 244 Question Id : 640653696453 Question Type : MSQ Is Question

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

Correct Marks : 1.5 Max. Selectable Options : 0

Question Label : Multiple Select Question

What is productive efficiency?

Options :

6406532326501. ❌ Consists of all combinations of outputs such that the production of one product cannot be increased without sacrificing the output of the other (without any change in technology)

6406532326502. ✓ It is an aspect of economic efficiency focussing on maximizing the output under given constraints.

6406532326503. ✓ Productive efficiency does not worry about optimal allocation, or choice of products

6406532326504. ❌ Both Consists of all combinations of outputs such that the production of one product cannot be increased without sacrificing the output of the other (without any change in technology) and It is an aspect of economic efficiency focussing on maximizing the output under given constraints.

6406532326505. ❌ Both It is an aspect of economic efficiency focussing on maximizing the output under given constraints and Productive efficiency does not worry about optimal allocation, or choice of products

Question Number : 245 Question Id : 640653696456 Question Type : MSQ Is Question

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

Correct Marks : 1.5 Max. Selectable Options : 0

Question Label : Multiple Select Question

There are 7 business units and you are using the DEA to compare them. You solve the LP for business unit 5. You find from the constraint expression that business unit 4 has obtained an efficiency of 0.9 and business unit 2 has obtained an efficiency of 0.6 with the optimal weights of business unit 5. Which of the following statements is correct?

Options :

6406532326514. ❌ Business unit 5 may be inefficient

6406532326515. ✓ Business unit 4 will be inefficient

6406532326516. ❌ Business unit 5 may be efficient

6406532326517. ✓ Business unit 2 will be inefficient

Sub-Section Number : 6

Sub-Section Id : 640653102980

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696432 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 : (246 to 252)

Question Label : Comprehension

An ice cream seller has collected data on the number of ice-creams sold by him in two streets "A" and "B" over the past 15 days. This data is provided in Table-1. The number of ice creams sold in street "A" is expected to follow a uniform distribution. Based on the sample, you decide to perform a statistical test with the following bins [75 to 100), [100 to 125), [125 to 150), [150 to 175].

Given this information, answer the given sub-questions.

	Number of Ice-Creams Sold in Street-A	Number of Ice-Creams Sold in Street-B
Day-1	120	85
Day-2	130	75
Day-3	75	120
Day-4	160	80
Day-5	130	160
Day-6	120	75
Day-7	120	78
Day-8	75	130
Day-9	75	143
Day-10	75	154
Day-11	75	122
Day-12	160	90
Day-13	160	85
Day-14	130	79
Day-15	160	97

Table-1

Sub questions

Question Number : 246 Question Id : 640653696433 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the expected number of ice-creams that will be sold in any given bin? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3.5

Question Number : 247 Question Id : 640653696434 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the "Degrees of Freedom" for the statistical test that will be performed? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 248 Question Id : 640653696435 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

What is the value of the computed test statistic? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

2.3 to 2.7

Question Number : 249 Question Id : 640653696436 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 tabulated value of the test statistic is 8.92, then which of the following statements are correct?

Options :

6406532326477. ❌ Reject the Null and conclude that the number ice-cream sold in Street-A follows a uniform distribution

6406532326478. ✓ Do Not Reject the Null and conclude that the number ice-cream sold in Street-A follows a uniform distribution

6406532326479. ❌ Reject the Null and conclude that the number ice-cream sold in Street-A does not follows a uniform distribution

6406532326480. ❌ Do Not Reject the Null and conclude that the number ice-cream sold in Street-A does not follows a uniform distribution

Question Number : 250 Question Id : 640653696437 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

How many degrees of freedom is present for the test used to determine if the sales in "Street-A" and "Street-B" are not-dependent on each other across days? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 251 Question Id : 640653696438 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

If the aim is to find if the sales in "Street-A" and "Street-B" are independent on each other across days, then what is the expected sales on "Day-10" for "Street-A"? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

121 to 122

Question Number : 252 Question Id : 640653696439 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

If the aim is to find if the sales in "Street-A" and "Street-B" are independent on each other across days, then what is the expected sales on "Day-4" for "Street-B"? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

112 to 114

Question Id : 640653696444 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 : (253 to 259)

Question Label : Comprehension

The three figures below (Picture-1, Picture-2, Picture-3) provide the partial regression output from excel for three models (Model-1, Model-2 and Model-3) which were built on the same data (*Hint: same number of rows, different number of columns*).

Given this information, answer the given sub-questions.

ANOVA					
	df	SS	MS	F	Significance F
Regression	3	A1	561.9428	24.96198	0.000867642
Residual	6	135.0717	22.51195		
Total	9	1820.9			

Picture-1: Partial Results from Excel for Model-1

ANOVA					
	df	SS	MS	F	Significance F
Regression	2	1685.625		43.61254	0.000111753
Residual		135.275			
Total	9				

Picture-2: Partial Results from Excel for Model-2

SUMMARY OUTPUT					
Regression Statistics					
Multiple R	0.846545				
R Square	0.716638				
Adjusted R Square	0.681218				
Standard Error	8.030988				
Observations	10				
ANOVA					
	df	SS	MS	F	Significance F
Regression	1	A2		20.23242	0.00200727
Residual	8	A3			
Total	9	A4			

Picture-3: Partial Results from Excel for Model-3

Sub questions

Question Number : 253 Question Id : 640653696445 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the value of "A1"? (Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23")

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

1683 to 1688

Question Number : 254 **Question Id :** 640653696446 **Question Type :** SA **Calculator :** None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the value of "A2"? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

1302 to 1306

Question Number : 255 **Question Id :** 640653696447 **Question Type :** SA **Calculator :** None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the value of "A2"? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

513 to 517

Question Number : 256 **Question Id :** 640653696448 **Question Type :** SA **Calculator :** None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the value of "A4"? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

1820 to 1821

Question Number : 257 **Question Id :** 640653696449 **Question Type :** SA **Calculator :** None

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

Correct Marks : 1.5

Question Label : Short Answer Question

What is the value of **R-Squared** for Model-1? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23". **DO NOT CONVERT THE ANSWER TO PERCENTAGE***)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.86 to 0.90

Question Number : 258 **Question Id :** 640653696450 **Question Type :** SA **Calculator :** None

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

Correct Marks : 1.5

Question Label : Short Answer Question

What is the value of **Adjusted R-Square** for Model-2? (*Note: Enter the answer in rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23". **DO NOT CONVERT THE ANSWER TO PERCENTAGE***)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.66 to 0.70

Question Number : 259 **Question Id :** 640653696451 **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 model is the best model for the provided data?

Options :

6406532326493. ❌ Model-1

6406532326494. ✓ Model-2

6406532326495. ❌ Model-3

6406532326496. * None of the models

Sub-Section Number :	7
Sub-Section Id :	640653102981
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653696440 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 : (260 to 262)

Question Label : Comprehension

A juice shop has been operating in IITM. The price of its most fast-moving juice "The Mango Delight" varies from month to month based on price of mangoes. The price for the juice and the demand for the juice in the past is given in Table-2.

Given this information, answer the given sub-questions.

Month	Price of the Juice	Demand for the Juice
Jan	Rs. 90/ glass	700 per day
Feb	Rs. 120/ glass	100 per day
March	Rs. 80/ glass	300 per day
April	Rs. 100/ glass	500 per day
May	Rs. 70/ glass	1100 per day

Table-2

Sub questions

Question Number : 260 Question Id : 640653696441 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 1

Question Label : Short Answer Question

If the demand response curve for "The Mango Delight" is modelled assuming it as "Linear Demand Response" then what is the maximum possible demand? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2500

Question Number : 261 Question Id : 640653696442 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

If the demand response curve for "The Mango Delight" is modelled assuming it as "Linear Demand Response" then what is the satiating price? (*Note: Enter the answer rounded to two decimal places. For example, if the answer is "1.234", then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

125

Question Number : 262 Question Id : 640653696443 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the difference in elasticity (at a price of Rs. 130/ glass) when modelling the curve as a "Linear Demand Response" as compared to a "Constant Elasticity Curve" (*Note: Enter the answer as an absolute number (only magnitude) rounded to two decimal places. For example if the answer is "-1.2345" then enter it as "1.23"*)

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

7.00 to 19.00

Sub-Section Number : 8

Sub-Section Id : 640653102982

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696458 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 : (263 to 267)

Question Label : Comprehension

A banking company wants to understand its model performance of a classification problem where the customers who purchased the insurance are labeled as 1 and those not purchased are labeled as 0. Using the table answer the given subquestions.

S.No	y_pred	y_actual
1	Purchased	Not Purchased
2	Not Purchased	Not Purchased
3	Not Purchased	Purchased
4	Purchased	Purchased
5	Purchased	Purchased
6	Purchased	Not Purchased
7	Purchased	Purchased
8	Not Purchased	Purchased
9	Purchased	Not Purchased
10	Not Purchased	Not Purchased
11	Not Purchased	Not Purchased
12	Purchased	Purchased

Sub questions

Question Number : 263 Question Id : 640653696459 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the accuracy of the model?(in %)

Hint: Round your answer to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

58.1 to 58.6

Question Number : 264 Question Id : 640653696460 Question Type : SA Calculator : None

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

Correct Marks : 1.5

Question Label : Short Answer Question

What is the precision of class 1?(in %)

Hint: Round your answer to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

66.5 to 66.8

Question Number : 265 Question Id : 640653696461 Question Type : SA Calculator : None

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

Correct Marks : 1.5

Question Label : Short Answer Question

What is the recall of class 1?(in %)

Hint: Round your answer to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

57.0 to 57.4

Question Number : 266 Question Id : 640653696462 Question Type : SA Calculator : None

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

Correct Marks : 1.5

Question Label : Short Answer Question

What is the precision of class 0?(in %)

Hint: Round your answer to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

49.9 to 50.1

Question Number : 267 Question Id : 640653696463 Question Type : SA Calculator : None

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

Correct Marks : 1.5

Question Label : Short Answer Question

What is the recall of class 0?(in %)

Hint: Round your answer to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

59.9 to 60.1

Sub-Section Number : 9

Sub-Section Id : 640653102983

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696467 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 270)

Question Label : Comprehension

The demand for candy at different prices in the supermarket is specified in the table below. Given this data, answer the given sub-questions (Note: For all the sub-questions, round your answer to two decimal places. Eg: If your answer is 10.256, then round it to 10.26).

Price	Candy Demand
40	500
60	450
80	400
100	350
120	300
140	250

Sub questions

Question Number : 268 Question Id : 640653696468 Question Type : SA Calculator : None

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

Correct Marks : 1.5

Question Label : Short Answer Question

If a linear demand-response curve is fit for the data, what is the satiating price?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

240

Question Number : 269 Question Id : 640653696469 Question Type : SA Calculator : None

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

Correct Marks : 1.5

Question Label : Short Answer Question

If a linear demand-response curve is fit for the data, what is the market size?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

600

Question Number : 270 Question Id : 640653696470 Question Type : SA Calculator : None

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

Correct Marks : 2

Question Label : Short Answer Question

What is the elasticity of the linear demand-response curve, when the price is Rs. 140?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1.4

System Commands

Section Id : 64065349225

Section Number : 11

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 Yes

Clear Response :

Maximum Instruction Time : 0

Sub-Section Number : 1

Sub-Section Id : 640653102984

Question Shuffling Allowed : No

Is Section Default? : null

Question Number : 271 Question Id : 640653696471 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 :

6406532326543. ✓ YES

6406532326544. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653102985

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 272 Question Id : 640653696472 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

NAME

cut - remove sections from each line of files

SYNOPSIS

cut OPTION... [FILE]...

DESCRIPTION

Print selected parts of lines from each FILE to standard output.

With no FILE, or when FILE is -, read standard input.

Mandatory arguments to long options are mandatory for short options too.

-b, --bytes=LIST

select only these bytes

-c, --characters=LIST

select only these characters

-d, --delimiter=DELIM

use DELIM instead of TAB for field delimiter

-f, --fields=LIST

select only these fields; also print any line that contains no delimiter character, unless the -s option is specified

-n (ignored)

--complement

complement the set of selected bytes, characters or fields

-s, --only-delimited

```
do not print lines not containing delimiters

--output-delimiter=STRING
    use STRING as the output delimiter the default is to use
    the input delimiter
```

```
-z, --zero-terminated
    line delimiter is NUL, not newline
```

```
--help display this help and exit
```

```
--version
    output version information and exit
```

Use one, and only one of -b, -c or -f. Each LIST is made up of one range, or many ranges separated by commas. Selected input is written in the same order that it is read, and is written exactly once. Each range is one of:

N N'th byte, character or field, counted from 1

N- from N'th byte, character or field, to end of line

N-M from N'th to M'th (included) byte, character or field

-M from first to M'th (included) byte, character or field

AUTHOR

Written by David M. Ihnat, David MacKenzie, and Jim Meyering.

...

From the context provided choose the wrong statement.

Options :

The command `cut -d: -f1 /etc/passwd` prints the first field of each line in the file `/etc/passwd` using `:` as the delimiter.

6406532326545. *

The command `echo abcd | cut -c2-3` prints bc .

6406532326546. *

6406532326547. ✓ The command `echo abcd | cut -d "ab" -f2` prints `cd`.

6406532326548. ✗ The command `echo abcd | cut --complement -c1` prints `bcd`.

Question Number : 273 Question Id : 640653696476 Question Type : MCQ Is Question

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

Correct Marks : 6

Question Label : Multiple Choice Question

Which of the following commands will change the word Alice with Rabbit for the range of lines starting from 5 to 25.

Options :

6406532326558. ✗ `sed '5~25 s/Alice/Rabbit/' file.txt`

6406532326559. ✗ `sed '5-25 s/Alice/Rabbit/' file.txt`

6406532326560. ✓ `sed '5,25 s/Alice/Rabbit/' file.txt`

6406532326561. ✗ `sed '5 s/Alice/Rabbit/; 25 s/Alice/Rabbit/' file.txt`

Question Number : 274 Question Id : 640653696484 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 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-n 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.  
 Donec et mollis dolor.
```

6406532326587. ✓

```
 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.
```

6406532326588. ✘

```
 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.  
 Donec et mollis dolor.
```

6406532326589. ✘

`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.
 Donec et mollis dolor.`

6406532326590. ❌

Question Number : 275 Question Id : 640653696486 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 scripts are using various means to read a file into a script. 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 :

6406532326595. ❖ Case 1 uses the input redirection method to read the file line-by-line.

6406532326596. ❖ Case 2 uses the pipe redirection to feed the cat output to the while loop.

6406532326597. ❖ The pipe redirection used in Case 2 is inefficient compared to input redirection.

6406532326598. ❖ Case 3 uses command substitution with the for loop to read the file.

6406532326599. ❖ Case 4 is input redirection, which reads each entry in the data.txt file (assuming the file has three columns) into individual variables.

6406532326600. ❗ Case 5 reads the entire line of the data file and assigns it to the line variable.

6406532326601. ✅ None of these options are correct.

Sub-Section Number : 3

Sub-Section Id : 640653102986

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 276 Question Id : 640653696474 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 regular expression (ERE) that matches the date where it is on or after 2021-01-01 and the amount is greater 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 in the range of 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

```
CompanyB,2021-04-04,14304.44
CompanyA,2021-11-01,21679.58
CompanyA,2022-09-06,16277.49
CompanyA,2021-12-14,29527.37
```

Options :

```
.*,202[12]-[01][0-9]-[0-9]{2},1[0-9]{4}\.[0-9]{2}
```

6406532326550. ❌

```
.*,202[1-3]-[01][0-9]-[0-9]{2},1[0-9]{4}\.[0-9]{2}
```

6406532326551. ❌

6406532326552. ❌

`.*,202[1-9]-[01][0-9]-[0-9]{2},[0-9]{4}\.[0-9]{2}`

`.*,202[1-9]-[01][0-9]-[0-9]{2},[0-9]{5}\.[0-9]{2}`

6406532326553. ✓

Question Number : 277 Question Id : 640653696475 Question Type : MCQ Is Question

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

Correct Marks : 7

Question Label : Multiple Choice Question

Which of the following command can be used to select the package name and its version from the following log file. Please refer to the desired output.

Note: Your solution should satisfy the sample output given the sample input.

Sample log file

```
2023-12-09 11:43:46 status installed nginx-common:all 1.18.0-6ubuntu14.4
2023-12-09 11:43:46 configure libnginx-mod-http-xslt-filter:amd64 1.18.0-
6ubuntu14.4 <none>
2023-12-09 11:43:46 status unpacked libnginx-mod-http-xslt-filter:amd64 1.18.0-
6ubuntu14.4
2023-12-09 11:43:46 status half-configured libnginx-mod-http-xslt-filter:amd64
1.18.0-6ubuntu14.4
```

Desired output

```
nginx-common:all 1.18.0
libnginx-mod-http-xslt-filter:amd64 1.18.0
libnginx-mod-http-xslt-filter:amd64 1.18.0
libnginx-mod-http-xslt-filter:amd64 1.18.0
```

Hint

#Relevent 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,m} 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 :

6406532326554. ❌ `grep -oE '\b[a-z][a-zA-Z0-9-]+:[a-zA-Z0-9.-]+' dpkg.log`

6406532326555. ❌ `grep -oE '\b[a-z][a-zA-Z0-9-]+:[a-zA-Z0-9.-]+[0-9]{7}' dpkg.log`

6406532326556. ✓ `grep -oE '\b[a-z][a-zA-Z0-9-]+:[a-zA-Z0-9.-]+\.{7}' dpkg.log`

6406532326557. ❌ `grep -oE '\b[a-z][a-zA-Z0-9-]+:[a-zA-Z0-9.-]+[0-9.]{7}' dpkg.log`

Question Number : 278 Question Id : 640653696478 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 | sed 2d
```

Options :

- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10

6406532326566. *

6406532326567. *

1
4
5
6
7
8
9
10

2
4
5
6
7
8
9
10

6406532326568. ✓

2
3
4
5
6
7
8
9

6406532326569. ✗

Question Number : 279 Question Id : 640653696482 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 that is not owned by the user `root` and consumes the maximum CPU usage now. Assume you have the permission to kill any process.

Hint:

- The third column of the output of `ps aux` command (%CPU) contains the percentage of CPU usage by the process.
- The `ps aux` command can be used to 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 ?
root           2  0.0  0.0      0      0 ?
root           3  0.0  0.0      0      0 ?
[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 ?
[pool_workqueue_release]
root           2  0.0  0.0      0      0 ?
root           1  0.0  0.1  21416 13004 ?
USER          PID %CPU %MEM    VSZ   RSS TTY      STAT START  TIME COMMAND
```

Options :

```
kill $(
  ps aux |
  head -1 |
  sort -k3,3 -rn |
  grep -v '^root\b' |
  sed 1d |
  awk '{print $2}'
)
```

6406532326582. *

6406532326583. *

```
kill $(  
    ps aux |  
    grep -v '^root\b' |  
    sed -n 1p |  
    sort -k3,3 -n |  
    head -1 |  
    awk '{print $2}'  
)
```

```
kill $(  
    ps aux |  
    sed 1d |  
    sort -k3,3 -rn |  
    grep -v '^root\b' |  
    head -1 |  
    awk '{print $2}'  
)
```

6406532326584. ✓

```
kill $(  
    ps aux |  
    grep -v '^root\b' |  
    sort -k3,3 -rn |  
    awk '{print $2}' |  
    sed 1d |  
    head -1  
)
```

6406532326585. ✘

Question Number : 280 Question Id : 640653696485 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

Following Shell Script is used to print common lines between two files. Please choose the option to which 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 :

6406532326591. ❌ There should not be a \$ before \n in the IFS assignment

The call in for loop \$(cat \${FILENAME1}) is incorrect and, the while loop should have been used to read lines.

6406532326592. ❌

6406532326593. ✓ The if statement is incorrect as the space between the [and \$ is missing.

6406532326594. ✅ The code is correct and has no issues.

Sub-Section Number :

4

Sub-Section Id :

640653102987

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 281 Question Id : 640653696479 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 JSON array.

The input file contains one word per line. The output should be a valid JSON array of words.

Note:

- A valid JSON array is enclosed in square brackets.
- Each element of the array is enclosed in double quotes.
- Each element of the array is separated by a comma.
- There is no comma after the last element of the array.

Sample Input

```
apple
banana
orange
```

Sample Output

```
[
"apple",
"banana",
"orange"
]
```

Options :

```
#!/usr/bin/sed -f
1 i [
s/^"/"
s/$/",/
$ s/$"/
$ i ]
```

6406532326570. *

```
#!/usr/bin/sed -f
1 a [
s/^"/
$ s/$/",/
$! s/$"/
$ i ]
```

6406532326571. ✘

```
#!/usr/bin/sed -f
1 a [
s/^"/
$! s/$/",/
$ s/$"/
$ i ]
```

6406532326572. ✘

```
#!/usr/bin/sed -f
1 i [
s/^"/
$! s/$/",/
$ s/$"/
$ a ]
```

6406532326573. ✓

Sub-Section Number : 5

Sub-Section Id : 640653102988

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 282 Question Id : 640653696477 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)
          equivalent to -E END if END is specified;
          otherwise, there is no end-of-file string

-e, --eof[=END]
          same as --replace=R
          replace R in INITIAL-ARGS with names read
          from standard input, split at newlines;
          if R is unspecified, assume {}

-I 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 :

6406532326562. ✓ `find . -type f -name '*.md' | xargs -L 1 head`

6406532326563. ✓ `head $(find . -type f -name '*.md')`

6406532326564.

✖ find . -type f -name '*.md*' | xargs -L 1 head

6406532326565. ✖ find . type f | grep md | head

Question Number : 283 Question Id : 640653696481 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

In a large bank they keep track of a file for customer interaction every day. The files `day1.csv` and `day2.csv` hold the data of customer id, token number and counter for two days.

Select the AWK script to find all the customers who visited the bank on both the days and print customer id. Refer to the provided sample below. The files `day1.csv` and `day2.csv` will be passed as arguments respectively.

day1.csv

```
customer_id,token_number,counter
1,3473,1a
2,3480,1b
3,5034,1c
4,4368,1d
5,4755,2a
6,5150,2b
```

day2.csv

```
customer_id,token_number,counter
1,1254218,10z
3,1245114,11x
5,1260578,11y
7,1251738,11z
```

Expected output

```
customer_id
1
3
5
```

Options :

```
BEGIN {FS=""}
FNR == NR {a[$1]=$2; next}
a[$1] {print a[$1]}
```

6406532326578. ✓

6406532326579.

```
BEGIN {FS=","}
NR != NR {a[$1]=$2; next}
a[$1] {print a[$1]}
```

✖

```
BEGIN {FS=","}
NR != NR {a[$1]=$2; next}
a[$1] {print}
```

6406532326580. ✖

```
BEGIN {FS=","}
NR != NR {a[$1]++; next}
a[$1] {print a[$1]}
```

6406532326581. ✓

Sub-Section Number : 6

Sub-Section Id : 640653102989

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 284 Question Id : 640653696480 Question Type : MSQ Is Question

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

Time : 0

Correct Marks : 7 Max. Selectable Options : 0

Question Label : Multiple Select Question

From the following option select the correct command which will remove all the html tags. A sample html file is provided for your reference.

Hint:

```
gsub(r, s [, t])      For each substring matching the regular expression r
in the string t, substitute
                           the string s, and return the number of
substitutions. If t is not supplied, use
                           $0. An & in the replacement text is
replaced with the text that was actually
                           matched. Use \& to get a literal &. (This must
be typed as "\&"; see GAWK:
                           Effective AWK Programming for a fuller
discussion of the rules for &'s and back-
                           slashes in the replacement text of sub(), gsub(),
and gensub().)
```

Sample Input

```
A <b>table</b> is an arrangement of <a href="/wiki/Information"
title="Information">information</a> or <a href="/wiki/Data"
title="Data">data</a>,
```

Sample Output

```
A table is an arrangement of information or data,
```

Options :

6406532326574. ✓ `sed 's/<[^>]*>//g' file.html`

6406532326575. ❌ `sed 's/<[^>].*//g' file.html`

6406532326576. ✓ `awk '{gsub(<[^>]*>, ""); print}' file.html`

6406532326577. ❌ `awk '{gsub(<[^>].*>, ""); print}' file.html`

Sub-Section Number :	7
Sub-Section Id :	640653102990
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 285 Question Id : 640653696473 Question Type : SA Calculator : None

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

Correct Marks : 8

Question Label : Short Answer Question

The following command is executed on the Sample Input provided. Please provide the correct output of the command.

```
cat tongue_twisters.txt |tr ' ' '\n'|sort|uniq|head -1
```

Sample Input

If you must cross a coarse, cross cow across a crowded cow crossing, cross the cross, coarse cow across the crowded cow crossing carefully.

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

If

Sub-Section Number :	8
Sub-Section Id :	640653102991
Question Shuffling Allowed :	Yes
Is Section Default? :	null

Question Number : 286 Question Id : 640653696483 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. The file `file1.txt` is composed of 4 lines. Based on the `diff` command output, find out how many lines does `file2.txt` contain?

Note: The lines `2d1` and `4c3` are not relevant to the solution.

```
$ diff file1.txt file2.txt
2d1
< efg
4c3
< mnop
---
> mnpo
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

TDS

Section Id : 64065349226

Section Number : 12

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 :	640653102992
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 287 Question Id : 640653696487 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 :

6406532326602. ✓ YES

6406532326603. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653102993
Question Shuffling Allowed :	Yes

Is Section Default? :

null

Question Number : 288 Question Id : 640653696489 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 :

6406532326610. ❌ algorithm

6406532326611. ❌ max_iter

6406532326612. ❌ n_clusters

6406532326613. ✓ n_init

Question Number : 289 Question Id : 640653696490 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 :

6406532326614. ❌ name , attribute

6406532326615. ❌ to , from

6406532326616. ✓ from , to

6406532326617. ❌ first , second

Question Number : 290 Question Id : 640653696494 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 :

6406532326630. ❌ There is no relationship between variables

6406532326631. ❌ The analysis is inconclusive

6406532326632. ✓ The relationship between variables is statistically significant

6406532326633. ❌ The model is overfitting

Question Number : 291 Question Id : 640653696495 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 :

6406532326634. ✓ Data cleaning and transformation

6406532326635. ❌ Data compression and storage

6406532326636. ❌ Real-time data analysis

6406532326637. ❌ Open source refined data

Question Number : 292 Question Id : 640653696496 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 :

6406532326638. ❌ ARIMA(..., trend = (4,1,0))

6406532326639. ✓ ARIMA(..., order = (4,1,0))

6406532326640. ❌ ARIMA(..., order = (0,4,1))

6406532326641. ❌ ARIMA(..., trend = (0,4,1))

Question Number : 293 Question Id : 640653696497 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 :

6406532326642. ❌ TRUE

6406532326643. ✓ FALSE

Question Number : 294 Question Id : 640653696498 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 :

6406532326644. ❌ Elements

6406532326645. ❌ Console

6406532326646. ❌ Sources

6406532326647. ✓ Network

6406532326648. ❌ APILogs

Question Number : 295 Question Id : 640653696499 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 :

6406532326649. ❌ Right click, choose View page-source

6406532326650. ✓ Right click, choose Inspect

6406532326651. ❌ Settings, more tools and choose Developer Tools

6406532326652. ❌ Settings, extensions and search for devtools

Question Number : 296 Question Id : 640653696501 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 :

6406532326656. ✓ TRUE

6406532326657.

✖ FALSE

Question Number : 297 Question Id : 640653696502 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 :

6406532326658. ✖ st.add_text()

6406532326659. ✓ st.text()

6406532326660. ✖ st.insert_text()

6406532326661. ✖ st.display_text()

Question Number : 298 Question Id : 640653696503 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 :

6406532326662. ✖ A workbook created in Microsoft Excel

6406532326663. ✓ A Tableau file containing sheets, dashboards, and stories

6406532326664. ✖ A spreadsheet in Tableau

6406532326665. ✖ A summary of visualizations

Question Number : 299 Question Id : 640653696504 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 :

6406532326666. ✓ Adds a button to trigger an action

6406532326667. ✗ Displays the current status of the app

6406532326668. ✗ Resets all input fields

6406532326669. ✗ Turns the app into full-screen mode

Question Number : 300 Question Id : 640653696505 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 :

6406532326670. ✓ By selecting a function from the "Summarize Values by" in the "Value Field settings"

6406532326671. ✗ By right-clicking the cell and choosing "Change Calculation"

6406532326672. ✗ By dragging a new field into the "Values" area

6406532326673. ✗ By adjusting the cell formatting in the "Values" area

Question Number : 301 Question Id : 640653696506 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 :

6406532326674. ❌ The text will be split based on spaces

6406532326675. ✓ The text will not be split, and the original content remains unchanged

6406532326676. ❌ An error message will be displayed

6406532326677. ❌ The text will be split into individual characters

Question Number : 302 Question Id : 640653696507 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 :

6406532326678. ❌ By using the optional argument: =WEEKNUM(A1, 1)

6406532326679. ❌ It is not possible to change the starting day

6406532326680. ✓ By using the optional argument: =WEEKNUM(A1, 7)

6406532326681. ❌ By adjusting the Excel settings in the options menu

Sub-Section Number : 3

Sub-Section Id : 640653102994

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 303 Question Id : 640653696488 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 :

6406532326604. ✘ have higher bias

6406532326605. ✓ have higher variance

6406532326606. ✘ have lower bias

6406532326607. ✘ have lower variance

6406532326608. ✓ overfit the data compared to your solution

6406532326609. ✘ underfit the data compared to your solution

Question Number : 304 Question Id : 640653696491 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 :

6406532326618. ✓ data_df.book.unique()

6406532326619. ✘ data_df.book.category_name()

6406532326620. ✘ data_df['book'].distinct()

6406532326621. ✓ data_df['book'].unique()

Question Number : 305 Question Id : 640653696492 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 :

6406532326622. ❌ Elements

6406532326623. ✓ Network

6406532326624. ❌ Source

6406532326625. ✓ Application

Question Number : 306 Question Id : 640653696493 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 :

6406532326626. ✓ Geopandas

6406532326627. ❌ QGIS

6406532326628. ✓ Folium

6406532326629. ❌ OpenStreetMap

Question Number : 307 Question Id : 640653696500 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 :

6406532326653. ✓ Trend Line in Line Chart

6406532326654. ✓ SLOPE function

6406532326655. ✗ None of these

AI

Section Id :	64065349227
Section Number :	13
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	9
Number of Questions to be attempted :	9
Section Marks :	25
Display Number Panel :	Yes
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 :	640653102995
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 308 Question Id : 640653696508 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 "DEGREE LEVEL : AI: SEARCH METHODS FOR PROBLEM SOLVING (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 :

6406532326682. ✓ YES

6406532326683. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653102996

Question Shuffling Allowed : No

Is Section Default? : null

Question Number : 309 Question Id : 640653696509 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

Printed graph sheets (hard copy) will be provided for registered candidates only.

**ASK FOR PRINTED
GRAPH SHEETS
10 PAGES TWO-SIDE PRINT**

Options :

6406532326684. ✓ Printed graph sheets were provided to me.

6406532326685. ✗ Printed graph sheets were not provided to me.

6406532326686. ✗ I did not use graph sheets.

Sub-Section Number : 3

Sub-Section Id : 640653102997

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696510 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 : (310 to 314)

Question Label : Comprehension

SEARCH

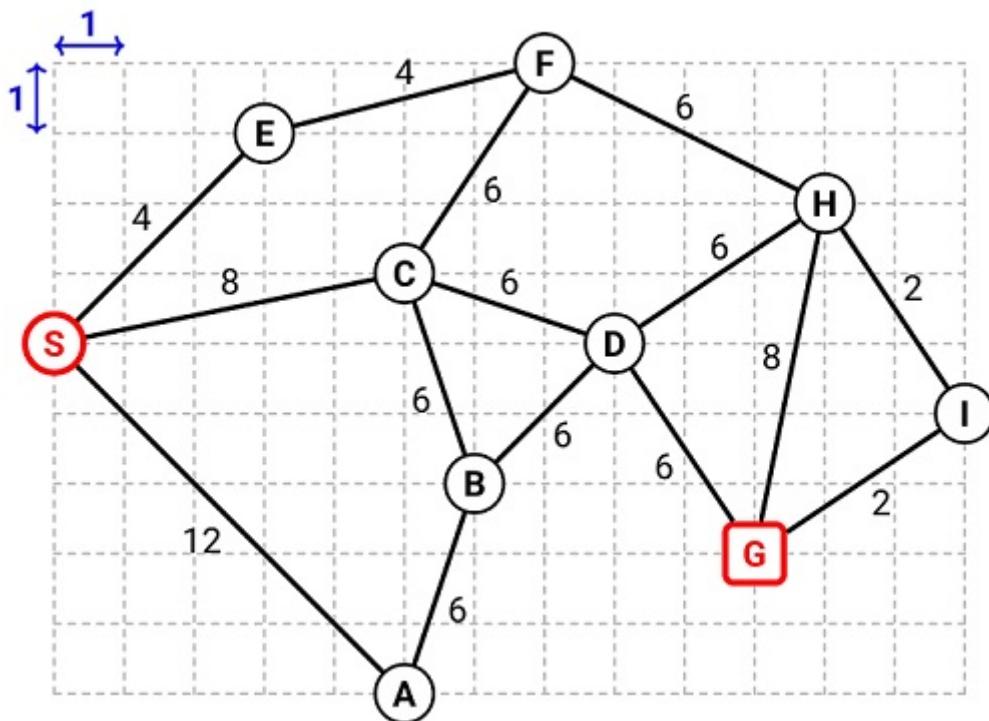
The figure shows a map on a uniform grid where each tile is 1x1 in size.

The start node is S and the goal node is G.

The MoveGen function returns nodes in alphabetical order.

Use Manhattan Distance as the heuristic function.

Tie-breaker: If several nodes have the same cost, use node labels to break the tie.



Based on the above data, answer the given subquestions.

Sub questions

Question Number : 310 Question Id : 640653696511 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the path found by the Best First Search algorithm? Enter the path as a comma separated list of node labels.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: S,X,Y,Z

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

S,A,B,D,G

Question Number : 311 Question Id : 640653696512 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the path found by A* search algorithm? Enter the path as a comma separated list of node labels.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: S,X,Y,Z

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

S,C,D,G

Question Number : 312 Question Id : 640653696513 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the path found by Branch-and-Bound search algorithm? Enter the path as a comma separated list of node labels.

Use the Branch-and-Bound variation that avoids cyclic expansions like S,A,S,A,S,A,...

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: S,X,Y,Z

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

S,E,F,H,I,G

Question Number : 313 **Question Id :** 640653696514 **Question Type :** MCQ **Is Question**

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

Correct Marks : 1

Question Label : Multiple Choice Question

For the given map, which algorithm finds the shortest path from S to G?

Options :

6406532326690. ❌ A* Search Algorithm

6406532326691. ✓ Branch-and-Bound Search Algorithm

6406532326692. ❌ None of these

Question Number : 314 **Question Id :** 640653696515 **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 can you say about the heuristic function for the given graph?

Options :

6406532326693. ❌ Admissible

6406532326694. ✓ Inadmissible

6406532326695. ❖ Partly admissible and partly inadmissible

6406532326696. ❖ Cannot be determined

Sub-Section Number :	4
Sub-Section Id :	640653102998
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Id : 640653696516 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 : (315 to 318)

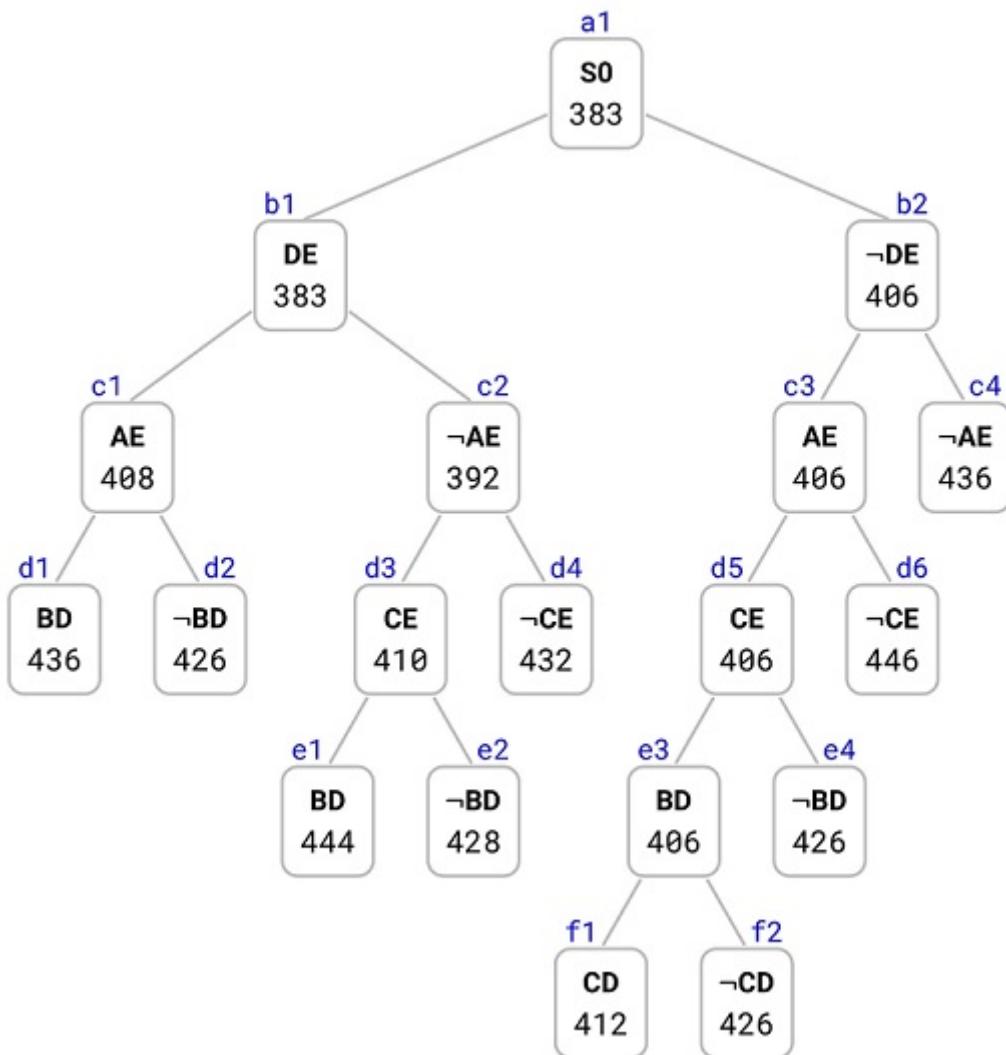
Question Label : Comprehension

TSP Branch-and-Bound

The TSP Branch-and-Bound algorithm is solving a TSP instance where the cities are A, B, C, and so on. The Branch-and-Bound search tree at the time when the algorithm has discovered the optimal tour is shown below.

Each node in the search tree displays an edge (either XY or ~XY), a cost value, and a unique reference number (a1, b1, b2, ..., c1, ..., d1, ..., e1, ..., f1, f2). Use the reference numbers to break ties. When required, enter the reference numbers in short answers.

What information can you glean from the search tree? Answer the sub-questions based on the information gleaned from the search tree.



Sub questions

Question Number : 315 Question Id : 640653696517 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

Let S0 (ref. no. a1) be the first node to be refined, identify the next 4 nodes (2nd to 5th node) that are refined by the TSP Branch-and-Bound algorithm. Enter the nodes (node reference numbers) in the order they are refined.

Enter a comma separated list of node reference numbers.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: a9,b9,c9,d9

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

b1,c2,b2,c3

Question Number : 316 **Question Id :** 640653696518 **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

Which node represents the optimal tour and what is the cost of the optimal tour? Enter the node reference number and the tour cost in the text box, or enter NIL if it is not possible to determine the optimal tour.

Enter a node reference number followed by tour cost, separated by comma.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: a9,42

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

f1,412

Question Number : 317 **Question Id :** 640653696519 **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

Determine the number of cities in the TSP instance. Enter the number of cities in the text box, or

enter NIL if it is not possible to determine the number of cities.

Enter an integer.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: 42

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Question Number : 318 **Question Id :** 640653696520 **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

Start from city A, what is the path representation of the optimal tour? Enter the path representation in the text box, or enter NIL if it is not possible to determine the optimal tour.

Enter a comma separated list of cities (city labels).

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: A,B,C

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Set

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

A,B,D,C,E

A,E,C,D,B

Question Id : 640653696521 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 322)

Question Label : Comprehension

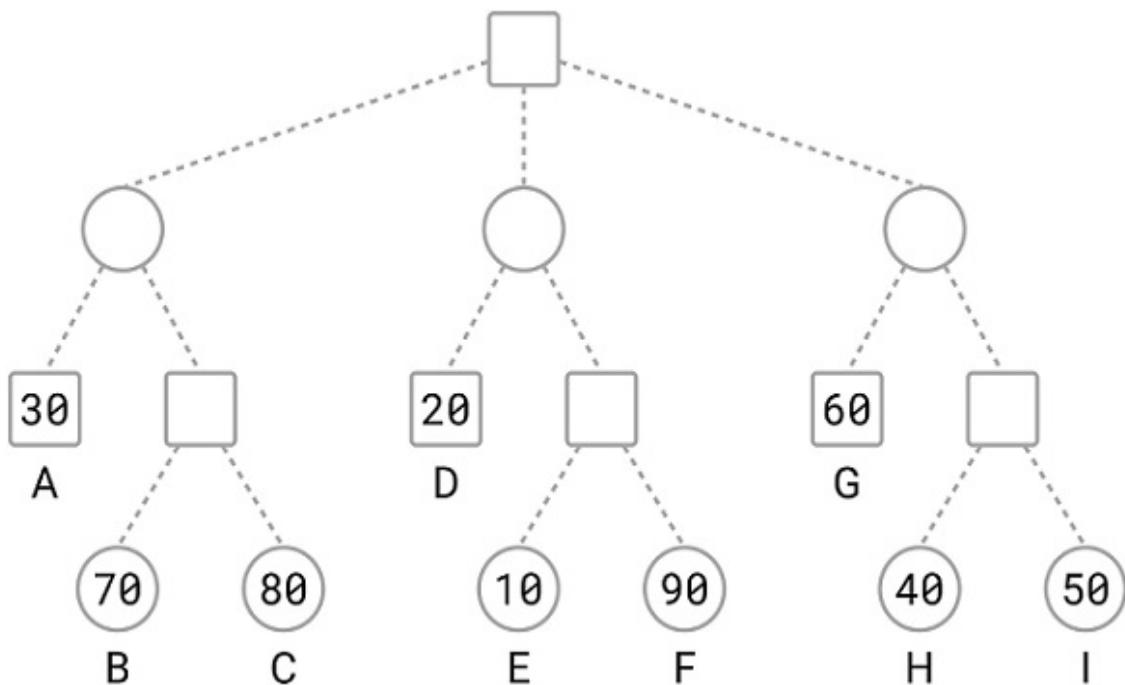
GAMES

The figure shows a game tree with evaluation function values at the horizon nodes.

The horizon nodes are labeled from A to I.

Use these labels to enter a horizon node or a list of horizon nodes in short answers (textbox).

Tie-breaker: when several nodes carry the same best cost then select the deepest node, if tie persists then select the leftmost of the deepest nodes to break the tie.



Based on the above data, answer the given subquestions.

Sub questions

Question Number : 319 Question Id : 640653696522 Question Type : MCQ Is Question

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

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following is a strategy for the MAX player?

Options :

6406532326701. ❌ A,D,G

6406532326702. ✓ D,E

6406532326703. ❌ E,F

6406532326704. ❌ G,H,I

Question Number : 320 Question Id : 640653696523 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

List the horizon nodes in the best strategy for MAX. Enter the node labels in alphabetical order.

Enter a comma separated list of node labels in alphabetical order.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: X,Y,Z

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

G,I

Question Number : 321 Question Id : 640653696524 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

List the horizon nodes pruned by Alpha-Beta.

Enter a comma separated list of node labels in alphabetical order.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: X,Y,Z

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

C,E,F

Question Number : 322 Question Id : 640653696525 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

List the horizon nodes not processed (neither LIVE nor SOLVED) by SSS*.

Enter a comma separated list of node labels in alphabetical order.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: X,Y,Z

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

B,C,E,F

Sub-Section Number : 5

Sub-Section Id : 640653102999

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696526 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 : (323 to 325)

Question Label : Comprehension

PROBLEM DECOMPOSITION

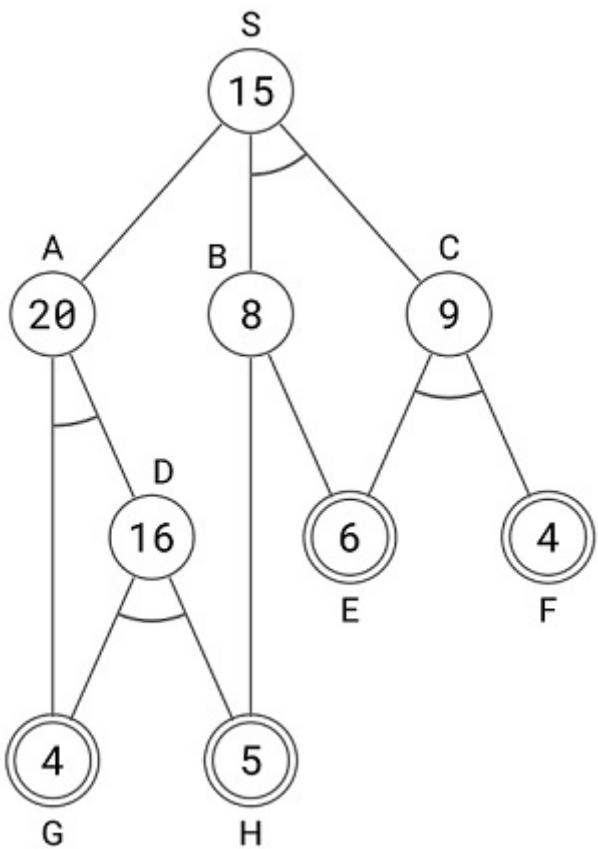
The figure shows an AND-OR graph that depicts how a problem S can be decomposed into one or more smaller problems. Nodes are uniquely identified by labels (S, A, B, ...). The number in each node is the heuristic estimate of the cost of solving that node.

Nodes shown in double lines are primitive nodes and their values are actual costs. Observe that a primitive node is added to the graph by its parent when the parent is expanded, and the primitive node is labeled as SOLVED and it will not be expanded subsequently.

The cost of each edge is 1 unit.

Tie-breaker 1: If several nodes have the same cost then break the tie using node labels.

Tie-breaker 2: For AND nodes, select the unsolved branch with the highest cost.



Use AO* algorithm to solve S, then answer the given subquestions.

Sub questions

Question Number : 323 Question Id : 640653696527 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

List the first three nodes (including S) expanded by AO* algorithm. List the nodes in the order they are expanded. Observe that primitive nodes are not expanded.

Enter a comma separated list of node labels.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: X,Y,Z

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Set

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

S,C,A

C,A,B

Question Number : 324 Question Id : 640653696528 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

Determine the value of the start node S after each node is expanded. What are the values of S after the 1st, 2nd and 3rd nodes are expanded, respectively? Enter the 3 values in the textbox.

Enter a comma separated list of numbers.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: 12,42,17

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Set

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

19,21,22

21,22,20

Question Number : 325 Question Id : 640653696529 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

What is the final value of the start node S?

Enter a number.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: 42

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

20

Question Id : 640653696530 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 : (326 to 328)

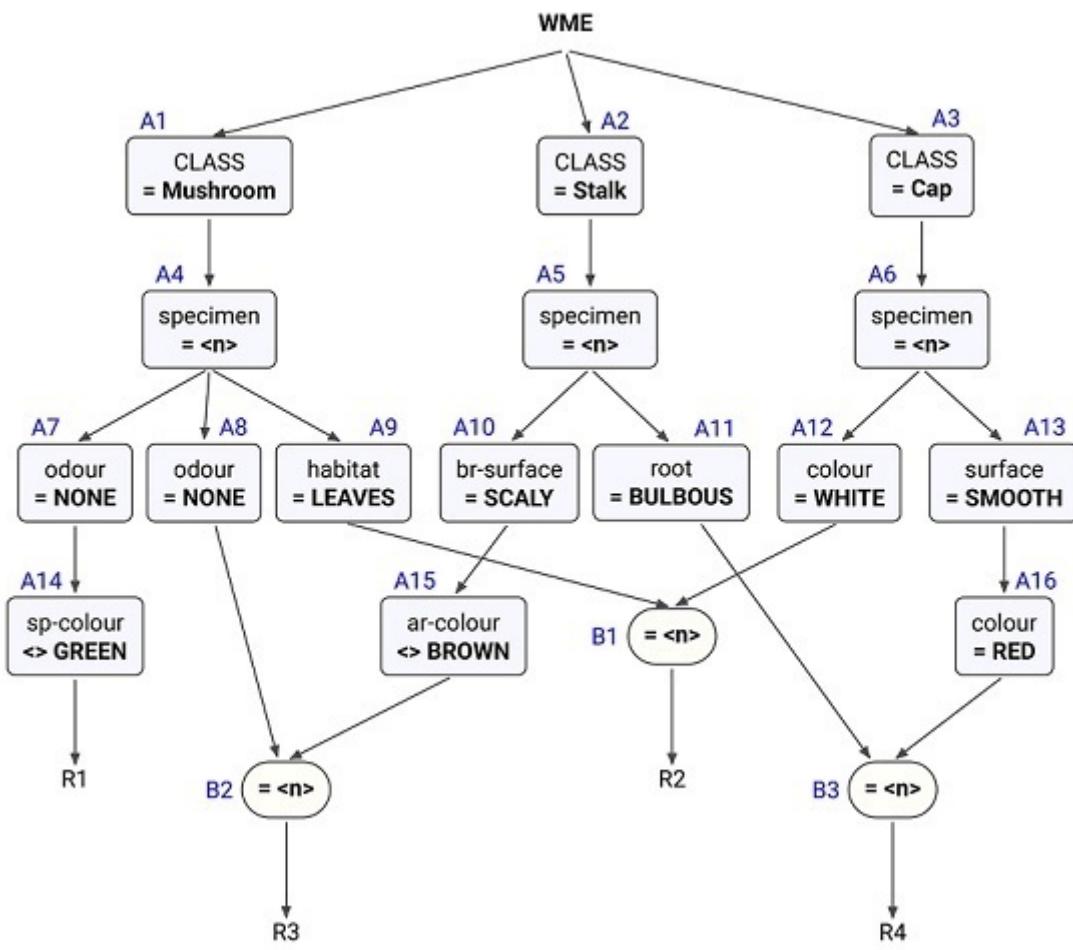
Question Label : Comprehension

RULE BASED EXPERT SYSTEMS

A part of the Rete Net that classifies mushrooms (as edible or poisonous) is shown in the figure.

The labels A1, A2, ..., A10, A16, ..., B1, B2, B3, R1, ..., R4 uniquely identify the nodes in the network.

When required, use the above label ordering to **break ties** and to enter short answers.



Run the Rete algorithm for the Working Memory shown below, the WMEs are in timestamp order. Assume that WMEs reside at appropriate Alpha nodes, and the Beta nodes point to WMEs residing in Alpha nodes.

101. (Cap ^specimen C36 ^colour RED ^surface SMOOTH)
102. (Cap ^specimen A25 ^colour WHITE ^surface SMOOTH)
103. (Mushroom ^specimen X16 ^odour NONE ^habitat LEAVES)
104. (Mushroom ^specimen A25 ^odour NONE ^habitat LEAVES)
105. (Stalk ^specimen C36 ^root BULBOUS ^ar-colour WHITE)
106. (Stalk ^specimen X16 ^br-surface SCALY ^ar-colour WHITE)
107. (Mushroom ^specimen C36 ^odour NONE ^sp-colour WHITE)
108. (Mushroom ^specimen B49 ^odour ALMOND ^sp-colour BROWN)
109. (Stalk ^specimen B49 ^br-surface SMOOTH)

For each WME identify its location (node label) in the Rete Net, and prepare the conflict set for the first cycle, then answer the given subquestions.

Sub questions

Question Number : 326 Question Id : 640653696531 Question Type : MSQ Is Question

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

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following rule-data tuples are in the conflict-set?

Options :

6406532326711. ✓ R1,107

6406532326712. ✓ R2,102,104

6406532326713. ✓ R3,103,106

6406532326714. ✓ R4,101,105

6406532326715. ✗ R2,102,103

6406532326716. ✗ R3,104,106

Question Number : 327 Question Id : 640653696532 Question Type : MSQ Is Question

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

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

If the Inference Engine uses **Specificity** as the conflict resolution strategy then which of the following rule-data tuples will qualify?

Options :

6406532326717. ✗ R1,107

6406532326718. ✗ R2,102,104

6406532326719. ✓ R3,103,106

6406532326720. ✓ R4,101,105

6406532326721. ✗ R2,102,103

6406532326722. ✗ R3,104,106

Question Number : 328 Question Id : 640653696533 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 Inference Engine uses **Recency** as the conflict resolution strategy then which of the following rule-data tuples will qualify?.

Options :

6406532326723. ✓ R1,107

6406532326724. ✗ R2,102,104

6406532326725. ✗ R3,103,106

6406532326726. ✗ R4,101,105

6406532326727. ✗ R2,102,103

6406532326728. ✗ R3,104,106

Sub-Section Number : 6

Sub-Section Id : 640653103000

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696534 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0 Question Numbers : (329 to 332)

Question Label : Comprehension

AUTOMATED PLANNING

The domain description of a Blocks World with a single one-armed robot is given below.

PREDICATES

armEmpty	The arm is not holding any block, it is empty.
holding(X)	The arm is holding X.
onTable(X)	X is on the table.
clear(X)	X has nothing above it, it is clear.
on(X, Y)	X is directly placed on Y.

OPERATORS

Pickup(X): pick up X from the table.

Preconditions: { armEmpty, clear(X), onTable(X) }
Add Effects : { holding(X) }
Del Effects : { armEmpty, onTable(X) }

Putdown(X): place X on the table.

Preconditions: { holding(X) }
Add Effects : { armEmpty, onTable(X) }
Del Effects : { holding(X) }

Unstack(X, Y): pick up X that is directly sitting on Y.

Preconditions: { armEmpty, clear(X), on(X, Y) }
Add Effects : { clear(Y), holding(X) }
Del Effects : { armempty, on(X, Y) }

Stack(X, Y): place X directly on top of Y.

Preconditions: { holding(X), clear(Y) }
Add Effects : { armEmpty, on(X, Y) }
Del Effects : { holding(X), clear(Y) }

Consider the planning problem with the following start state and goal description.



{ armEmpty, on(P,Q),
clear(P), clear(R),
onTable(Q), onTable(R) }

{ on(P,R), on(R,Q),
onTable(Q) }

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 329 Question Id : 640653696535 Question Type : MSQ Is Question

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

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following are **applicable** actions in the start state?

Options :

6406532326729. ✓ Pickup (R)

6406532326730. ✓ Unstack (P,Q)

6406532326731. ✗ Stack (R,Q)

6406532326732. ✗ Stack (P,R)

6406532326733. ✗ Putdown (Q)

Question Number : 330 Question Id : 640653696536 Question Type : MSQ Is Question

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

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following are **relevant** actions in the goal state?

Options :

6406532326734. ✘ Pickup (R)

6406532326735. ✘ Unstack (P,Q)

6406532326736. ✓ Stack (R,Q)

6406532326737. ✓ Stack (P,R)

6406532326738. ✓ Putdown (Q)

Question Number : 331 Question Id : 640653696537 Question Type : MSQ Is Question

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

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

In the planning graph, which of the following are mutex action pairs in Layer 1?

Options :

6406532326739. ✓ Unstack (P,Q), Pickup (R)

6406532326740. ✓ Unstack (P,Q), NOP-ACTION for armEmpty

6406532326741. ✓ Pickup (R), NOP-ACTION for onTable (R)

6406532326742. ✘ Stack (P,R), Stack (R,Q)

6406532326743. ✘ Stack (P,R), Putdown (Q)

Question Number : 332 Question Id : 640653696538 Question Type : MSQ Is Question

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

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

In the planning graph, which of the following are mutex proposition pairs in Layer 1?

Options :

6406532326744. ✓ clear (Q), armEmpty

6406532326745. ✓ holding (P), holding (R)

6406532326746. ✗ onTable (R), clear (R)

6406532326747. ✗ onTable (R), onTable (Q)

Sub-Section Number : 7

Sub-Section Id : 640653103001

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696539 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 : (333 to 334)

Question Label : Comprehension

CONSTRAINT SATISFACTION

The set of junctions (L, W, Y and T type junctions) that occur in a 2D line drawing of trihedral objects is provided below. The in-plane clockwise/counterclockwise rotations of these junctions are valid as well. These junctions provide constraints on the possible edge assignments (convex, concave, arrow) for the edges/lines in 2D line drawings of trihedral objects.

The junctions carry unique labels: L1, L2, L3, L4, L5, L6, T1, T2, T3, T4, W1, W2, W3, Y1, Y2, Y3. When required, use the labels in short answers.



L1



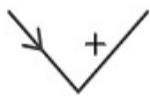
L2



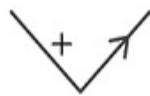
L3



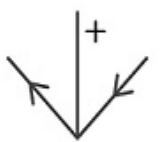
L4



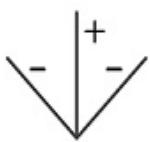
L5



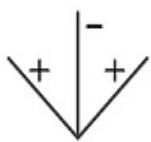
L6



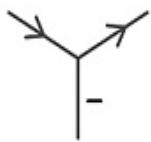
W1



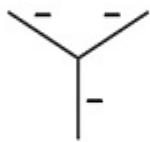
W2



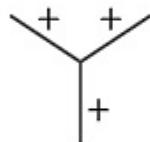
W3



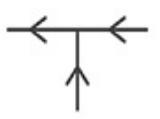
Y1



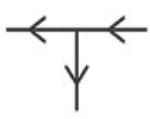
Y2



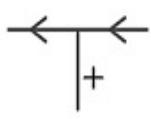
Y3



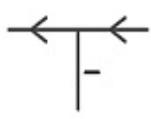
T1



T2



T3



T4

Note: A 2D line drawing of trihedral objects is considered to be consistent if all the edges and junctions can be assigned labels that are consistent with each other, otherwise the drawing is considered to be inconsistent and all labels are reset to NIL.

Apply a suitable algorithm to assign consistent labels to edges/junctions in the 2D line drawings in the sub-questions. Choose a suitable edge and junction order for solving the problems.

Based on the above data, answer the given subquestions.

Sub questions

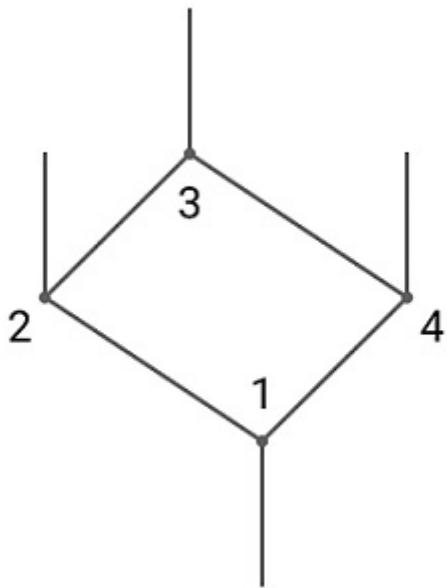
Question Number : 333 Question Id : 640653696540 Question Type : SA Calculator : None

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

Correct Marks : 1

Question Label : Short Answer Question

Assign consistent labels to all the edges and junctions in the 2D line drawing shown below. Enter the labels of the junctions 1, 2, 3, 4 in the text box, in that order. Otherwise enter NIL if the drawing has no consistent label assignment.



Enter a comma separated list of junction labels, or enter NIL.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: L9,Y9,T9,W9

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Set

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

Y1,W1,Y3,W2

Y1,W2,Y3,W1

Y2,W2,Y3,W2

Y3,W3,Y2,W3

Question Number : 334 **Question Id :** 640653696541 **Question Type :** SA **Calculator :** None

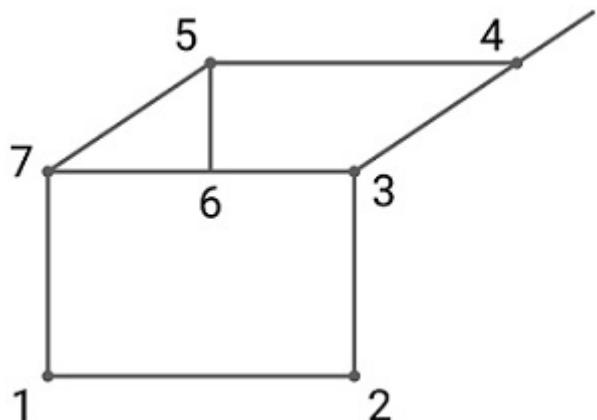
Response Time : N.A **Think Time :** N.A **Minimum Instruction Time :** 0

Correct Marks : 1

Question Label : Short Answer Question

Assign consistent labels to all the edges and junctions in the 2D line drawing shown below.

Enter the labels of the junctions 1, 2, 3, 4 in the text box, in that order. Otherwise enter NIL if the drawing has no consistent label assignment.



Enter a comma separated list of junction labels, or enter NIL.

NO SPACES, TABS, DOTS, BRACKETS OR EXTRANEous CHARACTERS.

Answer format: L9,Y9,T9,W9

Response Type : Alphanumeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Answers Case Sensitive : No

Text Areas : PlainText

Possible Answers :

NIL

CT

Section Id : 64065349228

Section Number : 14

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 :	640653103002
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 335 Question Id : 640653696542 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 :

6406532326750. ✓ YES

6406532326751. ✘ NO

Question Number : 336 Question Id : 640653696543 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 :

6406532326752. ✓ Useful Data has been mentioned above.

6406532326753. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 640653103003

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 337 Question Id : 640653696544 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

Statement

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     if(x.cityTown == "Chennai"){
9         B = 1
10    }
11    C = A + B
12    if(**Statement I**){
13        count = count + 1
14    }
15    Move X to Table 2
16 }
```

Match the following for different expressions of **Statement I** with the appropriate **Value of count**.

	Statement I		Value of count
(i)	$C < 1$	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 students who are either male or from Chennai but not both

Options :

6406532326754. ❌ (i) - r, (ii) - p, (iii) - q

6406532326755. ✓ (i) - q, (ii) - r, (iii) - p

6406532326756. ❌ (i) - q, (ii) - p, (iii) - r

6406532326757. ❌ (i) - p, (ii) - r, (iii) - q

Question Number : 338 Question Id : 640653696549 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 "Words" dataset. What will **count** represent at the end of the execution?

```
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 }
```

Options :

6406532326770. ✓ Number of nouns which have at least one verb adjacent to it

6406532326771. ✗ Number of verbs which have at least one noun adjacent to it

6406532326772. ✗ Number of nouns which are surrounded by verbs

6406532326773. ✗ Number of verbs which are surrounded by nouns

Question Number : 339 Question Id : 640653696553 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

Statement

The following pseudocode is executed using the "Shopping Bills" dataset. The variable **count** counts the number of bills which are either from Big Bazaar or have a total bill amount of more 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     *****
19     *** Fill the code ***
20     *****
21 End checkvalue
```

Options :

```
1 if(A and B){
2     return(True)
3 }
4 else{
5     return(False)
6 }
```

6406532326782. ✘

```
1 if(A or B){
2     return(True)
3 }
4 else{
5     return(False)
6 }
```

6406532326783. ✘

6406532326784. ✘

```
1 if(not(A and B) or (A or B)){
2     return(True)
3 }
4 else{
5     return(False)
6 }
```

```
1 if(not(A and B) and (A or B)){
2     return(True)
3 }
4 else{
5     return(False)
6 }
```

6406532326785. ✓

Question Number : 340 Question Id : 640653696560 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

Statement

What does the given procedure **calculate(a, b)** return for **a = 15** 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 :

6406532326806. ✘ 1

6406532326807.

✓ 3

6406532326808. ✘ 12

6406532326809. ✘ 15

Question Number : 341 Question Id : 640653696567 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

Statement

trains is a dictionary with a train number as a key mapped to a list of stations that the train runs through. For example, **trains** = { 12281: ["Bhubaneswar", "Balasore", "Adra", "Varanasi", "Kanpur", "New Delhi"],.....}. In this example, the train with train number 12281 starts from Bhubaneswar and reaches New Delhi via Balasore, Adra, Varanasi, and Kanpur.

What will **L** store at the end of the execution of pseudocode?

```
1  stns = { }, N = 0, L = []
2  foreach X in keys(trains){
3      stns = updateDictionary(stns, X)
4  }
5
6  foreach Y in keys(stns){
7      if(stns[Y] == N){
8          L = L ++ [Y]
9      }
10     if(stns[Y] > N){
11         L = [Y]
12         N = stns[Y]
13     }
14 }
15
16 Procedure updateDictionary(D, z)
17     foreach A in trains[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 :

6406532326832. ✓ List of stations through which maximum number of trains pass

6406532326833. ✗ List of stations through which minimum number of trains pass

6406532326834. ✗ List of trains that pass through the maximum number of stations

6406532326835. ✗ List of trains that pass through the minimum number of stations

Sub-Section Number : 3

Sub-Section Id : 640653103004

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 342 Question Id : 640653696545 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

Statement

The following pseudocode is executed using the "Words" dataset. What will A represent at the end of the execution? 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         if(X.LetterCount > A){
6             A = X.LetterCount
7         }
8     }
9     if(X.word ends with a full stop){
10        sNum = sNum + 1
11    }
12    Move X to Table 2
13 }
```

Options :

6406532326758. ✗ Letter count of the longest verb in the fourth sentence

6406532326759. ✘ Letter count of the longest verb in the fifth sentence

6406532326760. ✘ Letter count of the longest verb in the first four sentences

6406532326761. ✓ Letter count of the longest verb in the first five sentences

Sub-Section Number : 4

Sub-Section Id : 640653103005

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696546 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 : (343 to 344)

Question Label : Comprehension

Statement

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' or X.Physics > 90){
6         Flag = True
7     }
8     if(not Flag){
9         A = A + 1
10        if(X.Gender == 'M'){
11            B = B + 1
12        }
13    }
14    Move X to Table 2
15 }
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 343 Question Id : 640653696547 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 :

6406532326762. ✘ Number of students who have scored less than 90 marks in Physics

6406532326763. ✘ Number of female students who have scored more than 90 marks in Physics

6406532326764. ✓ Number of female students who have not scored more than 90 marks in Physics

6406532326765. ✘ Number of male students who have not scored more than 90 marks in Physics

Question Number : 344 Question Id : 640653696548 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 **B** represent at the end of the execution?

Options :

6406532326766. ✘ Total Number of male students

6406532326767. ✘ Number of male students who have scored not more than 90 marks in Physics

6406532326768. ✘ Number of male students who have scored more than 90 marks in Physics

6406532326769. ✓ It will be zero.

Question Id : 640653696555 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 : (345 to 346)

Question Label : Comprehension

Statement

The following pseudocode is executed using the "Shopping Bills" dataset. Assume each customer has a distinct name.

```
1 A = 1, N = 0, 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 : 345 Question Id : 640653696556 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 :

6406532326790. ✓ Maximum number of bills issued to a single customer

6406532326791. ❖ Maximum number of bills issued to a single customer from the same shop

6406532326792. ❖ Maximum number of customers who purchased items from the same shop

6406532326793. ❖ Minimum number of customers who purchased items from the same shop

Question Number : 346 Question Id : 640653696557 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 :

6406532326794. ✓ Number of customers

6406532326795. ❖ Total number of bills

6406532326796. ❖ Number of customers who have a maximum number of bills

6406532326797. ❖ Number of customers who have a minimum number of bills

Sub-Section Number : 5

Sub-Section Id : 640653103006

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696550 Question Type : COMPREHENSION Sub Question Shuffling

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

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

Question Numbers : (347 to 348)

Question Label : Comprehension

Statement

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

```
1 M = createMatrix(n,n)
2 foreach i in rows(M){
3     foreach j in columns(M){
4         M[i][j] = []
5     }
6 }
7
8 L = ["Chemistry", "Mathematics", "Physics"]
9 while(Table 1 has more rows){
10     Read the first row X in Table 1
11     Move X to Table 2
12     while(Table 1 has more rows){
13         Read the first row Y in Table 1
14         foreach subject in L{
15             if(X.Subject > Y.Subject){
16                 M[X.SeqNo][Y.SeqNo] = M[X.SeqNo][Y.SeqNo] ++ [subject]
17             }
18             if(X.Subject < Y.Subject){
19                 M[Y.SeqNo][X.SeqNo] = M[Y.SeqNo][X.SeqNo] ++ [subject]
20             }
21         }
22         Move Y to Table 3
23     }
24     Move all rows from Table 3 to Table 1
25 }
```

Sub questions

Question Number : 347 Question Id : 640653696551 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

For each pair of vertices i and j with $i \neq j$, choose the correct statement about $M[i][j]$.

Options :

6406532326774. ✓ $M[i][j]$ is a list of subjects in which i scores more than j

6406532326775.

* **M[i][j]** is a list of subjects in which **i** does not score less than **j**

6406532326776. ✓ **M[j][i]** is a list of subjects in which **i** scores less than **j**

6406532326777. ✖ **M[j][i]** is a list of subjects in which **i** does not score more than **j**

Question Number : 348 Question Id : 640653696552 Question Type : MSQ Is Question

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

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statement(s) is/are correct ? Note: Assume that no two students have scored the same maximum marks.

Options :

6406532326778. ✓ If student **i** has scored the minimum marks in subject **S** then **S** will not appear in **M[i][j]** for any **j**.

6406532326779. ✖ If student **i** has scored the minimum marks in subject **S** then **S** will appear in **M[i][j]** for any **i**.

6406532326780. ✓ If student **i** has scored the maximum marks in subject **S** then **S** will appear in **M[i][j]** for any **j**.

6406532326781. ✖ If student **i** has scored the maximum marks in subject **S** then **S** will not appear in **M[i][j]** for any **j**.

Question Id : 640653696562 Question Type : COMPREHENSION Sub Question Shuffling

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

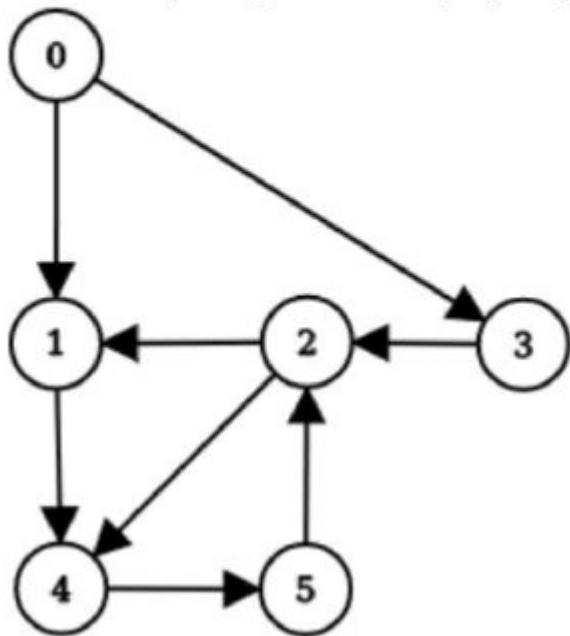
Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Question Numbers : (349 to 350)

Question Label : Comprehension

Statement

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 : 349 Question Id : 640653696563 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 **p** and **q** be at the end of execution of the pseudocode given below?

```
1 newMatrix = updateMatrix(M)
2 p = newMatrix[1][2]
3 q = newMatrix[2][5]
```

Options :

6406532326814. ✘ p = 0, q = 0

6406532326815. ✘ p = 1, q = 0

6406532326816. ✓ p = 0, q = 1

6406532326817. ✘ p = 1, q = 1

Question Number : 350 Question Id : 640653696564 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

Statement

What will the values of **p** and **q** be at the end of execution of the pseudocode given below?

```
1 newMatrix1 = updateMatrix(M)
2 newMatrix2 = updateMatrix(newMatrix1)
3 p = newMatrix2[1][2]
4 q = newMatrix2[2][5]
```

Options :

6406532326818. ✘ p = 0, q = 0

6406532326819. ✘ p = 1, q = 0

6406532326820. ✘ p = 0, q = 1

6406532326821. ✓ p = 1, q = 1

Sub-Section Number :

6

Sub-Section Id :

640653103007

Question Shuffling Allowed :

Yes

Is Section Default? :

null

Question Number : 351 Question Id : 640653696554 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

Statement

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 condition given in line 4 with the statement given below will provide the correct result.

```
1 | if(isKey(A, X.Author))
```

6406532326786. ✓

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
```

6406532326787. ✓

6406532326788. ✓ Interchanging lines 5 and 8 will provide the correct result.

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
```

6406532326789. ✘

Sub-Section Number : 7

Sub-Section Id : 640653103008

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 352 Question Id : 640653696558 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

Statement

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 total.

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 :

6406532326798. ❖ List of customers who purchased an item other than what both customers **x** and **y** purchased.

6406532326799. ❖ List of customers who purchased exactly the same item(s), which was purchased by either customer **x** or customer **y**

6406532326800. ✓ List of customers who bought at least one item in common with both customer **x** and customer **y**

6406532326801. ✘ List of customers who purchased at least one item, which was purchased by either customer **x** or customer **y**

Question Number : 353 Question Id : 640653696561 Question Type : MCQ Is Question

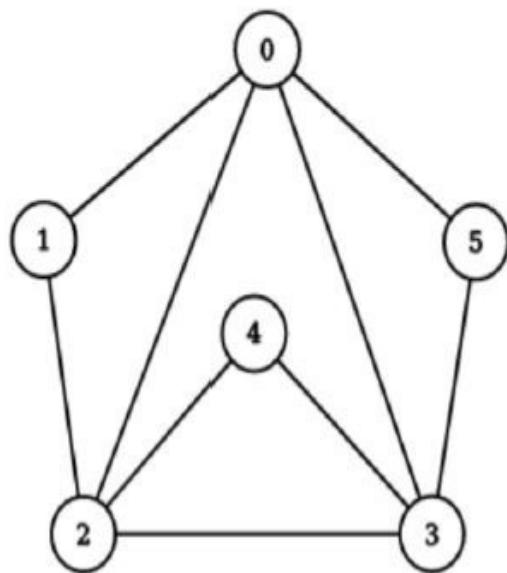
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0

Correct Marks : 6

Question Label : Multiple Choice Question

Statement

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[4] = -1
4 D, L = searchPath(M, D, L, 4)
5
6 Procedure searchPath(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 = searchPath(graph, P, S, j)
12        }
13    }
14    return (P, S)
15 End searchPath
```

Options :

6406532326810. ❌ $L = [4, 2, 1, 0, 3, 5]$

6406532326811. ✓ $L = [4, 2, 0, 1, 3, 5]$

6406532326812. ❌ $L = [4, 3, 2, 1, 0, 5]$

6406532326813. ❌ $L = [4, 3, 0, 1, 2, 5]$

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

Time : 0

Correct Marks : 6

Question Label : Multiple Choice Question

Statement

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                 D[a.Category][a.ItemName] = D[a.Category][a.ItemName] ++
8                     [a.Price]
9             }
10            else{
11                *** Statement I ***
12            }
13        else{
14            D[a.Category] = { }
15            *** Statement II ***
16        }
17    }
18    Move card X to Pile 2
19 }
```

Options :

6406532326822. ✓ Statement I: **D[a.Category][a.ItemName] = [a.Price]**

Statement II: **D[a.Category][a.ItemName] = [a.Price]**

6406532326823. ✗ Statement I: **D[a.Category][a.ItemName] = [a.Price]**

Statement II: **D[a.Category][a.ItemName] = D[a.Category][a.ItemName] ++ [a.Price]**

6406532326824. ✗ Statement I: **D[a.Category][a.ItemName] = D[a.Category][a.ItemName] ++ [a.Price]**

Statement II: **D[a.Category][a.ItemName] = [a.Price]**

6406532326825.

* 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 : 8

Sub-Section Id : 640653103009

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 355 Question Id : 640653696559 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

Statement

findSomething is a procedure that accepts a non-empty list of distinct integers **L** as input and finds the largest 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         ****
7         *** Fill the code ***
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 }
```

6406532326802. ✓

6406532326803. *

```
1 if(first(L) < last(L)){
2     return(findsomething(init(L)))
3 }
4 else{
5     return(findsomething(rest(L)))
6 }
```

```
1 if(first(L) < last(L)){
2     return(findsomething(rest(L)))
3 }
4 else{
5     return(findsomething(init(L)))
6 }
```

6406532326804. ✓

```
1 if(first(L) > last(L)){
2     return(findsomething(rest(L)))
3 }
4 else{
5     return(findsomething(init(L)))
6 }
```

6406532326805. ✗

Question Number : 356 Question Id : 640653696566 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

Statement

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]
10    }
11 }
12 Procedure updateDictionary(D, Y)
13     i = 1
14     while(i ≤ Y.LetterCount){
15         B = ith letter in Y.Word
16         if(not isKey(D, B)){
17             D[B] = D[B] + 1
18         }
19         else{
20             D[B] = 1
21         }
22         i = i + 1
23     }
24     return(D)
25 End updateDictionary
```

Options :

6406532326826. ❌ Line 1: Incorrect initialization of **D**

6406532326827. ✓ Line 8: Incorrect conditional expression

6406532326828. ❌ Line 9: **A** updated with wrong value

6406532326829. ❌ Line 13: Incorrect initialization of **i**

6406532326830. ✓ Line 16: Conditional expression should not use the "not" operator

6406532326831. ❌ Line 22: **i** updated at wrong place

Intro to Python

Section Id :	64065349229
Section Number :	15
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	17
Number of Questions to be attempted :	17
Section Marks :	50
Display Number Panel :	Yes
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 :	640653103010
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 357 Question Id : 640653696568 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 :

6406532326836. ✓ YES

6406532326837. ✘ NO

Question Number : 358 Question Id : 640653696569 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 :

6406532326838. ✓ Useful Data has been mentioned above.

6406532326839. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number : 2

Sub-Section Id : 640653103011

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 359 Question Id : 640653696570 Question Type : MCQ Is Question

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 sentence = 'this,is,not,as,hard,as,you,think,it,is'
2
3 D = dict()
4 for word in sentence.split(','):
5     for char in word:
6         if char not in D:
7             D[char] = 0
8         D[char] += 1
9
10 mchar, mval = '', 0
11 alpha = 'abcdefghijklmnopqrstuvwxyz'
12 for char in alpha:
13     if char not in D:
14         continue
15     if D[char] >= mval:
16         mval = D[char]
17         mchar = char
18
19 print(mchar)
```

Options :

6406532326840. ✓ 1 | s

6406532326841. ✗ 1 | i

6406532326842. ✗ 1 | d

6406532326843. ✗ 1 | y

Question Number : 360 Question Id : 640653696571 Question Type : MCQ Is Question

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

Time : 0

Correct Marks : 3

Question Label : Multiple Choice Question

If n is a positive integer, what is the output of the following snippet of code?

```
1 | P = [x for x in range(1, 2 * n + 1) if x % 2 == 0]
2 | print(sum(P))
```

Options :

6406532326844. ✘ $1 + 2 + 3 + \dots + n$

6406532326845. ✓ $2 + 4 + 6 + \dots + 2n$

6406532326846. ✘ $1 + 2 + 3 + \dots + (2n + 1)$

6406532326847. ✘ $1 + 2 + 3 + \dots + 2n$

6406532326848. ✘ $1 + 3 + 5 + \dots + (2n + 1)$

Question Number : 361 Question Id : 640653696572 Question Type : MCQ Is Question

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 snippets of code:

Code-1

```
1 | T = (1, 2, 3)
2 | T.add(1)
```

Code-2

```
1 | S = set()
2 | S.append(1)
```

Code-3

```
1 | L = []
2 | L = L + [1]
```

Select the most appropriate statement.

Options :

6406532326849. ❌ Only code-1 will throw an error in line-2

6406532326850. ❌ Only code-2 will throw an error in line-2

6406532326851. ❌ Only code-3 will throw an error in line-2

6406532326852. ✓ Code-1 and Code-2 will throw an error in line-2

6406532326853. ❌ Code-2 and Code-3 will throw an error in line-2

6406532326854. ❌ All three code snippets will throw an error in line-2

Question Number : 362 Question Id : 640653696573 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

```
1 | L = [('Arjun', 75), ('Anita', 85), ('Atul', 80), ('Anwer', 75), ('Andrew',  
80)]
```

Each entry in `L` corresponds to a student and the marks he or she has scored in a Python exam. Write these details to a CSV file named `scores.csv`. The header should be `Name,Python`. The entries should be written to the file in the order in which they appear in the list `L`. Select the correct implementation of a function named `write_to_file` that accepts `L` as argument and writes to the file `scores.csv`.

Snippet-1

```
1 | def write_to_file(L):  
2 |     f = open('scores.csv', 'w')  
3 |     f.write('Name,Python\n')  
4 |     for i in range(len(L)):  
5 |         name, marks = L[i]  
6 |         line = name + ',' + marks  
7 |         if i != len(L) - 1:  
8 |             line = line + '\n'  
9 |         f.write(line)  
10 |    f.close()
```

Snippet-2

```
1 | def write_to_file(L):  
2 |     f = open('scores.csv', 'w')  
3 |     f.write('Name,Python\n')  
4 |     for i in range(len(L)):  
5 |         name, marks = L[i]  
6 |         line = name + ',' + str(marks)  
7 |         if i != len(L) - 1:  
8 |             line = line + '\n'  
9 |         f.write(line)  
10 |    f.close()
```

Options :

6406532326855. ❌ Only snippet-1 is correct

6406532326856. ✓ Only snippet-2 is correct

6406532326857. ❌ Both snippets are correct

6406532326858. ❌ Both snippets are incorrect

Question Number : 363 Question Id : 640653696574 Question Type : MCQ Is Question

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

Correct Marks : 3

Question Label : Multiple Choice Question

If n is a positive integer, what does the function $g(n)$ return?

```
1 def g(n):
2     if n < 10:
3         return n
4     return n % 10 + g(n // 10)
```

Options :

6406532326859. ✓ Sum of digits in n

6406532326860. ✗ Number of digits in n

6406532326861. ✗ Product of digits in n

6406532326862. ✗ Factorial of n

Sub-Section Number : 3

Sub-Section Id : 640653103012

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 364 Question Id : 640653696575 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 (name, age). Select all snippets of code that create a list names that contains the names of people whose age is above 45. 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 = [('Ajay', 40), ('Anita', 50), ('Alfred', 30), ('Ahmed', 38), ('Afnan', 30), ('Ananya', 50)]
```

Sample Output

```
1 | ['Anita', 'Ananya']
```

Options :

6406532326863. ✓

```
1 | names = [x for (x, y) in L if y > 45]
2 | print(names)
```

6406532326864. ✓

```
1 | names = []
2 | for (x, y) in L:
3 |     if y > 45:
4 |         names.append(x)
5 | print(names)
```

6406532326865. ✘

```
1 | names = [x if y > 45 for (x, y) in L]
2 | print(names)
```

6406532326866. ✘

```
1 | names = [x for (x, y) in L]
2 | print(names)
```

Question Number : 365 Question Id : 640653696576 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('marks.csv', 'r')
2 D = dict()
3 for line in f:
4     name, subject, mark = line.strip().split(',')
5     mark = int(mark)
6     if name not in D:
7         D[name] = dict()
8     D[name][subject] = mark
9 print(D)
```

This code produces the given output:

```
1 {'Kubra': {'Math': 80, 'Chemistry': 90}, 'Livin': {'Physics': 85, 'Biology': 88}}
```

Which of the following could be the contents of the file `marks.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 Kubra,Math,80
- 2 Livin,Physics,85
- 3 Kubra,Chemistry,90
- 4 Livin,Biology,88

6406532326867. ✓

- 1 Kubra,Math,80
- 2 Livin,Physics,80
- 3 Kubra,Chemistry,90
- 4 Livin,Biology,88
- 5 Livin,Physics,85

6406532326868. ✓

- 1 Livin,Physics,85
- 2 Livin,Biology,88
- 3 Kubra,Math,80
- 4 Kubra,Chemistry,90

6406532326869. ✘

6406532326870. ✘

```
1 Kubra,Chemistry,90
2 Kubra,Math,80
3 Livin,Physics,85
4 Livin,Biology,88
```

Question Number : 366 Question Id : 640653696577 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

Statement

Consider the following code-blocks. E is a Boolean expression. Two blocks of code are said to be equivalent if they produce the same output for a given input.

Block-1

```
1 if E:
2     print('good')
3 else:
4     print('bad')
```

Block-2

```
1 if E:
2     print('good')
3 print('bad')
```

Block-3

```
1 print('good')
2 print('bad')
```

Select all true statements.

Options :

6406532326871. ✖ All three blocks are equivalent to each other.

6406532326872. ✘ Exactly two of these three blocks are equivalent to each other.

6406532326873. ✘ Blocks 1 and 2 print the same output when E evaluates to True .

6406532326874. ✓ Blocks 1 and 2 print the same output when E evaluates to False .

6406532326875. ✓ Blocks 2 and 3 print the same output when E evaluates to True .

Question Number : 367 Question Id : 640653696578 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 string1 = input()
2 string2 = input()
3
4 # there is no space between the quotes
5 out = ''
6
7 for char in string2:
8     if char not in string1:
9         out += char
10
11 print(out)
```

Select all inputs for which this code will print an empty string as output.

Options :

1 abcdefgh
2 adgh

6406532326876. ✓

1 grow
2 rowrowrow

6406532326877. ✓

6406532326878. ✘

```
1 | great
2 | goodandgreat
```

6406532326879. ✘

```
1 | perfect
2 | prefects
```

Sub-Section Number : 4

Sub-Section Id : 640653103013

Question Shuffling Allowed : Yes

Is Section Default? : null

Question Number : 368 Question Id : 640653696579 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 f(x, y):
2 |     if x == 1:
3 |         return 0
4 |     return 1 + f(x // y, y)
5 |
6 | print(f(6561, 3))
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 369 Question Id : 640653696580 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 string in ['1', '1.2', '3', '4']:
4     try:
5         x = int(string)
6         val += x
7     except:
8         count += 1
9         val += 10
10
11 print(val + count)
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

19

Question Number : 370 Question Id : 640653696581 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 s = 0
2 x = 2
3 while x <= 15:
4     count = 0
5     for f in range(1, x + 1):
6         if x % f == 0:
7             count += 1
8     if count == 2:
9         s = s + x
10    x = x + 1
11
12 print(s)
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

41

Sub-Section Number : 5

Sub-Section Id : 640653103014

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696582 **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 : (371 to 372)

Question Label : Comprehension

Consider the following definition of a class.

```
1 class Company:
2     def __init__(self, employees):
3         self.employees = employees
4
5     def update_salary(self, employee, salary):
6         self.employees[employee] = salary
7
8     def remove_employee(self, employee):
9         # removes key from dict
10        del self.employees[employee]
11
12    def add_employee(self, employee, salary):
13        self.employees[employee] = salary
```

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 371 Question Id : 640653696583 Question Type : MCQ Is Question

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 cmp = Company(dict())
2 cmp.add_employee('Arjun', 20000)
3 cmp.add_employee('Prachi', 30000)
4 cmp.update_salary('Arjun', 25000)
5 cmp.add_employee('Satwik', 10000)
6 print(cmp.employees)
```

Options :

6406532326883. ✓ 1 | {'Arjun': 25000, 'Prachi': 30000, 'Satwik': 10000}

6406532326884. ✗ 1 | {'Arjun': 20000, 'Prachi': 30000, 'Satwik': 10000}

6406532326885. ✘ 1 | [('Arjun', 20000), ('Prachi', 30000), ('Satwik', 10000)]

6406532326886. ✘ 1 | [('Arjun', 25000), ('Prachi', 30000), ('Satwik', 10000)]

Question Number : 372 Question Id : 640653696584 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

Write a method that returns the number of employees.

Options :

6406532326887. ✓ 1 | def num_employees(self):
2 | return len(self.employees)

6406532326888. ✘ 1 | def num_employees(self):
2 | return len(employees)

6406532326889. ✘ 1 | def num_employees():
2 | return len(employees)

6406532326890. ✘ 1 | def num_employees():
2 | return len(self.employees)

Sub-Section Number : 6

Sub-Section Id : 640653103015

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696585 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 : (373 to 374)

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. Now study the code given below:

```
1 # presses contains the sequence of button presses made by you
2 presses = 'UUUDDDUDDDUD'
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 : 373 Question Id : 640653696586 Question Type : MCQ Is Question

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 :

6406532326891. ✓ It prints the number of button presses after which you reach the floor -1 for the first time.

6406532326892. ✘ It prints the number of times you cross the floor -1

6406532326893. ✘ It prints the final floor level after all the button presses.

Question Number : 374 Question Id : 640653696587 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 :

9

Sub-Section Number : 7

Sub-Section Id : 640653103016

Question Shuffling Allowed : No

Is Section Default? : null

Question Id : 640653696588 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 : (375 to 377)

Question Label : Comprehension

Consider the following snippet of code:

```
1 def do_something(M):
2     out = [ ]
3     m, n = len(M), len(M[0])
4     for j in range(n):
5         row = [ ]
6         for i in range(m):
7             row.append(M[i][j])
8         out.append(row)
9     return out
10
11 M = [[1, 2, 3], [4, 5, 6], [7, 8, 9]]
12 P = do_something(M)
13 print(P)
14 P.reverse() # reverses the list P in-place
15 print(P)
16 P = do_something(P)
17 print(P)
```

Answer the given subquestions after executing the above code snippet.

Sub questions

Question Number : 375 Question Id : 640653696589 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 first line of the output?

Options :

6406532326895. ✓ 1 | [[1, 4, 7], [2, 5, 8], [3, 6, 9]]

6406532326896. ✗ 1 | [[3, 6, 9], [2, 5, 8], [1, 4, 7]]

6406532326897. ✗ 1 | [[3, 2, 1], [6, 5, 4], [9, 8, 7]]

6406532326898. ✘ 1 | [[1, 2, 3], [4, 5, 6], [7, 8, 9]]

Question Number : 376 Question Id : 640653696590 Question Type : MCQ Is Question

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

Correct Marks : 1.5

Question Label : Multiple Choice Question

What is the second line of the output?

Options :

6406532326899. ✘ 1 | [[1, 4, 7], [2, 5, 8], [3, 6, 9]]

6406532326900. ✓ 1 | [[3, 6, 9], [2, 5, 8], [1, 4, 7]]

6406532326901. ✘ 1 | [[3, 2, 1], [6, 5, 4], [9, 8, 7]]

6406532326902. ✘ 1 | [[1, 2, 3], [4, 5, 6], [7, 8, 9]]

Question Number : 377 Question Id : 640653696591 Question Type : MCQ Is Question

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

Correct Marks : 1.5

Question Label : Multiple Choice Question

What is the third line of the output?

Options :

6406532326903. ✘ 1 | [[1, 4, 7], [2, 5, 8], [3, 6, 9]]

6406532326904.

✖ 1 | [[3, 6, 9], [2, 5, 8], [1, 4, 7]]

6406532326905. ✓ 1 | [[3, 2, 1], [6, 5, 4], [9, 8, 7]]

6406532326906. ✖ 1 | [[1, 2, 3], [4, 5, 6], [7, 8, 9]]