

**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 FOUNDATION DIPLOMA AN EXAM  
QDF4 28 Apr 2024

**Subject Name :**

2024 Apr28: IIT M AN EXAM QDF4

**Creation Date :**

2024-04-16 17:20:17

**Duration :**

180

**Total Marks :**

984

**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

<b>Change Theme :</b>	No
<b>Help Button :</b>	No
<b>Show Reports :</b>	No
<b>Show Progress Bar :</b>	No

## **Group I**

<b>Group Number :</b>	1
<b>Group Id :</b>	64065318434
<b>Group Maximum Duration :</b>	0
<b>Group Minimum Duration :</b>	90
<b>Show Attended Group? :</b>	No
<b>Edit Attended Group? :</b>	No
<b>Break time :</b>	0
<b>Group Marks :</b>	984
<b>Is this Group for Examiner? :</b>	No
<b>Examiner permission :</b>	Cant View
<b>Show Progress Bar? :</b>	No
<b>Revisit allowed for group Instructions? :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Minimum Instruction Time :</b>	0
<b>Group Time In :</b>	Minutes
<b>Navigate To Group Summary From Last Question? :</b>	No
<b>Disable Submit Button During Assessment? :</b>	No
<b>Section Selection Time? :</b>	0
<b>No of Optional sections to be attempted :</b>	0

<b>Section Id :</b>	64065356701
<b>Section Number :</b>	1
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	18
<b>Number of Questions to be attempted :</b>	18
<b>Section Marks :</b>	50
<b>Display Number Panel :</b>	Yes
<b>Section Negative Marks :</b>	0
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	640653118980
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 1 Question Id : 640653816308 Question Type : MCQ Is Question**

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

**Correct Marks : 0**

Question Label : Multiple Choice Question

**THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : SEMESTER II:  
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 :**

6406532734385. ✓ YES

6406532734386. ✗ NO

**Question Number : 2 Question Id : 640653816309 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:

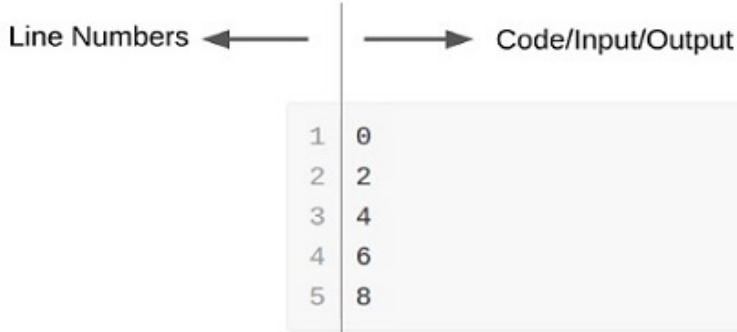
### Code

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

### Input or Output

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

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



## Useful information

### range

Sample behaviour of the `range` function:

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

### // operator

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

### NAT → integer

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

## Options :

6406532734387. ✓ Useful Data has been mentioned above.

6406532734388. ❗ This data attachment is just for a reference & not for an evaluation.

**Sub-Section Number :**

2

**Sub-Section Id :**

640653118981

**Question Shuffling Allowed :**

Yes

**Is Section Default? :**

null

**Question Number : 3 Question Id : 640653816310 Question Type : MCQ Is Question**

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

**Correct Marks : 3**

**Question Label : Multiple Choice Question**

What is the output of the following snippet of code?

```
1 def some_fun(L):
2     if len(L) == 1:
3         return L
4     if L[0] in L[1:]:
5         return some_fun(L[1:])
6     return [L[0]] + some_fun(L[1:])
7
8 print(some_fun([1, 5, 4, 3, 2, 1, 3, 2, 4, 3, 5, 7]))
```

**Options :**

1 | [1, 2, 4, 3, 5, 7]

6406532734389. ✓

1 | [1, 5, 4, 3, 2, 7]

6406532734390. ✗

1 | [1, 2, 3, 4, 5, 7]

6406532734391. ✗

1 | [7, 5, 4, 3, 2, 1]

6406532734392. ✗

**Question Number : 4 Question Id : 640653816311 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 3**

**Question Label : Multiple Choice Question**

`check_cooling` is a method of the class `AirConditioner` that updates the attribute `cooling_required` to the Boolean literal `True` if the attribute `current_temperature` is above 28 degrees Celsius, indicating that cooling is required, and `False` otherwise. Select the correct implementation of this method.

**Options :**

```
1 def check_cooling(self):
2     if self.current_temperature > 28:
3         self.cooling_required = True
4     else:
5         self.cooling_required = False
```

6406532734393. ✓

```
1 def check_cooling():
2     if self.current_temperature > 28:
3         self.cooling_required = True
4     else:
5         self.cooling_required = False
```

6406532734394. ✘

```
1 def check_cooling(self):
2     if current_temperature > 28:
3         self.cooling_required = True
4     else:
5         self.cooling_required = False
```

6406532734395. ✘

```
1 def check_cooling(self):
2     if self.current_temperature >= 28:
3         cooling_required = True
4     else:
5         cooling_required = False
```

6406532734396. ✘

**Question Number : 5 Question Id : 640653816312 Question Type : MCQ Is Question**

**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 | L = [x ** 2 if x % 2 == 0 else 2 * x for x in range(1, 11)]  
2 | print(L)
```

**Options :**

1 | [2, 4, 6, 16, 10, 36, 14, 64, 18, 100]

6406532734397. ✓

1 | [1, 4, 9, 8, 25, 12, 49, 16, 81, 20]

6406532734398. ✗

1 | [1, 4, 9, 16, 25, 36, 49, 64, 81, 100]

6406532734399. ✗

1 | [2, 4, 6, 8, 10, 12, 14, 16, 18, 20]

6406532734400. ✗

**Question Number : 6 Question Id : 640653816313 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 3**

Question Label : Multiple Choice Question

Consider the code given below.

```
1 f = open('output.txt', 'w')
2 f.write('apple')
3 f.write('banana')
4 f.write('cat')
5 f.write('dog')
6 f.write('elephant')
7 f.close()
```

What is the content present in the file `output.txt` after the execution of the above code?

**Options :**

1 | applebananacatdogelephant

6406532734401. ✓

1 | apple banana cat dog elephant

6406532734402. ✗

```
1 | apple
2 |
3 | banana
4 |
5 | cat
6 |
7 | dog
8 |
9 | elephant
```

6406532734403. ✗

```
1 | apple
2 | banana
3 | cat
4 | dog
5 | elephant
```

6406532734404. ✗

**Question Number : 7 Question Id : 640653816314 Question Type : MCQ Is Question**

**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 library maintains a database of book records in the form of a list of dictionaries. Each dictionary represents a book and contains the following keys:

- title
- author
- pages

The database is stored in the list `records`. A sample database is given below.

```
1 records = [
2     {'title': '1984', 'author': 'George Orwell', 'pages': 328},
3     {'title': 'To Kill a Mockingbird', 'author': 'Harper Lee', 'pages': 281},
4     {'title': 'Pride and Prejudice', 'author': 'Jane Austen', 'pages': 279},
5     {'title': 'The Catcher in the Rye', 'author': 'J.D. Salinger', 'pages':
6         277},
6     {'title': 'The Great Gatsby', 'author': 'F. Scott Fitzgerald', 'pages': 180}
7 ]
```

Write a function named `get_longest_book` that accepts the list `records` as argument and retrieves the book with the most pages from the database. The function should **return a dictionary** containing the details of the longest book. You can assume that the longest book is unique, that is, there is exactly one book with the most number of pages in the list.

**Snippet-1**

```
1 def get_longest_book(records):
2     max_pages = 0
3     for record in records:
4         if record['pages'] > max_pages:
5             max_pages = record['pages']
6     return max_pages
```

**Snippet-2**

```
1 def get_longest_book(records):
2     max_pages = 0
3     for record in records:
4         if record['pages'] > max_pages:
5             max_pages = record['pages']
6     for record in records:
7         if record['pages'] == max_pages:
8             return record
```

**Options :**

6406532734405. ❌ Only snippet-1 is correct

6406532734406. ✓ Only snippet-2 is correct

6406532734407. ❌ Both snippets 1 and 2 are correct

6406532734408. ❌ Both snippets 1 and 2 are incorrect

**Question Number : 8 Question Id : 640653816315 Question Type : MCQ Is Question**

**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 A = {1, 2, 3, 5, 9, 11, 15, 18, 24}
2 B = {2, 4, 5, 7, 8, 15, 25, 30}
3 C = set()
4 for x in A:
5     C.add(x)
6 for x in B:
7     if x in C:
8         C.remove(x)
9 print(C)
```

**Options :**

1 | {1, 3, 9, 11, 18, 24}

6406532734409. ✓

1 | {4, 7, 8, 25, 30}

6406532734410. ❌

1 | {1, 2, 3, 4, 5, 7, 8, 9, 11, 15, 18, 24, 25, 30}

6406532734411. ❌

6406532734412.

1 | {2, 5, 15}

**Sub-Section Number :** 3

**Sub-Section Id :** 640653118982

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 9 Question Id : 640653816316 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 snippets of code:

**Code-1**

```
1 | L = [1, 2, 3]
2 | L.append(4)
```

**Code-2**

```
1 | T = (1, 2, 3)
2 | T[0] = 4
```

**Code-3**

```
1 | D = {'one': 1}
2 | print(D['one'])
```

Select all true statements.

**Options :**

6406532734413. ✘ Code-1 will throw an error in line-2

6406532734414. ✘ Code-2 will throw an error in line-1

6406532734415. ✓ Code-2 will throw an error in line-2

6406532734416. ✗ Code-2 will run without any error

6406532734417. ✓ Code-3 will run without any error

**Question Number : 10 Question Id : 640653816318 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 function `fun` defined below that accepts a square matrix as argument and returns a Boolean value.

```
1 def fun(M):
2     n = len(M)
3     for i in range(n):
4         for j in range(n):
5             if i != j and M[i][j] != 0:
6                 return False
7             if i == j and M[i][j] != M[0][0]:
8                 return False
9     return True
```

Select all matrices for which the function returns the value `True`.

**Options :**

1 | `[[2, 0, 0], [0, 2, 0], [0, 0, 2]]`

6406532734422. ✓

1 | `[[5, 0, 0, 0], [0, 5, 0, 0], [0, 0, 5, 0], [0, 0, 0, 5]]`

6406532734423. ✓

1 | `[[1, 0, 0, 0], [0, 2, 0, 0], [0, 0, 3, 0], [0, 0, 0, 4]]`

6406532734424. ✗

```
1 | [[4, 0, 0, 1], [0, 4, 1, 0], [1, 0, 4, 0], [1, 0, 0, 4]]
```

6406532734425. ❌

**Sub-Section Number :** 4

**Sub-Section Id :** 640653118983

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 11 Question Id : 640653816317 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

M is a  $m \times n$  matrix with  $m \neq n$ . We wish to calculate the sum of each column and store the sums in a list called col\_sums. Note that col\_sums will have n elements. Select all correct implementations.

**Options :**

```
1 | m, n = len(M), len(M[0])
2 | col_sums = [sum([M[i][j] for i in range(m)]) for j in range(n)]
```

6406532734418. ✓

```
1 | m, n = len(M), len(M[0])
2 | col_sums = []
3 | for j in range(n):
4 |     csum = 0
5 |     for i in range(m):
6 |         csum += M[i][j]
7 |     col_sums.append(csum)
```

6406532734419. ✓

6406532734420. ❌

```
1 m, n = len(M), len(M[0])
2 col_sums = [ ]
3 for i in range(m):
4     csum = 0
5     for j in range(n):
6         csum += M[i][j]
7     col_sums.append(csum)
```

```
1 col_sums = [sum(col) for col in M]
```

6406532734421. ✘

**Sub-Section Number :** 5

**Sub-Section Id :** 640653118984

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 12 Question Id : 640653816319 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 calculate(m, n):
2     if n == 1:
3         return m
4     return m + calculate(m, n - 1)
5
6 c1 = calculate(3, 2)
7 c2 = calculate(4, 3)
8 c3 = calculate(5, 4)
9 print(c1 + c2 + c3)
```

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

38

**Question Number : 13 Question Id : 640653816320 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 L = [300, 252, 114, 65, 40, 22, 12]
2 n = len(L)
3
4 flag_1, flag_2 = True, True
5 for i in range(1, n):
6     if L[i] > L[i - 1]:
7         flag_2 = False
8     elif L[i] < L[i - 1]:
9         flag_1 = False
10
11 if flag_1:
12     print(1)
13 elif flag_2:
14     print(2)
15 else:
16     print(3)
```

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

2

**Question Number : 14 Question Id : 640653816322 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_1(P, Q):
2     return len(P) == len(Q)
3
4 def f_2(P, Q):
5     return sum([P[i] * Q[i] for i in range(len(P))])
6
7 def f_3(P, Q):
8     return f_2(P, Q) == 0
9
10 collection = [[1, 0, -1], [0, 1, 0], [-1, 0, -1],
11                 [0, 1, 0, 0], [0, 1, 1, 0, 0, 0]]
12
13 count = 0
14 for P in collection:
15     for Q in collection:
16         if f_1(P, Q):
17             if f_3(P, Q):
18                 count += 1
19
20 print(count)
```

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

**6**

**Question Number : 15 Question Id : 640653816323 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

`strings.txt` is a text file whose contents are given below:

```
1 1a  
2 2b  
3 3c  
4 4d  
5 5e  
6 6f  
7 7g
```

What is the output of the following snippet of code?

```
1 f = open('strings.txt', 'r')  
2 count = 0  
3 for line in f:  
4     line = line.strip()  
5     for char in line:  
6         try:  
7             x = int(char)  
8         except ValueError:  
9             count += 1  
10    f.close()  
11    print(count)
```

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

7

**Sub-Section Number :** 6

**Sub-Section Id :** 640653118985

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

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

**Correct Marks : 4**

Question Label : Short Answer Question

What is the output of the following snippet of code?

```
1 words = 'five,one,three/four,two'  
2  
3 D = {'one': 1, 'two': 2, 'three': 3, 'four': 4, 'five': 5}  
4 word = '' # empty string  
5 val, index = 0, 0  
6  
7 while index < len(words):  
8     char = words[index]  
9     index += 1  
10    if char == '/':  
11        break  
12    if char == ',':  
13        val += D[word]  
14        word = '' # empty string  
15        continue  
16    word = word + char  
17  
18 val += D[word]  
19  
20 print(val)
```

**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 :** 640653118986

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816324 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 : (17 to 18)**

Question Label : Comprehension

Consider the class **Doctor** :

```
1 class Doctor:
2     def __init__(self, name, fee):
3         self.name = name
4         self.fee = fee
5
6     def print_info(self):
7         print(f'Doctor name: {self.name}')
8         print(f'Doctor fee: {self.fee}')
9
10    def change_fee(self, new_fee):
11        self.fee = new_fee
```

**Surgeon** is a sub-class of **Doctor** :

```
1 class Surgeon(Doctor):
2     count = 0
3
4     def __init__(self, name, fee, experience):
5         super().__init__(name, fee)
6         self.experience = experience
7         Surgeon.count += 1
8
9     def print_info(self):
10        super().print_info()
11        print('Surgeon is a doctor')
12        print(f'Experience: {self.experience}')
13
14    def is_experienced(self):
15        return self.experience == 'Yes'
```

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 17 Question Id : 640653816325 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 output of the following snippet of code?

```
1 | surgeon = Surgeon('Kian', 1000, 'Yes')
2 | surgeon.change_fee(1200)
3 | surgeon.print_info()
```

**Options :**

- 1 Doctor name: Kian
- 2 Doctor fee: 1000

6406532734431. ✘

- 1 Doctor name: Kian
- 2 Doctor fee: 1200

6406532734432. ✘

- 1 Surgeon is a doctor
- 2 Experience: Yes

6406532734433. ✘

- 1 Doctor name: Kian
- 2 Doctor fee: 1000
- 3 Surgeon is a doctor
- 4 Experience: Yes

6406532734434. ✘

- 1 Doctor name: Kian
- 2 Doctor fee: 1200
- 3 Surgeon is a doctor
- 4 Experience: Yes

6406532734435. ✓

**Question Number : 18 Question Id : 640653816326 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**

`hospital` represents a list of objects

of type `Surgeon`. What is the

output of the following snippet

of code?

```
1 Surgeon.count = 0
2 hospital = [Surgeon('Hari', 800, 'No'),
3                 Surgeon('Pooja', 1200, 'Yes'),
4                 Surgeon('Ayan', 900, 'No'),
5                 Surgeon('Sindhu', 900, 'Yes'),
6                 Surgeon('Mary', 1300, 'Yes')]
7
8 count = 0
9 for surgeon in hospital:
10     if surgeon.is_experienced():
11         count = count + 1
12
13 print(count)
```

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

**3**

**Question Id : 640653816327 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 a csv file named `employees.csv` containing details of employees in a company. Note that the file has exactly 11 lines, and the entire file is given below for your reference:

```
1 department,name,position
2 HR, John Doe, Manager
3 Sales, Alice Smith, Sales Representative
4 IT, David Johnson, Software Engineer
5 HR, Jane Smith, HR Coordinator
6 IT, Michael Brown, Data Analyst
7 Sales, Sarah Lee, Sales Manager
8 IT, Chris Wilson, Software Engineer
9 HR, Emily Jones, Recruiter
10 Sales, Robert Garcia, Sales Associate
11 IT, Emma Taylor, Software Developer
```

Execute the following code given below and answer the questions that follow:

```
1 f = open('employees.csv', 'r')
2 f.readline() # read the header
3 employees = dict()
4 for line in f:
5     line = line.strip().split(',')
6     department, name, position = line
7     if department not in employees:
8         employees[department] = dict()
9     if name not in employees[department]:
10        employees[department][name] = position
11 f.close()
```

Based on the above data, answer the given subquestions.

### Sub questions

**Question Number : 19 Question Id : 640653816328 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 output of the following snippet of code?

```
1 | try:  
2 |     print(employees['Finance'])  
3 | except FileNotFoundError:  
4 |     print('File Not Found Error')  
5 | except KeyError:  
6 |     print('Key Error')
```

Options :

1 | {'Anna': 'Software developer', 'David': 'PMO'}

6406532734437. ✘

1 | Value Error

6406532734438. ✘

1 | Key Error

6406532734439. ✓

The code will execute without throwing any error but will not print any output to the console

6406532734440. ✘

**Question Number : 20 Question Id : 640653816329 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 output of the following snippet of code?

```
1 | print(len(employees['HR'].keys()))
```

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

3

## Sem1 English1

<b>Section Id :</b>	64065356702
<b>Section Number :</b>	2
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	26
<b>Number of Questions to be attempted :</b>	26
<b>Section Marks :</b>	100
<b>Display Number Panel :</b>	Yes
<b>Section Negative Marks :</b>	0
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	640653118987
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 21 Question Id : 640653816330 Question Type : MCQ Is Question**

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

**Correct Marks : 0**

Question Label : Multiple Choice Question

**THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : SEMESTER I: ENGLISH I  
(COMPUTER BASED EXAM)"**

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

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

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

**Options :**

6406532734442. ✓ YES

6406532734443. ✗ NO

**Sub-Section Number :** 2

**Sub-Section Id :** 640653118988

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816331 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 : (22 to 36)**

Question Label : Comprehension

Read the following passage and answer the given subquestions:

Open AI Staff 'Warned Board New System Threatened Humanity'

Open AI was reportedly working on an advanced system that was so powerful that it caused safety concerns among staff at the company before Sam Altman's sacking. The artificial intelligence model triggered such alarm with some OpenAI researchers that they wrote to the board of directors before Altman's dismissal warning that it could threaten humanity, Reuters reported.

The model, called Q\* – and pronounced as “Q Star” – was able to solve basic maths problems it had not seen before, according to the tech news site The Information, which added that the pace of development behind the system had alarmed some safety researchers. The ability to solve maths problems would be viewed as a significant development in AI. The reports followed days of turmoil at San Francisco-based Open AI, whose board sacked Altman, but then reinstated him after nearly all of the company’s 750 staff threatened to resign if he were not brought back. Altman also had the support of OpenAI’s biggest investor, Microsoft.

Many experts are concerned that companies such as OpenAI are moving too fast towards developing artificial general intelligence (AGI), the term for a system that can perform tasks at human or above-human levels of intelligence – and which could, in theory, evade human control. Andrew Rogoyski, of the Institute for People-Centred AI at the University of Surrey, said the existence of a maths-solving large language model (LLM) would be a breakthrough. He said: “The intrinsic ability of LLMs to do maths is a major step forward, allowing AIs to offer a whole new swath of analytical capabilities. It’s a big step forward.”

In an appearance at the Asia-Pacific Economic Cooperation summit, Altman said: “Four times now in the history of OpenAI, the most recent time was just in the last couple weeks [sic], I’ve gotten to be in the room, when we sort of push the veil of ignorance back and the frontier of discovery forward, and getting to do that is the professional honour of a lifetime.” Open AI was founded as a nonprofit venture with a board that governs a commercial subsidiary, run by Altman. Open AI states that it was established with the goal of developing “safe and beneficial artificial general intelligence for the benefit of humanity” and that the for-profit company would be “legally bound to pursue the nonprofit’s mission.” The emphasis on safety led to the speculation that Altman had been sacked for endangering the company’s core mission.

Excerpted from:

Milmo, Dan. “Open AI Staff ‘Warned Board New System Threatened Humanity.’” The Guardian, 24 Nov 2023.

### **Sub questions**

**Question Number : 22 Question Id : 640653816332 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose a synonym for the word "trigger."

**Options :**

6406532734444. ❌ Hinder

6406532734445. ❌ Inhibit

6406532734446. ❌ Deter

6406532734447. ✓ Produce

**Question Number : 23 Question Id : 640653816333 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose an antonym for the word "turmoil."

**Options :**

6406532734448. ❌ Revolution

6406532734449. ❌ Confusion

6406532734450. ✓ Calm

6406532734451. ❌ Chaos

**Question Number : 24 Question Id : 640653816334 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

[T]he pace of development behind the system had **alarmed** some safety researchers.

Choose the word that can replace the word "alarmed" without altering the sense of the sentence.

**Options :**

6406532734452. ✘ Empowered

6406532734453. ✓ Frightened

6406532734454. ✘ Embezzled

6406532734455. ✘ Festooned

**Question Number : 25 Question Id : 640653816335 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

To which of the following words is "reinstate" closest in meaning?

**Options :**

6406532734456. ✓ Restore

6406532734457. ✘ Revere

6406532734458. ✘ Reprove

**Question Number : 26 Question Id : 640653816336 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

To which of the following words is "evade" in the phrase "evade human control" closest in meaning?

**Options :**

6406532734459. ✓ Bypass

6406532734460. ✘ Bilateral

6406532734461. ✘ Biennial

6406532734462. ✘ Blatant

**Question Number : 27 Question Id : 640653816337 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

*The intrinsic ability of LLMs to do maths is a major step forward, allowing AIs to offer a whole new swath of analytical capabilities.*

A word in the sentence above can be replaced using the word “area” without altering the sense of the sentence. Find the word.

**Options :**

6406532734463. ✘ Intrinsic

6406532734464. ✓ Swath

6406532734465. ✘ Analytical

6406532734466. ✘ Capabilities

**Question Number : 28 Question Id : 640653816338 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

Open AI was founded as:

**Options :**

6406532734467. ✘ A commercial venture with a board that governed a nonprofit subsidiary.

6406532734468. ✓ A nonprofit venture with a board that governed a commercial subsidiary.

6406532734469. ✗ A charitable venture for safe and beneficial artificial general intelligence for the benefit of humanity.

6406532734470. ✗ None of these.

**Question Number : 29 Question Id : 640653816339 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 did the staff at Open AI fear would threaten humanity?

**Options :**

6406532734471. ✗ The sacking of Sam Altman

6406532734472. ✗ The reinstatement of Sam Altman

6406532734473. ✓ Q\*, an advanced artificial intelligence model

6406532734474. ✗ Losing its biggest investor

**Question Number : 30 Question Id : 640653816340 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, according to Sam Altman, is the professional honour of a lifetime?

**Options :**

6406532734475. ✗ To be sacked from Open AI

6406532734476. ✗ To be reinstated to Open AI

6406532734477. ✗ To govern the commercial subsidiary of Open AI

6406532734478. ✓ To be the part of a venture that reduces ignorance by driving discoveries

**Question Number : 31 Question Id : 640653816341 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

How many syllables are there in "speculation"?

**Options :**

6406532734479. ✗ Three

6406532734480. ✗ Five

6406532734481. ✓ Four

6406532734482. ✗ None of these

**Question Number : 32 Question Id : 640653816342 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/statements is/are true?

- i. Nearly all of OpenAI's 750 staff threatened to resign if Sam Altman were not brought back.
- ii. Sam Altman did not enjoy the support of OpenAI's biggest investor.
- iii. The ability to solve maths problems is not a significant development in AI.

**Options :**

6406532734483. ✗ iii only

6406532734484. ✗ ii only

6406532734485. ✗ Both i and ii

6406532734486. ✓ i only

**Question Number : 33 Question Id : 640653816343 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

*The emphasis on safety led to the speculation that Altman had been sacked for endangering the company's core mission.*

A word in the sentence above can be replaced using the word "stress" without altering the sense of the sentence. Find the word.

**Options :**

6406532734487. ✓ Emphasis

6406532734488. ✗ Speculation

6406532734489. ✗ Endangering

6406532734490. ✗ Led

**Question Number : 34 Question Id : 640653816344 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

*The emphasis on safety led to the speculation that Altman had been sacked for endangering the company's core mission.*

A word in the sentence above can be replaced using the word "supposition" without altering the sense of the sentence. Find the word.

**Options :**

6406532734491. ✩ Emphasis

6406532734492. ✓ Speculation

6406532734493. ✩ Mission

6406532734494. ✩ Safety

**Question Number : 35 Question Id : 640653816345 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

*OpenAI was reportedly working on an advanced system that was so powerful that it caused safety concerns among staff at the company before Sam Altman's sacking.*

The use of the word "reportedly" in this sentence suggests that the author of the article does not have first-hand information of the events detailed in the article. The topic statement of this article is based on information received from the reportage of \_\_\_\_.

**Options :**

6406532734495. ✩ Sam Altman

6406532734496. ✩ The Institute for People-Centred AI

6406532734497. ✓ Reuters, a news agency

6406532734498. ✩ Asia-Pacific Economic Cooperation summit

**Question Number : 36 Question Id : 640653816346 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

*Open AI states that it was established with the goal of developing "safe and beneficial artificial general*

*intelligence for the benefit of humanity."*

The word "*institute*" can be used to replace which of the following words in the aforesated sentence?

**Options :**

6406532734499. ❌ "*Institutes*" can replace "*states*"

6406532734500. ✓ "*Instituted*" can replace "*established*"

6406532734501. ❌ "*Institutional*" can replace "*beneficial*"

6406532734502. ❌ "*Institute*" can replace "*benefit*"

**Sub-Section Number :** 3

**Sub-Section Id :** 640653118989

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816347 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Question Numbers : (37 to 46)**

Question Label : Comprehension

Read the following programme brochure and answer the given subquestions.

The Kala Ghoda Arts Festival 2020

The Kala Ghoda Art District is a crescent shaped precinct, with its concentration of museums, art galleries, educational institutions, boutiques and restaurants, has the finest array of heritage buildings in the city, and has emerged as an important art and cultural centre, thronged by visitors and tourists from across the globe. The Kala Ghoda Association was formed with the idea of giving back to the city it calls home by giving life to the biggest street art festival that India has seen- the Kala Ghoda Arts Festival. It is the country's largest multicultural festival, and it takes place [Edit i] **each** year in February. The festival draws visitors in large numbers not only from the city but also

from all over the country and the world. With the funds from The Kala Ghoda Arts Festival and the support from generous sponsors, the Kala Ghoda Association has helped to physically improve the area, restoring buildings and facades, installing people-friendly street furniture and improving the amenities available.

1<sup>st</sup> FEB SATURDAY

- *What's the Point?* with Arzan Khambatta and Deepti Nair

CSMVS Lawns 11:00 a.m. - 12:30 p.m.

The start of every ingenious creation is a dot, and when that dot goes for a walk, it becomes a line. [Edit ii] **Lets** connect the dots in free space using beads and wires to create magic. (Age: 8 yrs +)

- Faber-Castell Artivity - Kandinsky's *Concentric Circles* by *Know Your Art*

CSMVS Lawns 1:00 p.m. - 2:00 p.m.

Join us to create your interpretation of Kandinsky's iconic work *The Square with Concentric Circles* at the *Know Your Art* workshop. (Age: 6 to 12 yrs)

- *Bored* - a street play followed by *The Story Room* conducted by Tejaswini Patwardhan and her team of *Open Minds Productions*

CSMVS Lawns 2:00 p.m. - 3:30 p.m.

*Bored* encourages kids to have unstructured time to ponder over, get creative or simply interact [Edit iii] **with each other, where as The Story Room** is a fun and interactive session of lateral thinking and creative writing for the parent-child duo. (Age: 6 to 12 yrs)

- *World of Coding* with *CodeW/Floppy*

CSMVS Lawns 3:30 p.m. - 4:30 p.m.

Play a maze with algo or dance to the tune of loopy, in our fun & interactive world of programming, presented by *CodeW/Floppy*. [Edit iv] **Stay SMART & remain SAFE online, learn about cybersecurity by cracking codes in this fun exercise presented by CodeW/Floppy.** (Age: 5 to 12 yrs)

- *Making the World* with Laura Simms

CSMVS Lawns 5:00 p.m. - 6:30 p.m.

Laura tells a beautiful Seneca story called "The Woman Who Fell from the Sky," a tale of good overcoming bad [Edit v] **and a love for nature followed by children** creating [Edit vi] **a mural with dots of the images of the story from their imagination.** (Age: 8 yrs +)

Adapted from: *Kala Ghoda Arts Festival 2020*. Kala Ghoda Association.

### **Sub questions**

**Question Number : 37 Question Id : 640653816348 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Which of the following options shows the correctly punctuated form of the sentence given below? Choose only one option as your answer and ensure that your chosen answer avoids punctuation marks where they are not necessary and uses punctuation marks where they are necessary.

*The Kala Ghoda Art District is a crescent shaped precinct, with its concentration of museums, art galleries, educational institutions, boutiques and restaurants, has the finest array of heritage buildings in the city, and has emerged as an important art and cultural centre, thronged by visitors and tourists from across the globe.*

### **Options :**

6406532734503. ❖ The Kala Ghoda Art District is a crescent shaped precinct with its concentration of museums art galleries, educational institutions boutiques and restaurants, has the finest array of heritage buildings in the city, and has emerged as an important art and cultural centre,

thronged by visitors and tourists from across the globe.

6406532734504. ✓ The Kala Ghoda Art District is a crescent-shaped precinct with its concentration of museums, art galleries, educational institutions, boutiques and restaurants, has the finest array of heritage buildings in the city, and has emerged as an important art and cultural centre thronged by visitors and tourists from across the globe.

6406532734505. ✗ The Kala Ghoda Art District is a crescent shaped precinct, with its concentration of museums art galleries educational institutions boutiques and restaurants, has the finest array of heritage buildings in the city, and has emerged as an important art and cultural centre, thronged by visitors and tourists from across the globe.

6406532734506. ✗ The Kala Ghoda Art District is a crescent shaped precinct, with its concentration of museums, art galleries educational institutions, boutiques, and restaurants, has the finest array of heritage buildings in the city, and has emerged as an important art, and cultural centre, thronged by visitors and tourists from across the globe.

**Question Number : 38 Question Id : 640653816349 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Which of the following is not true according to the information given in the brochure?

**Options :**

6406532734507. ✗ The Kala Ghoda Association has installed people-friendly street furniture.

6406532734508. ✗ The Kala Ghoda Association has improved buildings and facades in the area.

6406532734509. ✓ The Kala Ghoda Association is a façade.

6406532734510. ✗ The funds from The Kala Ghoda Arts Festival and the money received from generous sponsors are used to improve the amenities available in the area.

**Question Number : 39 Question Id : 640653816350 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

How can the word marked in bold as [Edit i] be changed to improve the brochure?

*It is the country's largest multicultural festival, and it takes place **[Edit i]** each year in February.*

**Options :**

6406532734511. ❌ All

6406532734512. ✓ Every

6406532734513. ❌ Just each

6406532734514. ❌ Per

**Question Number : 40 Question Id : 640653816351 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

How can the word marked in bold as [Edit ii] be changed to improve the brochure?

*[Edit ii] Lets connect the dots in free space using beads and wires to create magic.*

**Options :**

6406532734515. ✓ Let's

6406532734516. ❌ Lets'

6406532734517. ❌ Lets all

6406532734518. ❌ Lest

**Question Number : 41 Question Id : 640653816352 Question Type : MCQ Is Question**

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

Time : 0

**Correct Marks : 2**

Question Label : Multiple Choice Question

How can the part of the sentence marked in bold as [Edit iii] be changed to improve the brochure?

Choose the single most fitting answer from the options given below keeping in mind the organisation of the events.

*Bored encourages kids to have unstructured time to ponder over, get creative or simply interact [Edit iii] with each other, whereas **The Story Room** is a fun and interactive session of lateral thinking and creative writing for the parent-child duo.*

**Options :**

6406532734519. ✓ With each other; whereas, *The Story Room*

6406532734520. ✗ With each other where *The Story Room*

6406532734521. ✗ With each other, as the *Story Room*

6406532734522. ✗ With each other whereas *The Story Room*

**Question Number : 42 Question Id : 640653816353 Question Type : MCQ Is Question**

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

Time : 0

**Correct Marks : 2**

Question Label : Multiple Choice Question

Identify the error in the sentence marked in bold as [Edit iv].

*[Edit iv] Stay SMART & remain SAFE online, learn about cybersecurity by cracking codes in this fun exercise presented by CodeW/Floppy.*

**Options :**

6406532734523. ✗ Subject-verb disagreement

6406532734524. ✗ Incorrect use of adjectives

6406532734525. ✓ Lacks a coordinating conjunction

6406532734526. ❌ Lacks a subordinating conjunction

**Question Number : 43 Question Id : 640653816354 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

How can the part of the sentence given in bold as [Edit v] be changed to improve the brochure?

*Laura tells a beautiful Seneca story called "The Woman Who Fell from the Sky," a tale of good overcoming bad [Edit v] **and a love for nature followed by children** creating [Edit vi] a mural with dots of the images of the story from their imagination.*

(A) and of fostering a love for nature followed by the children

(B) and a love for nature following by children

(C) and of fostering a love for nature, followed by the children's

**Options :**

6406532734527. ❌ Only (A)

6406532734528. ❌ Only (B)

6406532734529. ✓ Only (C)

6406532734530. ❌ Both (A) and (C)

**Question Number : 44 Question Id : 640653816355 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

How can the part of the sentence given in bold as [Edit vi] be changed to improve the brochure?

Choose the single most fitting answer from the options given below keeping in mind the brochure's need to minimise ambiguity.

*Laura tells a beautiful Seneca story called "The Woman Who Fell from the Sky," a tale of good overcoming bad [Edit v] and a love for nature followed by children creating [Edit vi] a mural with dots of the images of the story from their imagination.*

**Options :**

6406532734531. ✘ A mural using dots of their visualisation of the story.

6406532734532. ✓ A dot-mural on the basis of their imagination of the story.

6406532734533. ✘ A mural of dots of their visualisation of the story.

6406532734534. ✘ A mural with their imagination of the images of the story of dots.

**Question Number : 45 Question Id : 640653816356 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 information is necessary for this brochure to serve its purpose?

**Options :**

6406532734535. ✘ Time

6406532734536. ✘ Venue

6406532734537. ✘ The age group for which the events are intended

6406532734538. ✓ All of these

**Question Number : 46 Question Id : 640653816357 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

The purpose of 'not only...but also' in the sentence '*The festival draws visitors in large numbers not*

*'only from the city but also from all over the country and the world' is:*

**Options :**

6406532734539. ✓ To correlate different sites from which the festival gains its audience so as to show the popularity of the festival

6406532734540. ✘ To contrast between the lifestyles of the visitors from the city and the visitors from other places

6406532734541. ✘ To show a cause and effect relationship between the visitors from the city and the visitors from other places

6406532734542. ✘ To make a prediction

**Sub-Section Number :** 4

**Sub-Section Id :** 640653118990

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816358 Question Type : COMPREHENSION Sub Question Shuffling**

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

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

**Question Numbers : (47 to 51)**

Question Label : Comprehension

Read the following passage and fill in the blanks with the verb in the present tense. Answer the given subquestions.

The energetic students of Spring High School \_\_\_\_\_(1) known for their enthusiasm in various extracurricular activities. Every year, the school \_\_\_\_\_(2) a grand sports event where athletes from different schools \_\_\_\_\_(3) fiercely. The teachers \_\_\_\_\_(4) always encouraged their students to participate wholeheartedly, and their efforts \_\_\_\_\_(5) resulted in numerous victories over the years.

**Sub questions**

**Question Number : 47 Question Id : 640653816359 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose the correct option for blank (1).

**Options :**

6406532734543. ✓ Are

6406532734544. ✗ Am

6406532734545. ✗ Be

6406532734546. ✗ Is

**Question Number : 48 Question Id : 640653816360 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose the correct option for blank (2).

**Options :**

6406532734547. ✗ Host

6406532734548. ✗ Hosting

6406532734549. ✗ Hosted

6406532734550. ✓ Hosts

**Question Number : 49 Question Id : 640653816361 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose the correct option for blank (3).

**Options :**

6406532734551. ✘ Competes

6406532734552. ✓ Compete

6406532734553. ✘ Competing

6406532734554. ✘ Competed

**Question Number : 50 Question Id : 640653816362 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose the correct option for blank (4).

**Options :**

6406532734555. ✘ Are

6406532734556. ✘ Is

6406532734557. ✘ Were

6406532734558. ✓ Have

**Question Number : 51 Question Id : 640653816363 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose the correct option for blank (5).

**Options :**

6406532734559. ✘ Is

6406532734560. ✘ Are

6406532734561. ✓ Have

6406532734562. ✘ Were

**Question Id : 640653816364 Question Type : COMPREHENSION Sub Question Shuffling**

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

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

**Question Numbers : (52 to 56)**

Question Label : Comprehension

Fill in the blanks in List A with the most contextually appropriate modal verbs in List B.

List A	List B
(i) The kitten seemed very sure that it _____ catch the butterfly. Hint: To talk about ability in the past	[a] Shall
(ii) I think we _____ keep away from their property. Hint: To make a suggestion.	[b] Must
(iii) _____ I watch the baby? Hint: To offer to do something.	[c] May not
(iv) It _____ be that she had gone without food for so long that she had gone crazy. Hint: To talk about a probable logical conclusion.	[d] Should
(v) No one ever is so smart that someone else _____ prove to be smarter still. Hint: To talk emphatically about a future possibility where there is an equal chance of something's happening or not happening.	[e] Could

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 52 Question Id : 640653816365 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

The kitten seemed very sure that it \_\_\_\_ catch the butterfly.

Hint: To talk about ability in the past

**Options :**

6406532734563. ✘ Shall

6406532734564. ✘ Must

6406532734565. ✘ May not

6406532734566. ✘ Should

6406532734567. ✓ Could

**Question Number : 53 Question Id : 640653816366 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

I think we \_\_\_\_ keep away from their property.

Hint: To make a suggestion.

**Options :**

6406532734568. ✘ Shall

6406532734569. ✘ Must

6406532734570. ✘ May not

6406532734571. ✓ Should

6406532734572. ✘ Could

**Question Number : 54 Question Id : 640653816367 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

\_\_\_\_ I watch the baby?

Hint: To offer to do something.

**Options :**

6406532734573. ✓ Shall

6406532734574. ✗ Must

6406532734575. ✗ May not

6406532734576. ✗ Should

6406532734577. ✗ Could

**Question Number : 55 Question Id : 640653816368 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

It \_\_\_\_ be that she had gone without food for so long that she had gone crazy.

Hint: To talk about a probable logical conclusion.

**Options :**

6406532734578. ✗ Shall

6406532734579. ✓ Must

6406532734580. ✗ May not

6406532734581. ✘ Should

6406532734582. ✘ Could

**Question Number : 56 Question Id : 640653816369 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

No one ever is so smart that someone else \_\_\_\_ prove to be smarter still.

Hint: To talk emphatically about a future possibility where there is an equal chance of something's happening or not happening.

**Options :**

6406532734583. ✘ Shall

6406532734584. ✘ Must

6406532734585. ✓ May not

6406532734586. ✘ Should

6406532734587. ✘ Could

**Question Id : 640653816370 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 : (57 to 61)**

Question Label : Comprehension

Read the following telephone conversation and answer the given subquestions:

Steve: Hello! Can I get Mili with us?

George: Wait a second, let me (i) \_\_\_\_\_ Mili into this call.

Steve: Was she not here already?

George: Yes. Her call was (ii) \_\_\_\_\_

Steve: I see.

George: Hi Mili. Am I audible to you? Steve, please (iii) \_\_\_\_\_ the line.

Steve: Sure. Please take your time. I can wait.

### **Sub questions**

**Question Number : 57 Question Id : 640653816371 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 expression would complete the conversation in (i)?

**Options :**

6406532734588. ❌ Rope off

6406532734589. ❌ Pull on

6406532734590. ✓ Rope in

**Question Number : 58 Question Id : 640653816372 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 expression would complete the conversation in (ii)?

**Options :**

6406532734591. ❌ Cut back

6406532734592. ❌ Cut out

6406532734593. ✓ Cut off

**Question Number : 59 Question Id : 640653816373 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 expression would complete the conversation in (iii)?

**Options :**

6406532734594. ❌ Stay up

6406532734595. ✓ Stay on

6406532734596. ❌ Stay over

**Question Number : 60 Question Id : 640653816374 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 means '*to stop or wait*'?

**Options :**

6406532734597. ❌ Put out

6406532734598. ❌ Stay out

6406532734599. ✓ Hold on

**Question Number : 61 Question Id : 640653816375 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 means '*to connect*'?

**Options :**

6406532734600.

✖ Patch up

6406532734601. ✖ Patch together

6406532734602. ✓ Patch through

<b>Sub-Section Number :</b>	5
<b>Sub-Section Id :</b>	640653118991
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 62 Question Id : 640653816376 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

The word '*erode*' is \_\_\_\_.

**Options :**

6406532734603. ✖ Trisyllabic

6406532734604. ✖ Polysyllabic

6406532734605. ✓ Disyllabic

**Question Number : 63 Question Id : 640653816377 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

The word '*revenue*' has \_\_\_\_ syllables.

**Options :**

6406532734606. ✖ 1

6406532734607. ✘ 2

6406532734608. ✓ 3

**Question Number : 64 Question Id : 640653816378 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 company projects the estimated spending for this year at 75,000\$.'

Choose the appropriate stress for the usage of the word 'project' in the sentence.

**Options :**

6406532734609. ✘ PROject

6406532734610. ✓ proJECT

**Question Number : 65 Question Id : 640653816379 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 /p/ sound in the word *people* is aspirated?

**Options :**

6406532734611. ✓ /p/ in the first syllable

6406532734612. ✘ /p/ in the second syllable

6406532734613. ✘ Both /p/ sounds are aspirated

6406532734614. ✘ No /p/ sounds are aspirated

**Question Number : 66 Question Id : 640653816380 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

Identify the nouns in the following sentence.

*Riya visited the Gateway of India in Mumbai.*

**Options :**

6406532734615. ❌ Riya

6406532734616. ❌ Gateway of India

6406532734617. ✓ Riya, Gateway of India and Mumbai

6406532734618. ❌ Mumbai

**Question Number : 67 Question Id : 640653816381 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

Identify the grammatically correct sentence from the options given.

**Options :**

6406532734619. ❌ Mary and myself attended the marriage.

6406532734620. ✓ Mary and I attended the marriage.

**Question Number : 68 Question Id : 640653816382 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

Identify the grammatically correct sentence from the options given.

**Options :**

6406532734621. ❌ Neither the farmers nor the headman were arrested.

6406532734622. ✓ Neither the farmers nor the headman was arrested.

**Question Number : 69 Question Id : 640653816383 Question Type : MCQ Is Question**

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

**Correct Marks : 1**

Question Label : Multiple Choice Question

In the plural noun *institutes*, the plural marker sounds as \_\_\_\_\_

**Options :**

6406532734623. ✓ [s]

6406532734624. ❌ [z]

6406532734625. ❌ [iz]

**Question Number : 70 Question Id : 640653816384 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 board \_\_\_\_\_ these quality standards very carefully.

**Options :**

6406532734626. ❌ Regulate

6406532734627. ❌ Regulation

6406532734628. ✓ Regulates

6406532734629. ✘ Regulating

**Question Number : 71 Question Id : 640653816385 Question Type : MCQ Is Question**

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

**Correct Marks : 1**

Question Label : Multiple Choice Question

Choose the right answer.

The xerox machine \_\_\_\_\_ working well.

**Options :**

6406532734630. ✘ Had not

6406532734631. ✓ Had not been

6406532734632. ✘ Hadn't

**Question Number : 72 Question Id : 640653816386 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

Gopika and Sana resemble each other so closely, they are **like two peas in a pod**. What does this idiom mean?

**Options :**

6406532734633. ✘ That both Gopika and Sana are round, like peas in a pod.

6406532734634. ✘ That both Gopika and Sana are small of build, like peas in a pod.

6406532734635. ✘ That both Gopika and Sana like the colour of peas, which is green.

6406532734636. ✓ That both Gopika and Sana have very little difference in their appearance, like peas in a pod.

**Question Number : 73 Question Id : 640653816387 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

Rafiq cannot take sides when his friends fight, he's always **sitting on the fence**. Is the idiom used correctly?

**Options :**

6406532734637. ✓ Yes

6406532734638. ✗ No

**Question Number : 74 Question Id : 640653816388 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

Fill in the blank with the most appropriate idiom from the given options.

I am sure that I was not the neatest eater when I was a child, but I suppose my parents \_\_\_\_ to it.

**Options :**

6406532734639. ✓ Turned a blind eye

6406532734640. ✗ Added fuel to the fire

6406532734641. ✗ Added insult to injury

6406532734642. ✗ Barked up the wrong tree

**Question Number : 75 Question Id : 640653816389 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 officer showed \_\_ sentiments towards the grievances.

**Options :**

6406532734643. ✓ Cold

6406532734644. ✗ Dark

6406532734645. ✗ Active

6406532734646. ✗ None of these

**Question Number : 76 Question Id : 640653816390 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

Either Sana or Maitreyi \_\_at the party.

**Options :**

6406532734647. ✓ Is

6406532734648. ✗ Are

**Question Number : 77 Question Id : 640653816391 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

Choose which part of speech the underlined part belongs to:

This bill was passed yesterday.

**Options :**

6406532734649. ✘ Adjective

6406532734650. ✘ Noun

6406532734651. ✘ Verb

6406532734652. ✓ Adverb

**Question Number : 78 Question Id : 640653816392 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

Do you know the reason \_\_\_\_\_ his absence.

**Options :**

6406532734653. ✘ On

6406532734654. ✘ Of

6406532734655. ✓ For

6406532734656. ✘ None of these

**Question Number : 79 Question Id : 640653816393 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

I have been waiting here for \_\_\_\_\_ long time.

**Options :**

6406532734657. ✓ A

6406532734658. ✘ The

6406532734659.

\* No article

6406532734660. \* An

**Question Number : 80 Question Id : 640653816394 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 baby is crying \_\_\_\_ it is hungry.

**Options :**

6406532734661. ✓ Because

6406532734662. \* Yet

6406532734663. \* Though

6406532734664. \* Or

**Question Number : 81 Question Id : 640653816395 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 semi-vowel occurs in the transition between the words 'no' and 'other' in the sentence '*there was no other option*'?

**Options :**

6406532734665. ✓ /w/

6406532734666. \* /y/

## Sem2 English2

Section Id :	64065356703
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	31
Number of Questions to be attempted :	31
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653118992
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 82 Question Id : 640653816396 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

**THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : SEMESTER II: ENGLISH 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 :**

6406532734667. ✓ YES

6406532734668. ✘ NO

**Sub-Section Number :** 2

**Sub-Section Id :** 640653118993

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816397 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 : (83 to 92)**

Question Label : Comprehension

**Read the following passage and answer the given subquestions.**

Foreigners were assumed to be generally amiable but also intellectually dim and incapable of understanding Chinese social and political conflicts. As such, they were viewed as harmless and therefore to be humored to the extent possible. The father of a friend visiting from America once borrowed my bicycle and blew right past the guards of Zhongnanhai, the compound where China's top leaders live and work, and rode around, as the guards called to him in Chinese and jogged after the bike. This would be the equivalent of walking into the president's bedroom in the White House. And while domestic dissidents were treated with great harshness, there was a (i)\_\_\_\_\_ that attended protection against foreign threats. One time, bicycling, I arrived late to the Great Hall of the People for a meeting with Li Lanqing, the vice premier. I had forgotten to bring the invitation card and my ID. Instead, I showed the guard a CCP membership card I had bought as a novelty at a market. He looked at the card, which I had filled in myself with my atrocious calligraphy, and said, "I didn't know any foreigners were party members." I told him, "I'm Number 66," and he let me in.

Gradually, the membrane between foreign and Chinese thinned and became more porous. There

were too many loopholes: Sometimes, Chinese married foreigners, then what were they? Sometimes, people with foreign passports looked Chinese. Sometimes, foreigners had been born in China—should they be restricted?

The government tried to expand the system of controls over foreigners to be less reliant on people and more reliant on technology, such as listening devices and surveillance cameras. But the exceptions started to break that down. Ultimately, the circle of Chinese who participated in foreign privileges got wider and wider, and it became clear that the privileges extended to foreigners would bleed into Chinese life and become a liberalizing influence.

Source: chinafile.com - Keeping the Flies Out - Anne Stevenson-Yang

### **Sub questions**

**Question Number : 83 Question Id : 640653816398 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

What is the meaning of the word *amiable*?

**Options :**

6406532734669. ❌ Suspicious

6406532734670. ❌ Foreign

6406532734671. ✓ Friendly

6406532734672. ❌ Laughable

**Question Number : 84 Question Id : 640653816399 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

Pick the appropriate word to fill the blank at (i).

**Options :**

6406532734673. ❌ Casualty

6406532734674. ✓ Casualness

6406532734675. ❌ Causation

6406532734676. ❌ Casually

**Question Number : 85 Question Id : 640653816400 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 opposite of the word *porous*?

**Options :**

6406532734677. ✓ Impenetrable

6406532734678. ❌ Rugged

6406532734679. ❌ Irrelevant

6406532734680. ❌ Slippery

**Question Number : 86 Question Id : 640653816401 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

What is the meaning of the word *novelty* as used in the given excerpt?

**Options :**

6406532734681. ❌ Full of words

6406532734682. ❌ Weird

6406532734683. ✓ Cheap little thing

6406532734684. ❌ Freshly made

**Question Number : 87 Question Id : 640653816402 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose the synonym for the word *atrocious*.

**Options :**

6406532734685. ❌ Awesome

6406532734686. ❌ Tasty

6406532734687. ❌ Stubborn

6406532734688. ✓ Horrible

**Question Number : 88 Question Id : 640653816403 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 began to break down the system of controls that the Chinese government had over foreigners residing in China?

**Options :**

6406532734689. ❌ The other countries demanded that they be treated well

6406532734690. ❌ The foreigners requested special treatment from the authorities

6406532734691. ✓ It became tough to identify who was a foreigner and who was not

6406532734692. ✘ All the foreigners went back

**Question Number : 89 Question Id : 640653816404 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 were foreigners treated less harshly than the local dissidents?

**Options :**

6406532734693. ✘ They were from modern societies and had to be treated with respect

6406532734694. ✓ They were assumed to be foolish

6406532734695. ✘ To avoid possible conflicts with other world nations

6406532734696. ✘ For growing tourism

**Question Number : 90 Question Id : 640653816405 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose the synonym for the word *privileges*.

**Options :**

6406532734697. ✓ Benefits

6406532734698. ✘ Borders

6406532734699. ✘ Enemies

6406532734700. ✘ Duties

**Question Number : 91 Question Id : 640653816406 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

*The father of a friend visiting from America once borrowed my bicycle and **blew** right past the guards of Zhongnanhai.*

What is the tense of the verb 'blew' in this sentence?

**Options :**

6406532734701. ❌ Present perfect

6406532734702. ✓ Past simple

6406532734703. ❌ Past perfect

**Question Number : 92 Question Id : 640653816407 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

*I had **forgotten** to bring the invitation card and my ID.*

What is the tense of the verb 'forgotten' in this sentence?

**Options :**

6406532734704. ❌ Present perfect

6406532734705. ❌ Past simple

6406532734706. ✓ Past perfect

**Question Id : 640653816414 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 : (93 to 102)**

Question Label : Comprehension

**Read the following exchange between an interviewer and an interviewee and answer the given subquestions:**

Ramya: Sir, may I come in?

Interviewer: Yes, please come in.

Ramya: Thank you, sir.

Interviewer: Please have a seat.

(Interviewer reads through her resume)

Interviewer: Hello, Ramya. Please introduce yourself.

Ramya: I am currently working as a Digital Marketing Manager in Wipro. I have about 3 years of experience in this field. Before this, I worked for 2 years as a content editor in Vedantu, which is also an educational company. Coming to my education, I have an MBA in marketing, which I did from Balaji Institute of Modern Management, Pune. I did my BBM from St. Paul's College in Mangalore. I am currently 33 years old and I live in Bangalore with my husband.

Interviewer: I see. Tell me, why do you want to work with us? It seems like you already have a good job.

Ramya: Yes, sir. I do have a good job, but I am looking for a change in responsibilities. I feel like I have reached my ceiling at my present company. Moreover, it is a wonderful company to work for, but I need more experience and exposure. Hence, I decided to take this step.

Interviewer: Good, that's good. So tell me why you think you would be a good fit at our company?

Ramya: Sir, I have heard good things about your company in the news lately. Moreover, I believe I have the qualification and experience necessary for this job. However, I would say my biggest driving force to join your organization is my passion for this line of work. In fact, I feel enthusiastic when I do my job.

Interviewer: That sounds fascinating! So what responsibilities did you handle at your company?

Ramya: Since my company was in the education field, we mainly focused on digital marketing – using various tools and techniques to promote our website. You see, our organization makes sales from the leads we generate online. Hence, it is an important responsibility. I also oversaw the daily tasks which were done by my team. I also provide regular reports on the team's performance and also provide insights if there are any new trends in the world of digital marketing. That way, I can ensure that my team is up-to-date with the current trends and they can plan their work accordingly.

### **Sub questions**

**Question Number : 93 Question Id : 640653816415 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose the correct option.

Currently, Ramya works as a digital marketing engineer in \_\_\_\_\_.

**Options :**

6406532734723. ❌ Deloitte

6406532734724. ✓ Wipro

6406532734725. ❌ Accenture

6406532734726. ❌ Cognizant

**Question Number : 94 Question Id : 640653816416 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Identify the correct word of the meaning 'an administrative and functional structure of a business, a political party, or a charity.'

**Options :**

6406532734727. ✘ Anarchy

6406532734728. ✘ Derangement

6406532734729. ✘ Disorder

6406532734730. ✓ Organization

**Question Number : 95 Question Id : 640653816417 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

What is the meaning of '*reach my ceiling*'?

**Options :**

6406532734731. ✘ To become popular

6406532734732. ✓ To reach the limit

6406532734733. ✘ To do something easily

6406532734734. ✘ To check something carefully

**Question Number : 96 Question Id : 640653816418 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Select true/false for the following statement.

'Up-to-date' means in accordance with or reflecting the latest ideas.

**Options :**

6406532734735. ✓ TRUE

6406532734736. ✗ FALSE

**Question Number : 97 Question Id : 640653816419 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose the right option.

Which one of the following is **NOT** a responsibility handled by Ramya in her company?

**Options :**

6406532734737. ✗ To oversee the daily tasks which were done by her team.

6406532734738. ✗ To provide regular reports on the team's performance.

6406532734739. ✗ To provide insights if there were any latest trends in the world of digital marketing

6406532734740. ✓ To hire, evaluate, and train new employees.

**Question Number : 98 Question Id : 640653816420 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Which of the following is **NOT** a reason for Ramya's seeking a new job?

**Options :**

6406532734741. ✗ She was looking for a change in responsibilities

6406532734742. ✘ She feels like she has reached her ceiling at her present company

6406532734743. ✓ She feels that her pay is not sufficient

6406532734744. ✘ She needs more exposure and experience

**Question Number : 99 Question Id : 640653816421 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

How does Ramya's current organization make sales?

**Options :**

6406532734745. ✘ From the insights gleaned by Ramya and her team about new trends in the world of digital marketing

6406532734746. ✓ From the leads that Ramya and her team generate online

6406532734747. ✘ By overseeing the daily tasks done by Ramya and her team

6406532734748. ✘ None of these

**Question Number : 100 Question Id : 640653816422 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Which of the following can you clearly gather from the given conversation ?

**Options :**

6406532734749. ✓ Total number of years of experience that Ramya has

6406532734750. ✘ The name of the position for which Ramya is now being interviewed

6406532734751. ✘ The name of the company to which Ramya has applied and is being

interviewed

6406532734752. ✘ None of these

**Question Number : 101 Question Id : 640653816423 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

Ramya's biggest driving force to join the new company is:

**Options :**

6406532734753. ✘ That she has heard good things about the company in recent news

6406532734754. ✓ That she is passionate about her line of work and feels enthused by her work

6406532734755. ✘ That she believes that she has the experience and qualification necessary for the job

6406532734756. ✘ None of these

**Question Number : 102 Question Id : 640653816424 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

Positions in which Ramya was previously employed **DO NOT** include:

**Options :**

6406532734757. ✘ Digital marketing manager

6406532734758. ✘ Content editor

6406532734759. ✓ Digital modern management

**Sub-Section Number :**

3

**Sub-Section Id :**

640653118994

**Question Shuffling Allowed :**

No

**Is Section Default? :**

null

**Question Id : 640653816408 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 : (103 to 107)**

Question Label : Comprehension

**Read the following email and answer the given subquestions.**

From: Kevin Jackson kevin.jackson@gmail.com

To: Book Lovers Haven info@booklovershaven.com

Subject: \_\_\_\_\_

\_\_\_\_\_'

I hope this email finds you well. I am reaching out to inquire about the availability and price of the textbook "Food for Thought: Nourishing Your Body and Mind." Could you confirm if this book is available in your stock?

\_\_\_\_\_'  
Kevin Jackson

Social Science Student

Princeton University

**Sub questions**

**Question Number : 103 Question Id : 640653816409 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose the most appropriate subject from the following

**Options :**

6406532734707. ✓ Textbook Availability Inquiry

6406532734708. ✗ Exclusive Books on Sale

6406532734709. ✗ Application for Assistant Editor- Kevin Jackson

6406532734710. ✗ Exploring Collaboration Opportunities - Kevin Jackson

**Question Number : 104 Question Id : 640653816410 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose the most appropriate salutation from the following

**Options :**

6406532734711. ✗ Hi Jackson

6406532734712. ✗ Hey Kevin

6406532734713. ✓ Dear Booklovers Heaven Staff

6406532734714. ✗ Dear Mr. Jackson

**Question Number : 105 Question Id : 640653816411 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

Select true or false for the following statement

The body of this email mentions the textbook titled "Food for Thought: Nourishing Your Body and Soul."

**Options :**

6406532734715. ✘ TRUE

6406532734716. ✓ FALSE

**Question Number : 106 Question Id : 640653816412 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Choose the appropriate closing line from the following

**Options :**

6406532734717. ✘ Take care

6406532734718. ✓ Thanks in advance for your assistance

6406532734719. ✘ Sending you love

6406532734720. ✘ Stay awesome

**Question Number : 107 Question Id : 640653816413 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Fill in the blank with the correct option

Which one of the following is the recipient's email address?

**Options :**

6406532734721. ✓ info@booklovershaven.com

6406532734722. ✘ kevin.jackson@gmail.com

**Question Id : 640653816425 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 : (108 to 112)**

Question Label : Comprehension

Identify the most appropriate sentence to use in the given social setting.

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 108 Question Id : 640653816426 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

Setting: Between doctors of the same professional standing in a hospital.

Refusing a coffee that your colleague prepared for you

**Options :**

6406532734760. ✓ This is very kind of you, but I don't have the habit of drinking coffee. Sorry!

6406532734761. ✗ I don't drink coffee

6406532734762. ✗ Do you have tea?

6406532734763. ✗ Sorry, I can't have coffee

**Question Number : 109 Question Id : 640653816427 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

Setting: Between doctors of the same professional standing in a hospital.

Asking about their salary

**Options :**

6406532734764. ✘ How much do you earn?

6406532734765. ✘ Can you tell me your salary?

6406532734766. ✘ Would you mind sharing details of your salary with me?

6406532734767. ✓ If you are comfortable doing so, would you mind telling me about your salary?

I am trying to understand the pay scale before I ask for a raise.

**Question Number : 110 Question Id : 640653816428 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

Setting: Between doctors of the same professional standing in a hospital.

Requesting technical assistance

**Options :**

6406532734768. ✘ Can you fix this for me?

6406532734769. ✘ Please fix this for me

6406532734770. ✓ I have tried my best with this. Would you mind taking a look?

6406532734771. ✘ You are the best at fixing technical glitches. Fix this for me.

**Question Number : 111 Question Id : 640653816429 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

Setting: Between doctors of the same professional standing in a hospital.

Requesting a switch of seats

**Options :**

6406532734772. ✘ Please switch seats with me

6406532734773. ✓ This seat is too high for me. Would you consider switching seats with me?

6406532734774. ✘ Have you thought of switching seats with me?

6406532734775. ✘ I think it will be a good idea to switch seats. Let us try it.

**Question Number : 112 Question Id : 640653816430 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

Setting: Between doctors of the same professional standing in a hospital.

Raising a concern about incomplete work

**Options :**

6406532734776. ✘ Your work is incomplete

6406532734777. ✘ Why can you never complete your tasks?

6406532734778. ✘ Why is your work always incomplete?

6406532734779. ✓ Would you mind revisiting your work and completing it? Are you facing any challenges?

**Question Id : 640653816431 Question Type : COMPREHENSION Sub Question Shuffling**

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

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

**Question Numbers : (113 to 117)**

Question Label : Comprehension

Match the following:

Process of Formation	Word
[1] Blending	[a] Kleenex
[2] Compounding	[b] Laser
[3] Coinage	[c] Waterproof
[4] Borrowing	[d] Brexit
[5] Acronymy	[e] Haiku

Based on the above data, answer the given subquestions.

**Sub questions****Question Number : 113 Question Id : 640653816432 Question Type : MCQ Is Question****Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0****Correct Marks : 2**

Question Label : Multiple Choice Question

Select the correct answer for Blending

**Options :**

6406532734780. ✘ Kleenex

6406532734781. ✘ Laser

6406532734782. ✘ Waterproof

6406532734783. ✓ Brexit

6406532734784. ✘ Haiku

**Question Number : 114 Question Id : 640653816433 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Select the correct answer for Compounding

**Options :**

6406532734785. ❌ Kleenex

6406532734786. ❌ Laser

6406532734787. ✓ Waterproof

6406532734788. ❌ Brexit

6406532734789. ❌ Haiku

**Question Number : 115 Question Id : 640653816434 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Select the correct answer for Coinage

**Options :**

6406532734790. ✓ Kleenex

6406532734791. ❌ Laser

6406532734792. ❌ Waterproof

6406532734793. ❌ Brexit

6406532734794. ❌ Haiku

**Question Number : 116 Question Id : 640653816435 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

Select the correct answer for Borrowing

**Options :**

6406532734795. ❌ Kleenex

6406532734796. ❌ Laser

6406532734797. ❌ Waterproof

6406532734798. ❌ Brexit

6406532734799. ✓ Haiku

**Question Number : 117 Question Id : 640653816436 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

Select the correct answer for Acronymy

**Options :**

6406532734800. ❌ Kleenex

6406532734801. ✓ Laser

6406532734802. ❌ Waterproof

6406532734803. ❌ Brexit

6406532734804. ❌ Haiku

**Sub-Section Number :** 4

**Sub-Section Id :** 640653118995

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 118 Question Id : 640653816437 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

Fill in the blank using the most appropriate contrast word.

\_\_\_\_\_ his despondency made him wish for death, he hesitated to take his own life.

**Options :**

6406532734805. ❌ But

6406532734806. ❌ Because

6406532734807. ✓ Although

6406532734808. ❌ Nor

**Question Number : 119 Question Id : 640653816438 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

*Blog* is a word that has its origin in new media: weblog → blog. What word formation process is at work here?

**Options :**

6406532734809. ❌ Back-formation

6406532734810. ❌ Middle-clipping

6406532734811. ✓ Fore-clipping

6406532734812. ❌ Initialism

**Question Number : 120 Question Id : 640653816439 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

*This route is better; \_\_\_, we will have to pay a toll.*

**Options :**

6406532734813. ✘ Because

6406532734814. ✓ However

6406532734815. ✘ And

6406532734816. ✘ Since

**Question Number : 121 Question Id : 640653816440 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

Amitav Ghosh wrote the famous novel *The Shadow Lines*.

When written in passive voice, the sentence above will be:

**Options :**

6406532734817. ✘ Amitav Ghosh wrote the famous novel *The Shadow Lines*.

6406532734818. ✓ The famous novel *The Shadow Lines* was written by Amitav Ghosh.

6406532734819. ✘ Amitav Ghosh had written the famous novel *The Shadow Lines*.

6406532734820. ✘ The famous novel *The Shadow Lines* is being written by Amitav Ghosh.

**Question Number : 122 Question Id : 640653816441 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

Muskan said to Kirthi, '*Ravi will leave tomorrow.*'

Change the above sentence into indirect speech.

**Options :**

6406532734821. ✓ Muskan told Kirthi that Ravi would leave the next day

6406532734822. ✗ Muskan said Kirthi that Ravi would leave tomorrow

6406532734823. ✗ Muskan told Kirthi that Ravi would leave tomorrow

6406532734824. ✗ Muskan told Kirthi that Ravi would be leaving the next day

**Sub-Section Number :** 5

**Sub-Section Id :** 640653118996

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 123 Question Id : 640653816442 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

*'Farmers are not legally bound to sell their produce to government agencies but they are free to sell their produce anywhere at any prices they get.'*

Spot the viewpoint adverb in the given sentence.

**Options :**

6406532734825. ✓ Legally

6406532734826. ✗ Anywhere

6406532734827. ✗ Any

6406532734828. ✗ Agencies

**Question Number : 124 Question Id : 640653816443 Question Type : MCQ Is Question  
Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction  
Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

Identify the compound noun in the given sentence.

*'Under the cicadas, deeper down than the longest taproot, between and beneath the rounded black rocks and slanting slabs of sandstone in the earth, groundwater creeps.'*

**Options :**

6406532734829. ✘ Longest

6406532734830. ✘ Rounded

6406532734831. ✓ Groundwater

6406532734832. ✘ Black

**Question Number : 125 Question Id : 640653816444 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

*My mother likes to receive guests in our house; she very enjoys the pleasure of what we call "seein' folks."*

The use of the degree adverb in the given sentence is:

**Options :**

6406532734833. ✘ Correct

6406532734834. ✓ Incorrect

**Question Number : 126 Question Id : 640653816445 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

*'They will have followed the winding stone road downhill.'*

The suffix -ed attached to the verb "follow" in this sentence indicates:

**Options :**

6406532734835. ❌ The state of continuity of the action of following in future time

6406532734836. ❌ The state of indefiniteness of the action of following in future time

6406532734837. ❌ The state of continuity of the action of following in past time

6406532734838. ✓ The state of completion of the action of following in future time

**Question Number : 127 Question Id : 640653816446 Question Type : MCQ Is Question**

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

**Correct Marks : 1**

Question Label : Multiple Choice Question

Choose the correct modal verb to fill in the blank. See the hint or context provided and choose only the most appropriate option to fill the blank.

She looks very sad. The exam \_\_\_\_ have been difficult.

Hint: The speaker, from his/her awareness of a situation, deduces something to have necessarily been the case.

**Options :**

6406532734839. ❌ Shall

6406532734840. ❌ Will

6406532734841. ✓ Must

6406532734842. ✘ Can

**Question Number : 128 Question Id : 640653816447 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

\_\_ you finish reading the book by tomorrow? (Context: future possibility)

**Options :**

6406532734843. ✘ Would

6406532734844. ✓ Will

6406532734845. ✘ Could

6406532734846. ✘ All of these

**Question Number : 129 Question Id : 640653816448 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

Complete the given sentence with the most fitting question tag.

*Something about the house seemed disturbing, \_\_\_\_?*

**Options :**

6406532734847. ✘ Doesn't it?

6406532734848. ✘ Did it?

6406532734849. ✓ Didn't it?

6406532734850. ✘ Don't it?

**Question Number : 130 Question Id : 640653816449 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

Identify the object of the verb '*infer*' in the given sentence.

*His comments were too vague to infer whether he had in his mind France or California.*

**Options :**

6406532734851. ❌ Only *were too vague*

6406532734852. ❌ Only *France or California*

6406532734853. ✓ *Whether he had in his mind France or California*

6406532734854. ❌ *His comments were too vague*

**Question Number : 131 Question Id : 640653816450 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

*That it grows in little pots with little to no care and watering is what makes cactus a popular house plant.*

The that-clause in the given statement is:

**Options :**

6406532734855. ❌ The direct object of the main verb *grows*

6406532734856. ❌ The indirect object of the main verb *grows*

6406532734857. ✓ The subject of the sentence

6406532734858. ✘ The predicate of the sentence

**Question Number : 132 Question Id : 640653816451 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

Identify the adjunct in the following sentence.

*When the president arrived, the meeting had already started.*

**Options :**

6406532734859. ✓ When the president arrived

6406532734860. ✘ The meeting

6406532734861. ✘ The meeting had already started

6406532734862. ✘ No adjunct

**Question Number : 133 Question Id : 640653816452 Question Type : MCQ Is Question**

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

**Correct Marks : 1**

Question Label : Multiple Choice Question

Identify the adjectival clauses in the following sentence and the noun it modifies.

*The movie-adaptation, which was directed by a famous filmmaker, became a box office hit.*

**Options :**

6406532734863. ✘ Adjectival clause: became a box office hit, Noun: movie-adaptation

6406532734864. ✓ Adjectival clause: which was directed by a famous filmmaker, Noun: movie-adaptation

6406532734865. ❌ Adjectival clause: which was directed, Noun: movie

6406532734866. ❌ None of these

**Question Number : 134 Question Id : 640653816453 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

*'I know a man who can throw 90 meters.'* In this sentence, 'who' is a \_\_\_\_.

**Options :**

6406532734867. ❌ Simple sentence

6406532734868. ❌ Coordinating conjunction

6406532734869. ✓ Relative pronoun

6406532734870. ❌ Subordinating conjunction

**Question Number : 135 Question Id : 640653816454 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

*'Until this roof is repaired, the leak will not stop.'* This is an example of a \_\_\_\_.

**Options :**

6406532734871. ❌ Compound sentence

6406532734872. ✓ Complex sentence

6406532734873. ❌ Simple sentence

6406532734874. ❌ Compound-complex sentence

**Question Number : 136 Question Id : 640653816455 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

*They quickly retracted their advertisement following the protests.* Here the adjunct is \_\_\_\_.

**Options :**

6406532734875. ✘ Following the protests

6406532734876. ✘ Quickly

6406532734877. ✘ No adjunct

6406532734878. ✓ Both Following the protests & Quickly

**Question Number : 137 Question Id : 640653816456 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

'Did they finish their work?' If the intonation is on 'they,' it means \_\_\_\_.

**Options :**

6406532734879. ✓ The speaker wants to specifically know whether those people finished the work

6406532734880. ✘ The speaker is amazed by seeing the finished work

6406532734881. ✘ The speaker just wants to know whether the work has been finished, regardless of who finished it

6406532734882. ✘ None of these

**Question Number : 138 Question Id : 640653816457 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

*I could spend this money now. \_\_\_ I could save it up for a future goal.*

**Options :**

6406532734883. ✘ Because

6406532734884. ✓ On the other hand

6406532734885. ✘ Contrary

6406532734886. ✘ On an average

**Question Number : 139 Question Id : 640653816458 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

Which of the following sentences uses a discourse marker to express a positive opinion?

**Options :**

6406532734887. ✘ Honestly, the movie was quite boring

6406532734888. ✘ I guess so, I didn't really see the appeal but if you liked it so much it must be good

6406532734889. ✓ Wow, you look stunning in that dress!

6406532734890. ✘ I do like pineapple. That said, I would never put it on a pizza

**Question Number : 140 Question Id : 640653816459 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

*'All the world's a stage, and all the men and women merely players.'* What is the figure of speech used

here?

**Options :**

6406532734891. ✘ Alliteration

6406532734892. ✓ Metaphor

6406532734893. ✘ Personification

6406532734894. ✘ Oxymoron

**Question Number : 141 Question Id : 640653816460 Question Type : MCQ Is Question**

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

**Correct Marks : 1**

Question Label : Multiple Choice Question

Choose the correct active form of the following sentence.

*'A ticket was booked for me by my father.'*

**Options :**

6406532734895. ✘ My father would have booked me a ticket

6406532734896. ✓ My father booked a ticket for me

6406532734897. ✘ My ticket was booked by my father

6406532734898. ✘ A ticket booked by my father was for me

**Question Number : 142 Question Id : 640653816461 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 she had practiced, she would have won the competition.* This is a \_\_ sentence.

**Options :**

6406532734899. ✘ Zero conditional

6406532734900. ✘ First conditional

6406532734901. ✘ Second conditional

6406532734902. ✓ Third conditional

## Sem1 Maths1

<b>Section Id :</b>	64065356704
<b>Section Number :</b>	4
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	15
<b>Number of Questions to be attempted :</b>	15
<b>Section Marks :</b>	50
<b>Display Number Panel :</b>	Yes
<b>Section Negative Marks :</b>	0
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	640653118997
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 143 Question Id : 640653816462 Question Type : MCQ Is Question**

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

**Correct Marks : 0**

Question Label : Multiple Choice Question

**THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : SEMESTER I: MATHEMATICS FOR DATA SCIENCE I (COMPUTER BASED EXAM)"**

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

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

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

**Options :**

6406532734903. ✓ YES

6406532734904. ✗ NO

**Question Number : 144 Question Id : 640653816463 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

**Instructions:**

- There are some questions which have functions with discrete valued domains (such as day, month, year etc). For simplicity, we treat them as continuous functions.
- For NAT type question, enter only one right answer even if you get multiple answers for that particular question.

**Options :**

6406532734905. ✓ Instructions has been mentioned above.

6406532734906. ✗ This Instructions is just for a reference & not for an evaluation.

**Sub-Section Number :** 2

**Sub-Section Id :** 640653118998

**Question Shuffling Allowed :** Yes

**Is Section Default? :**

null

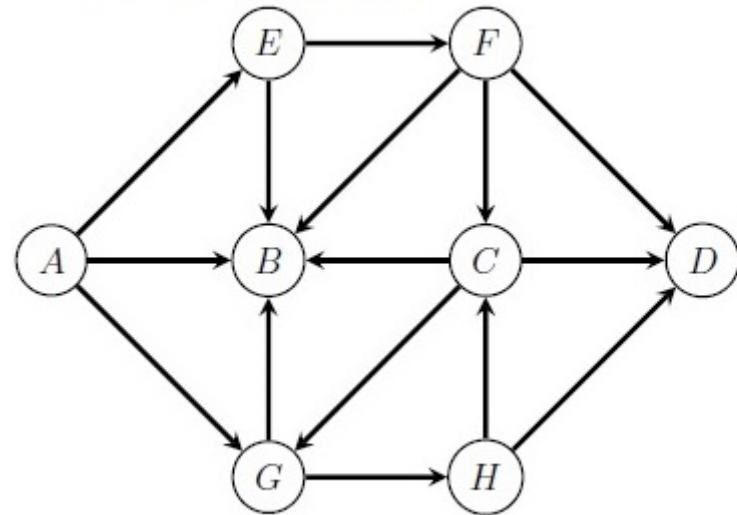
**Question Number : 145 Question Id : 640653816464 Question Type : MCQ Is Question**

**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 given graph



Which of the following is the longest path of the graph?

**Options :**

6406532734907. ✘ AEFBGHD

6406532734908. ✓ AEFCGHD

6406532734909. ✘ GAEFCHD

6406532734910. ✘ CBAEFCD

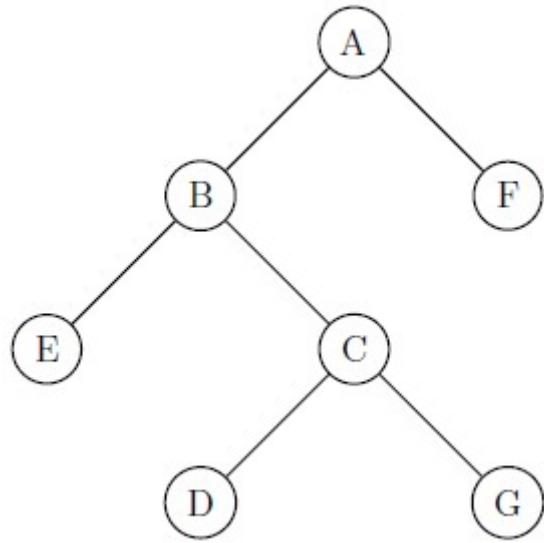
**Question Number : 146 Question Id : 640653816470 Question Type : MCQ Is Question**

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

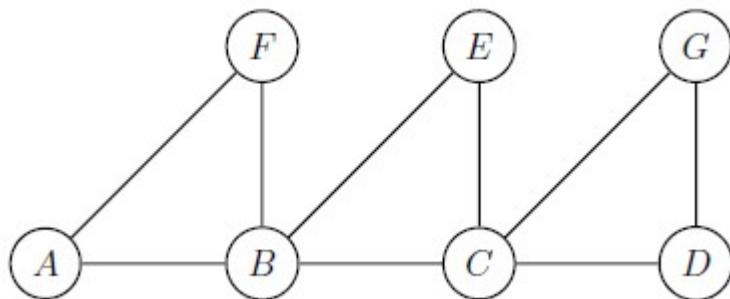
**Correct Marks : 4**

Question Label : Multiple Choice Question

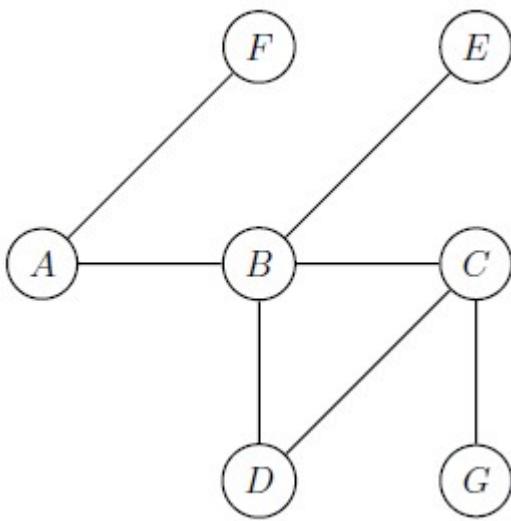
The DFS (Depth First Search) tree of a graph starting with vertex A is shown below. Choose the option which might be the original graph.



**Options :**

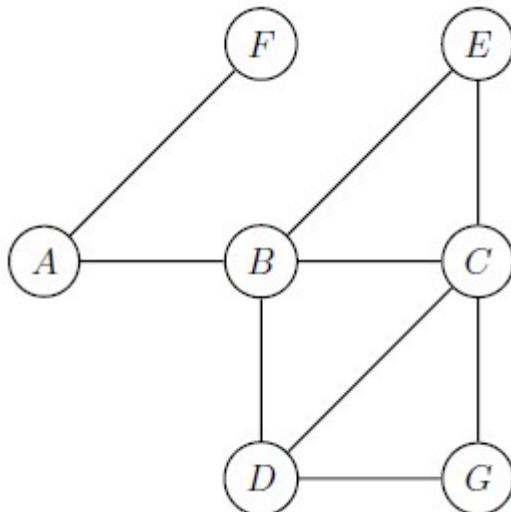
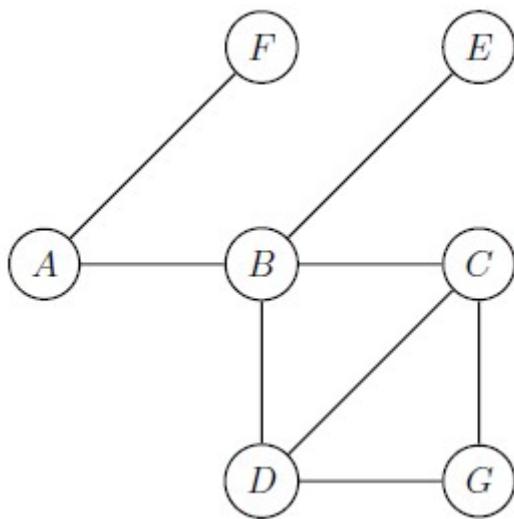


6406532734918. ✘



6406532734919. ✓

6406532734920. ✘



6406532734921. \*

**Sub-Section Number :** 3

**Sub-Section Id :** 640653118999

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 147 Question Id : 640653816489 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 set of correct options considering the function given below:

$$f(y) = \begin{cases} \frac{\sin(y)}{y} & \text{if } y \neq 0 \\ 1 & \text{if } y = 0 \end{cases}$$

**Options :**

6406532734948. ✘ The derivative of  $f(y)$  at  $y = 0$ (if it exists) is 1.

6406532734949. ✓  $f(y)$  is continuous at  $y = 0$ .

6406532734950. ✓ The derivative of  $f(y)$  at  $y = 0$ (if it exists) is 0.

6406532734951. ✘  $f(y)$  is not differentiable at  $y = 0$ .

**Sub-Section Number :** 4

**Sub-Section Id :** 640653119000

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 148 Question Id : 640653816471 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

Suppose  $A = \{a, b, c, d\}$  and  $B = \{p, q, r, s\}$  are two sets. Consider the following relations on  $A \times B$ .

- $R_1 = \{(a, p), (c, r), (d, q)\}$
- $R_2 = \{(a, s), (b, s), (c, p), (d, r)\}$
- $R_3 = \{(a, p), (b, r), (b, s), (d, q)\}$
- $R_4 = \{(a, r), (b, p), (c, q), (d, s)\}$

Which of the following statements are correct?

**Options :**

6406532734922. ✘  $R_2, R_3$ , and  $R_4$  are functions.

6406532734923. ✓  $R_2$  and  $R_4$  are functions.

6406532734924. ✘  $R_2$  is an injective function.

6406532734925. ✓  $R_4$  is a bijective function.

**Question Number : 149 Question Id : 640653816485 Question Type : MSQ Is Question**

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

**Correct Marks : 4 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Which of the following statements is/are true about the function  $f(x) = \log(\log(x))$ ?

**Options :**

6406532734942. ✓  $f$  is one-one on its domain.

6406532734943. ✓  $f$  has an inverse on its domain.

6406532734944. ✘  $f$  is a decreasing function.

6406532734945. ✘ The domain of  $f$  is  $(0, \infty)$

**Sub-Section Number :** 5

**Sub-Section Id :** 640653119001

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

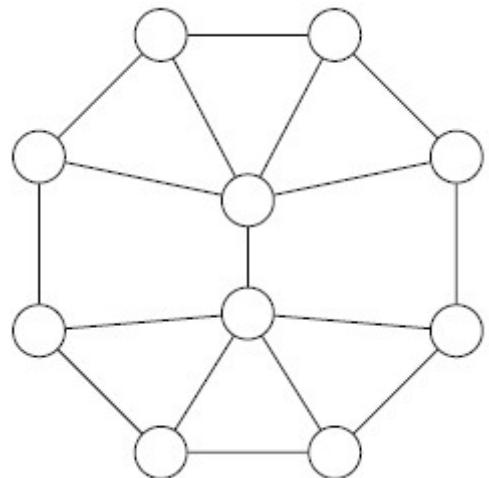
**Question Number : 150 Question Id : 640653816465 Question Type : SA Calculator : None**

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

**Correct Marks : 3**

## Question Label : Short Answer Question

What is the minimum number of colors required to color the graph given below?



## **Response Type : Numeric**

## **Evaluation Required For SA : Yes**

**Show Word Count : Yes**

## **Answers Type : Equal**

## **Text Areas : PlainText**

## Possible Answers:

3

### **Sub-Section Number :**

6

### **Sub-Section Id :**

640653119002

### **Question Shuffling Allowed :**

Yes

## Is Section Default? :

null

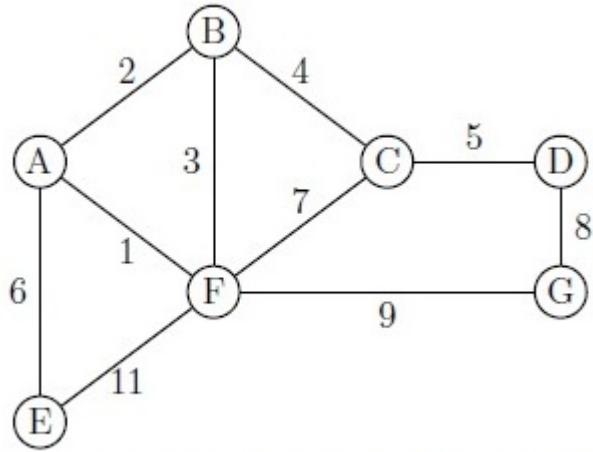
Question Number : 151 Question Id : 640653816466 Question Type : SA Calculator : None

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

## **Correct Marks : 4**

## Question Label : Short Answer Question

Consider the following graph:



Calculate the cost of minimum spanning tree for the above graph.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

26

**Sub-Section Number :** 7

**Sub-Section Id :** 640653119003

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id :** 640653816472 **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 :** (152 to 153)

**Question Label :** Comprehension

A person is climbing stairs and he stops at a point  $P$  on the stairs after reaching two-third of the total distance of stairs. The stairs forms an isosceles triangle with the floor and wall. Assume the origin  $(0, 0)$  at the intersection of the wall and floor and the stairs is to the right of the wall.

Based on the above data, answer the given subquestions.

## **Sub questions**

**Question Number : 152 Question Id : 640653816473 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 angle between the stairs and the wall(in degrees).

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

45

**Question Number : 153 Question Id : 640653816474 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 distance between the bottom of the stairs and the wall is 3m, the  $x$ -coordinate of  $P$  is

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

1

**Question Id : 640653816486 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 : (154 to 155)**

Question Label : Comprehension

Find  $\lim_{n \rightarrow \infty} a_n$  for the given sequences.

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 154 Question Id : 640653816487 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

$$\{a_n\} \text{ such that } a_n = \frac{n^2 + 5n}{6n^2 + 1}$$

**Note:** 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 :**

0.16 to 0.17

**Question Number : 155 Question Id : 640653816488 Question Type : SA Calculator : None**

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

**Correct Marks : 1**

Question Label : Short Answer Question

$$\{a_n\} \text{ such that } a_n = \frac{1}{10} + \frac{(-1)^n}{n^3}$$

**Note:** 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 :**

0.08 to 0.12

**Sub-Section Number :** 8

**Sub-Section Id :** 640653119004

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816475 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 : (156 to 159)**

Question Label : Comprehension

Consider the following function ;

$$f(x) = \begin{cases} \log(-x - 2) & x < -2 \\ \frac{1}{x-2} & -2 \leq x < 0 \\ \frac{1}{x-3} & 0 \leq x \leq 2 \\ -e^{(x-2)} & x > 2 \end{cases}$$

Are the given statements about the function  $f(x)$  true or false?

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 156 Question Id : 640653816476 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 limit of  $f(x)$  at  $x = 0$  does not exists.

**Options :**

6406532734928. ✓ TRUE

6406532734929. ✗ FALSE

**Question Number : 157 Question Id : 640653816477 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 limit of  $f(x)$  at  $x = 2$  exists and it's equal to  $f(2) = -1$ . i.e.  $f(x)$  is continuous at  $x = 2$ .

**Options :**

6406532734930. ✓ TRUE

6406532734931. ✗ FALSE

**Question Number : 158 Question Id : 640653816478 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 limit of  $f(x)$  at  $x = -2$  exists and it's equal to  $f(-2) = -1$ . i.e.  $f(x)$  is continuous at  $x = -2$ .

**Options :**

6406532734932. ✗ TRUE

6406532734933. ✓ FALSE

**Question Number : 159 Question Id : 640653816479 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

$f(x)$  is continuous on the entire real line.

**Options :**

6406532734934. ✘ TRUE

6406532734935. ✓ FALSE

**Question Id : 640653816480 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 : (160 to 163)**

Question Label : Comprehension

Consider a polynomial function  $f(x) = \frac{x^5}{5} - \frac{5x^3}{3} + 4x$  which is defined in  $\mathbb{R}$ .

Answer the given sub-questions.

**Sub questions**

**Question Number : 160 Question Id : 640653816481 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 critical points does  $f(x)$  have?

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

**Question Number : 161 Question Id : 640653816482 Question Type : MCQ Is Question**

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

**Correct Marks : 1**

Question Label : Multiple Choice Question

Is the statement True or False:  $f(x)$  is decreasing in the set  $(-2, -1] \cup (-1, 2)$  and  $x = 1$  is saddle point.

**Options :**

6406532734937. ✘ TRUE

6406532734938. ✓ FALSE

**Question Number : 162 Question Id : 640653816483 Question Type : MCQ Is Question**

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

**Correct Marks : 1**

Question Label : Multiple Choice Question

Is the statement True or False:  $f(x)$  is increasing in the set  $(-\infty, -2) \cup (2, \infty)$  and  $x = 1$  is the point of local maxima.

**Options :**

6406532734939. ✓ TRUE

6406532734940. ✘ FALSE

**Question Number : 163 Question Id : 640653816484 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 points of local minima does  $f(x)$  have?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

2

**Question Id : 640653816490 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 : (164 to 165)**

Question Label : Comprehension

Suppose  $f$  is a real valued function defined on  $\mathbb{R}$ . Let  $f(x+y) = f(x)f(y)$  for all  $x, y \in \mathbb{R}$  and  $f(1) = 7$  and  $f'(0) = 2$ .

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 164 Question Id : 640653816491 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  $f(0)$ ?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

**Question Number : 165 Question Id : 640653816492 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  $f'(1)$ ?

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

14

**Sub-Section Number :** 9

**Sub-Section Id :** 640653119005

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816467 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 : (166 to 167)**

Question Label : Comprehension

Consider the following adjacency matrix of an undirected graph

$$\begin{array}{ccccc} & A & B & C & D & E \\ A & \begin{bmatrix} 0 & 1 & 1 & 0 & 1 \\ 1 & 0 & 0 & 1 & 1 \\ 1 & 0 & 0 & 1 & 0 \\ 0 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 0 & 0 \end{bmatrix} \end{array}$$

which represents graph  $G$  which has 5 vertices  $A, B, C, D$  and  $E$ .

Based on the above data, answer the given subquestions.

### Sub questions

**Question Number : 166 Question Id : 640653816468 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 options is/are true?

**Options :**

6406532734913. ✓ The number of vertices is 5.

6406532734914. ✓ The number of edges is 6.

6406532734915. ✗ Each vertex has degree 2.

6406532734916. ✗ There is an edge between every pair of vertices.

**Question Number : 167 Question Id : 640653816469 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 size of the minimum vertex cover of graph G?

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

# Sem1 Statistics1

Section Id :	64065356705
Section Number :	5
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	15
Number of Questions to be attempted :	15
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	Yes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653119006
Question Shuffling Allowed :	No
Is Section Default? :	null

Question Number : 168 Question Id : 640653816493 Question Type : MCQ Is Question

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

Correct Marks : 0

Question Label : Multiple Choice Question

**THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : SEMESTER I: STATISTICS FOR DATA SCIENCE I (COMPUTER BASED EXAM)"**

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

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

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

**REGISTERED BY YOU)**

**Options :**

6406532734954. ✓ YES

6406532734955. ✘ NO

**Sub-Section Number :** 2

**Sub-Section Id :** 640653119007

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 169 Question Id : 640653816516 Question Type : MCQ Is Question**

**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 probability of a man hitting a target is  $1/4$ . If he fires 5 times, then find the probability that he will hit the target at least twice.

**Options :**

6406532735003. ✘  $\frac{1}{4}$

6406532735004. ✘  $\frac{486}{1024}$

6406532735005. ✘  $\frac{648}{1024}$

6406532735006. ✓  $\frac{376}{1024}$

**Sub-Section Number :** 3

**Sub-Section Id :** 640653119008

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 170 Question Id : 640653816506 Question Type : MSQ Is Question**

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

**Correct Marks : 2 Max. Selectable Options : 0**

Question Label : Multiple Select Question

If  $X \sim \text{Normal}(\mu, \sigma^2)$ , then choose the correct option(s) from the following.

**Options :**

6406532734979. ❌  $P(X \leq \mu) \neq P(X > \mu)$

6406532734980. ✓  $P(X \leq \mu) = P(X > \mu) = 0.5$

6406532734981. ❌ If  $Z = \frac{X - \mu}{\sigma^2}$ , then  $Z \sim N(\mu, 1)$ .

6406532734982. ✓ If  $Z = \frac{X - \mu}{\sigma}$ , then  $Z \sim N(0, 1)$ .

**Question Number : 171 Question Id : 640653816507 Question Type : MSQ Is Question**

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

**Correct Marks : 2 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Choose the correct option(s) from the following.

**Options :**

6406532734983. ✓ If  $X \sim \text{Bernoulli}(p)$ , then  $E(X) = p$ .

6406532734984. ✗ Range of cumulative distribution function of a discrete random variable is  $(-\infty, +\infty)$ .

6406532734985. ✓ Number of attempts to clear a qualifier exam is a discrete variable.

6406532734986. ✗ Hypergeometric distribution comes under continuous distribution.

**Question Number : 172 Question Id : 640653816513 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 option(s) is/are correct for a variable with interval scale of measurement?

**Options :**

6406532734994. ✓ Difference between the values of a variable can be evaluated.

6406532734995. ✓ Order of the data is meaningful.

6406532734996. ✗ Multiplication and division of values of a variable is possible.

6406532734997. ✗ It has an absolute zero.

**Question Number : 173 Question Id : 640653816514 Question Type : MSQ Is Question**

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

**Correct Marks : 2 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Which of the following statement(s) is(are) correct?

**Options :**

6406532734998. ✓ We must preserve the order of an ordinal data in a bar chart.

6406532734999. ✗ Mode is not defined for an ordinal data.

6406532735000. ✗ Mean can be calculated for a categorical data.

6406532735001. ✓ Covariance can be computed only for two numerical variables.

**Sub-Section Number :** 4

**Sub-Section Id :** 640653119009

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 174 Question Id : 640653816512 Question Type : SA Calculator : None**

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

**Correct Marks : 3**

**Question Label :** Short Answer Question

If the mean of the observations  $2a$ , 10,  $3a$ , 50 and 40 is 30, then find the median of the dataset.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

30

**Question Number : 175 Question Id : 640653816517 Question Type : SA Calculator : None**

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

**Correct Marks : 3**

**Question Label :** Short Answer Question

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

$x$	-1	0	1
$P(X = x)$	1/6	1/2	1/3

Table 2

Find the value of  $E(2X + 1)^2$ . Enter the answer correct to two decimal places.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

3.62 to 3.70

**Sub-Section Number :** 5

**Sub-Section Id :** 640653119010

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number :** 176 **Question Id :** 640653816511 **Question Type :** SA **Calculator :** None

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

**Correct Marks :** 4

**Question Label :** Short Answer Question

In the first semester of B.S. degree, a student is expected to take 4 subjects. The grades for each subject can be S(10points),A(9points),B(8points),C(7points),D(6points),E(5points) and F(Fail). As per the rules, an enrolled student should obtain a minimum grade E in each subject to get promoted to the next semester. What is the total number of possible ways in which a student can get promoted?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

**Question Number : 177 Question Id : 640653816515 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 mean and sample standard deviation of the dataset consisting of 8 observations is 15 and 11 respectively. Later it is noted that one observation 13 is wrongly noted as 10. What is the mean of the original dataset? 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 :**

**15.08 to 15.68**

**Sub-Section Number :** 6

**Sub-Section Id :** 640653119011

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816494 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 : (178 to 179)**

**Question Label : Comprehension**

In a company, 120 employees are divided into three departments: Marketing, Finance and IT. The number of employees in each department is as follows: 36 in Marketing, 40 in Finance and 44 in IT. An employee, out of 120, is randomly selected for a presentation. Let  $X$  denote the number of employees in the department to which that employee belongs. Based on the given information, answer the subquestions.

## Sub questions

**Question Number : 178 Question Id : 640653816495 Question Type : MCQ Is Question**

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

**Correct Marks : 3**

Question Label : Multiple Choice Question

Identify the correct distribution of  $X$ .

**Options :**

$x$	36	40	44
$P(X = x)$	1/3	1/3	1/3

6406532734956. \*

$x$	36	40	44
$P(X = x)$	3/10	1/3	11/30

6406532734957. ✓

$x$	36	40	44
$P(X = x)$	1/3	11/30	3/10

6406532734958. \*

$x$	36	40	44
$P(X = x)$	3/10	11/30	1/3

6406532734959. \*

**Question Number : 179 Question Id : 640653816496 Question Type : SA Calculator : None**

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

**Correct Marks : 2**

Question Label : Short Answer Question

Find the expected value of X. 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 :**

40.24 to 40.30

**Question Id : 640653816497 Question Type : COMPREHENSION Sub Question Shuffling**

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

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

**Question Numbers : (180 to 181)**

Question Label : Comprehension

A manufacturing company produces steel rods with lengths between 20 cm and 40 cm. Assume length of steel rods follows a uniform distribution.

Based on the given information, answer the given subquestions.

**Sub questions**

**Question Number : 180 Question Id : 640653816498 Question Type : SA Calculator : None**

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

**Correct Marks : 3**

Question Label : Short Answer Question

If  $P(X \leq k) = P(X > k)$ , then find the value of  $k$ .

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

**Question Number : 181 Question Id : 640653816499 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 probability that a randomly selected steel rod will have a length of more than 25 cm?

**Options :**

6406532734962. ✘  $\frac{1}{2}$

6406532734963. ✘  $\frac{1}{3}$

6406532734964. ✘  $\frac{1}{4}$

6406532734965. ✓  $\frac{3}{4}$

**Question Id : 640653816500 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 : (182 to 183)**

Question Label : Comprehension

Suppose the time taken by a delivery service to deliver a package (in hours) follows an exponential distribution with a mean delivery time of 10 hours. If someone places an order just before you, then based on the given information, answer the given subquestions.

**Sub questions**

**Question Number : 182 Question Id : 640653816501 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 probability that you will have to wait more than 15 hours for your package to be delivered?

**Options :**

6406532734966. ❌  $1 - e^{-1.5}$

6406532734967. ✓  $e^{-1.5}$

6406532734968. ❌  $1 - e^{-0.67}$

6406532734969. ❌  $e^{-0.67}$

**Question Number : 183 Question Id : 640653816502 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 3**

Question Label : Multiple Choice Question

What is the probability that you will have to wait between 15 hours and 30 hours?

**Options :**

6406532734970. ✓  $e^{-1.5} - e^{-3}$

6406532734971. ❌  $e^{-3} - e^{-1.5}$

6406532734972. ✘  $e^{-0.67} - e^{-0.33}$

6406532734973. ✘  $e^{-0.33} - e^{-0.67}$

**Question Id : 640653816503 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 : (184 to 185)**

Question Label : Comprehension

Suppose  $X \sim \text{Poisson}(\lambda)$ .

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 184 Question Id : 640653816504 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 3**

Question Label : Multiple Choice Question

Find the value of  $\lambda$  for which  $3P(X = 3) = 2P(X = 2) + 4P(X = 1)$ .

**Options :**

6406532734974. ✘ 2

6406532734975. ✓ 4

6406532734976. ✘ 1

6406532734977. ✘ -2

**Question Number : 185 Question Id : 640653816505 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  $\frac{P(X \leq 1)}{P(X \leq 2)}$ ?

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 :**

0.35 to 0.41

**Question Id : 640653816508 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 : (186 to 187)**

**Question Label :** Comprehension

Table Q.1 represents the data of status of a disease and blood concentration in the patients.

Test	Disease	
	$D+$	$D-$
$T+$	25	35
$T-$	50	20

Table Q.1

where,

$D+$  = disease present  
 $D-$  = disease absent

$T+$  = high blood concentration (positive test)

$T-$  = low blood concentration (negative test)

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 186 Question Id : 640653816509 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 probability that a patient has the disease and the test is positive?

**Options :**

6406532734987. ✓  $\frac{5}{26}$

6406532734988. ✗  $\frac{5}{14}$

6406532734989. ✗  $\frac{1}{3}$

6406532734990. ✗  $\frac{1}{2}$

**Question Number : 187 Question Id : 640653816510 Question Type : SA Calculator : None**

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

**Correct Marks : 3**

Question Label : Short Answer Question

Find the probability that a patient has the disease given that the test is positive.

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 :**

0.39 to 0.45

## Sem2 Statistics2

<b>Section Id :</b>	64065356706
<b>Section Number :</b>	6
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	12
<b>Number of Questions to be attempted :</b>	12
<b>Section Marks :</b>	40
<b>Display Number Panel :</b>	Yes
<b>Section Negative Marks :</b>	0
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	640653119012
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 188 Question Id : 640653816518 Question Type : MCQ Is Question**

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

**Correct Marks : 0**

Question Label : Multiple Choice Question

**THIS IS QUESTION PAPER FOR THE SUBJECT "FOUNDATION LEVEL : SEMESTER II: STATISTICS FOR DATA SCIENCE II (COMPUTER BASED EXAM)"**

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

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

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

**Options :**

6406532735008. ✓ YES

6406532735009. ✗ NO

**Question Number : 189 Question Id : 640653816519 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**

Use the following information if required:

1.  $F_Z$  values.

$$F_Z(-1.75) = 0.04, F_Z(-0.175) = 0.43, F_Z(-1.645) = 0.05, F_Z(-2.32) = 0.01$$

$$2. \int e^{ax} dx = \frac{e^{ax}}{a}.$$

Discrete random variables:

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

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( $\lambda$ )	$\lambda e^{-\lambda x}, x > 0$	$\begin{cases} 0 & x \leq 0 \\ 1 - e^{-\lambda x} & x > 0 \end{cases}$	$\frac{1}{\lambda}$	$\frac{1}{\lambda^2}$
Normal( $\mu, \sigma^2$ )	$\frac{1}{\sigma\sqrt{2\pi}} \exp\left(\frac{-(x-\mu)^2}{2\sigma^2}\right),$ $-\infty < x < \infty$	No closed form	$\mu$	$\sigma^2$
Gamma( $\alpha, \beta$ )	$\frac{\beta^\alpha}{\Gamma(\alpha)} x^{\alpha-1} e^{-\beta x}, x > 0$		$\frac{\alpha}{\beta}$	$\frac{\alpha}{\beta^2}$
Beta( $\alpha, \beta$ )	$\frac{\Gamma(\alpha+\beta)}{\Gamma(\alpha)\Gamma(\beta)} x^{\alpha-1} (1-x)^{\beta-1}$ $0 < x < 1$		$\frac{\alpha}{\alpha+\beta}$	$\frac{\alpha\beta}{(\alpha+\beta)^2(\alpha+\beta+1)}$

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

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

2. **Chebyshev's inequality:** Let  $X$  be a discrete random variable with a finite mean  $\mu$  and a finite variance  $\sigma^2$ . Then,

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

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

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

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

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

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

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

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

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

Procedure: For one parameter  $\theta$

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

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

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

8. Maximum likelihood (ML) estimation:

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

9. Bayesian estimation: Let  $X_1, \dots, X_n \sim \text{i.i.d. } X$ , parameter  $\Theta$ .

Prior distribution of  $\Theta$ :  $\Theta \sim f_\Theta(\theta)$ .

Samples,  $S : (X_1 = x_1, \dots, X_n = x_n)$

Posterior:  $\Theta | (X_1 = x_1, \dots, X_n = x_n)$

Bayes' rule: Posterior  $\propto$  Prior  $\times$  Likelihood

Posterior density  $\propto f_\Theta(\theta) \times P(X_1 = x_1, \dots, X_n = x_n | \Theta = \theta)$

10. Normal samples with unknown mean and known variance:

$X_1, \dots, X_n \sim \text{i.i.d. Normal}(M, \sigma^2)$ .

Prior  $M \sim \text{Normal}(\mu_0, \sigma_0^2)$ .

Posterior mean:  $\hat{\mu} = \bar{X} \left( \frac{n\sigma_0^2}{n\sigma_0^2 + \sigma^2} \right) + \mu_0 \left( \frac{\sigma^2}{n\sigma_0^2 + \sigma^2} \right)$

## 11. Hypothesis Testing

- Test for mean

Case (1): When population variance  $\sigma^2$  is known ( $z$ -test)

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

Case (2): When population variance  $\sigma^2$  is unknown ( $t$ -test)

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

- $\chi^2$ -test for variance:

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

- Two samples  $z$ -test for means:

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

- Two samples  $F$ -test for variances

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

## Options :

6406532735010. ✓ Useful Data has been mentioned above.

6406532735011. ✖ This data attachment is just for a reference & not for an evaluation.

**Sub-Section Number :**

2

**Sub-Section Id :**

640653119013

**Question Shuffling Allowed :**

Yes

**Is Section Default? :**

null

**Question Number : 190 Question Id : 640653816520 Question Type : MCQ Is Question**

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

**Correct Marks : 3**

**Question Label : Multiple Choice Question**

Let  $X_1, X_2, X_3 \sim \text{i.i.d.} X$  and  $X \sim \text{Uniform}\{-0.2, 0.2\}$ . Define a random variable  $S = X_1 + X_2 + X_3$ . Find the MGF (moment generating function) of  $S$ .

**Options :**

6406532735012. ❌  $\left( \frac{e^{-0.2\lambda} + e^{0.2\lambda}}{3} \right)^3$

6406532735013. ❌  $\left( \frac{e^{-0.5\lambda} + e^{0.5\lambda}}{2} \right)^3$

6406532735014. ✓  $\left( \frac{e^{-0.2\lambda} + e^{0.2\lambda}}{2} \right)^3$

6406532735015. ❌  $\left( \frac{e^{-0.5\lambda} + e^{0.5\lambda}}{3} \right)^2$

**Question Number : 191 Question Id : 640653816522 Question Type : MCQ Is Question**

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

**Correct Marks : 3**

**Question Label : Multiple Choice Question**

Consider 100 samples  $X_1, X_2, \dots, X_{100} \sim \text{iid Normal}(\mu, 36)$ . Let the null and alternative hypothesis be  $H_0 : \mu = 4$  and  $H_A : \mu = -4$ . Suppose  $T = \frac{X_1 + X_2 + \dots + X_{100}}{100}$ .

Consider a test that rejects  $H_0$  if  $T < c$  for some constant  $c$ . What is the level of significance in terms of ' $c$ '?

**Options :**

6406532735017. ❌  $1 - F_Z \left( \frac{5c + 20}{2} \right)$

6406532735018. ❌  $1 - F_Z \left( \frac{5c - 20}{3} \right)$

6406532735019. ❌  $F_Z \left( \frac{5c + 20}{3} \right)$

6406532735020. ✓  $F_Z \left( \frac{5c - 20}{3} \right)$

**Question Number : 192 Question Id : 640653816524 Question Type : MCQ Is Question**

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

**Correct Marks : 3**

Question Label : Multiple Choice Question

Consider the following situation and match it with suitable test statistic and hypothesis test:

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

**Options :**

6406532735022. ❌ Test Statistic:  $T = \text{Sample mean}$ , Hypothesis test:  $Z$ -test.

6406532735023. ❌ Test Statistic:  $T = \text{Sample mean}$ , Hypothesis test:  $\chi^2$ -test.

6406532735024. ✖ Test Statistic:  $T$  = Sample variance, Hypothesis test:  $\chi^2$ -test.

6406532735025. ✓ Test Statistic:  $T$  = Sample mean, Hypothesis test:  $t$ -test.

<b>Sub-Section Number :</b>	3
<b>Sub-Section Id :</b>	640653119014
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 193 Question Id : 640653816521 Question Type : SA Calculator : None**

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

**Correct Marks : 3**

**Question Label : Short Answer Question**

Suppose the time taken by a delivery service to deliver a package (in hours) follows an exponential distribution with parameter  $\lambda$ . The timings (in hours) from a random sample of 6 deliveries are as follows:

15, 20, 15, 16, 14, 20

Find the method of moment estimate of  $\lambda$  for the given sample. Enter the answer correct to two decimal places.

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Range**

**Text Areas : PlainText**

**Possible Answers :**

0.03 to 0.09

**Question Number : 194 Question Id : 640653816523 Question Type : SA Calculator : None**

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

**Correct Marks : 3**

**Question Label :** Short Answer Question

Suppose  $X_1, X_2, \dots, X_n$  are i.i.d. samples from a distribution  $X$  with an unknown mean  $\mu$  and variance  $\sigma^2$ . If  $\hat{\mu}_1$  is an estimator of  $\mu$  such that  $E(\hat{\mu}_1) = 2\mu + 3$  and another estimator  $\hat{\mu}_2$  is defined as

$$\hat{\mu}_2 = \frac{\hat{\mu}_1 - k}{(k - 1)}$$

Find the value of  $k$  for which  $\hat{\mu}_2$  will be an unbiased estimator of  $\mu$ .

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

3

**Sub-Section Number :** 4

**Sub-Section Id :** 640653119015

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816525 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 : (195 to 196)**

**Question Label :** Comprehension

The probability mass function of a random variable  $X$  is given as

$x$	0	1	2	3
$P(X = x)$	$\frac{p}{4}$	$\frac{p}{4}$	$\frac{p}{4}$	$1 - \frac{3p}{4}$

Based on the above data, answer the given subquestions.

### Sub questions

**Question Number : 195 Question Id : 640653816526 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 random sample  $(0, 3, 2, 2, 3, 1, 2, 2, 3, 0)$ .

Find the method of moments estimate of  $p$  for the given sample. Enter the answer correct to one decimal place.

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Range**

**Text Areas : PlainText**

**Possible Answers :**

0.7 to 0.9

**Question Number : 196 Question Id : 640653816527 Question Type : SA Calculator : None**

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

**Correct Marks : 2**

Question Label : Short Answer Question

Consider a random sample  $(0, 0, 1, 2, 2, 3, 3, 3, 3, 3)$ .

Find the maximum likelihood estimate of  $p$  for the given sample. 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 :**

0.63 to 0.70

**Question Id : 640653816528 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 : (197 to 198)**

Question Label : Comprehension

Let  $X$  be a discrete random variable taking values  $\{1, 3, 5\}$  with respective probabilities

$\left\{ \frac{\theta}{2}, (1 - \theta), \frac{\theta}{2} \right\}$ , where  $0 \leq \theta \leq 1$  is a parameter.

Consider the samples  $\{1, 1, 5, 3, 5, 3, 3, 1, 1, 5\}$  from  $X$ . Assume prior distribution of  $\theta$  to be Beta(5, 6).

Based on the above data, answer the given subquestions.

### Sub questions

**Question Number : 197 Question Id : 640653816529 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 3**

Question Label : Multiple Choice Question

Find the posterior distribution of  $\theta$ .

**Options :**

6406532735028. ✘ Gamma(11, 8)

6406532735029. ✘ Beta(11, 8)

6406532735030. ✓ Beta(12, 9)

6406532735031. ✘ Beta(9, 12)

**Question Number : 198 Question Id : 640653816530 Question Type : SA Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 2**

Question Label : Short Answer Question

Find the posterior mean. Enter the answer correct to two decimal places.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

0.54 to 0.60

**Question Id : 640653816531 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 : (199 to 200)**

Question Label : Comprehension

A university claims that the average time for students to complete a particular exam is 60 minutes with a standard deviation of 5 minutes. An analyst believes that the average time is less than 60 minutes. He randomly selects 100 completed exams and finds that the average completion time is 59.3 minutes.

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 199 Question Id : 640653816532 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 null hypothesis and alternative hypothesis should the analyst consider?

**Options :**

6406532735033. ✖  $H_0 : \mu = 60, H_A : \mu > 60$

6406532735034. ✓  $H_0 : \mu = 60, H_A : \mu < 60$

6406532735035. ✖  $H_0 : \mu = 59.3, H_A : \mu < 59.3$

6406532735036. ✖  $H_0 : \mu = 59.3, H_A : \mu > 59.3$

**Question Number : 200 Question Id : 640653816533 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 conclusions will the analyst reach at the specified significance levels ?

**Options :**

6406532735037. ✖ Reject  $H_0$  at significance level  $\alpha = 0.05$ .

6406532735038. ✖ Reject  $H_0$  at significance level  $\alpha = 0.01$ .

6406532735039. ✓ Accept  $H_0$  at significance level  $\alpha = 0.05$ .

6406532735040. ✓ Accept  $H_0$  at significance level  $\alpha = 0.01$ .

**Question Id : 640653816534 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 : (201 to 202)**

Question Label : Comprehension

Suppose a random variable  $X$  follows an exponential distribution with mean 5.

Based on the above data, answer the given subquestions.

### **Sub questions**

**Question Number : 201 Question Id : 640653816535 Question Type : MCQ Is Question**

**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  $P(X \leq k) = 0.95$ , then find the value of  $k$ .

**Options :**

6406532735041. ✘  $\frac{1}{5}(\ln 20)$

6406532735042. ✓  $5(\ln 20)$

6406532735043. ✘  $\frac{1}{5}(\ln 2)$

6406532735044. ✘  $5(\ln 2)$

**Question Number : 202 Question Id : 640653816536 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Find the value of  $P(10 \leq X \leq 15)$ .

**Options :**

6406532735045. ✘  $e^{-3} - e^{-2}$

6406532735046. ✘  $1 - e^{-2}$

6406532735047. ✘  $1 - e^{-3}$

6406532735048. ✓  $e^{-2} - e^{-3}$

**Question Id : 640653816537 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 : (203 to 204)**

Question Label : Comprehension

The PMF of a discrete random variable  $X$  is given as

$$f_X(x) = \begin{cases} \frac{x}{15}, & x = 1, 2, 3, 4, 5 \\ 0, & \text{otherwise.} \end{cases}$$

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 203 Question Id : 640653816538 Question Type : SA Calculator : None**

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

**Correct Marks : 2**

Question Label : Short Answer Question

Find the value of  $P(X = 1 \text{ or } X = 2)$ . Enter the answer correct to one decimal place.

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

0.1 to 0.3

**Question Number :** 204 **Question Id :** 640653816539 **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 value of  $P\left(\frac{1}{2} < X < \frac{5}{2} \mid X > 1\right)$ ?

Enter the answer correct to two decimal places.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

0.11 to 0.17

## DBMS

**Section Id :** 64065356707

**Section Number :** 7

**Section type :** Online

**Mandatory or Optional :** Mandatory

**Number of Questions :** 20

**Number of Questions to be attempted :** 20

**Section Marks :** 50

<b>Display Number Panel :</b>	Yes
<b>Section Negative Marks :</b>	0
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	640653119016
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 205 Question Id : 640653816540 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 : DATA BASE MANAGEMENT SYSTEM (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 :**

6406532735051. ✓ YES

6406532735052. ✗ NO

<b>Sub-Section Number :</b>	2
<b>Sub-Section Id :</b>	640653119017
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 206 Question Id : 640653816541 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 us consider the following statistics for searching a condition within a given relation.

- Number of blocks containing record of the relation ( $b$ ) = 400
- Time to transfer one block ( $t_b$ ) = 0.6 milliseconds
- Time for one seek ( $t_s$ ) = 8 milliseconds

What will be the cost of selection query using linear search file scan?

**Options :**

6406532735053. ✘ 24.8 milliseconds

6406532735054. ✘ 128 milliseconds

6406532735055. ✓ 248 milliseconds

6406532735056. ✘ 16.6 milliseconds

**Question Number : 207 Question Id : 640653816542 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 relation  $R(A, B, C, D, E)$  and the functional dependencies set

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

Let  $R1(A, D, E)$  be one of the decomposed relations. Find out the number of candidate keys applicable to  $R1(A, D, E)$ .

**Options :**

6406532735057. ✘ 1

6406532735058. ✓ 2

6406532735059. ✘ 3

6406532735060. ✘ 4

<b>Sub-Section Number :</b>	3
<b>Sub-Section Id :</b>	640653119018
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 208 Question Id : 640653816543 Question Type : MCQ Is Question**

**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 relational schema:

**Intern(*intern\_code*, *intern\_name*, *project*, *hobby*).**

An intern can work in several projects and can have several hobbies. However, it maintains the FD:  $\text{intern\_code} \rightarrow \text{intern\_name}$ .

Identify the most appropriate 4NF decomposition for the given schema.

**Options :**

6406532735061. ✘ R1(*intern\_code*, *intern\_name*, *project*, *hobby*), R2(*intern\_code*, *project*, *hobby*)

6406532735062. ✘ R1(*intern\_code*, *intern\_name*, *project*), R2(*intern\_code*, *hobby*)

6406532735063. ✘ R1(*intern\_code*, *intern\_name*, *hobby*), R2(*intern\_code*, *project*)

6406532735064. ✓ R1(*intern\_code*, *intern\_name*), R2(*intern\_code*, *project*), R3(*intern\_code*, *hobby*)

<b>Sub-Section Number :</b>	4
<b>Sub-Section Id :</b>	640653119019
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 209 Question Id : 640653816545 Question Type : MSQ Is Question**

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

**Time : 0**

**Correct Marks : 1 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Choose the incorrect statement(s):

**Options :**

6406532735069. ✓ Time complexity of searching in a BST is  $O(n \log n)$

6406532735070. ✗ In a B+ tree the leaf nodes are linked using a link list

6406532735071. ✓ Sparse indices are generally faster than dense indices for locating records.

6406532735072. ✗ B tree does not allow duplicate search-key values

**Question Number : 210 Question Id : 640653816546 Question Type : MSQ Is Question**

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

**Time : 0**

**Correct Marks : 1 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Choose the correct statement(s):

**Options :**

6406532735073. ✓ In Raid 0 architecture, if one disk fails, then all the data in the disk array is gone.

6406532735074. ✗ Raid 1 architecture provides excellent fault tolerance

6406532735075. ✓ In Raid 2 architecture, the striping unit consists of 2 bits.

6406532735076. ✓ In Raid 5 architecture, recovery of only one disk failure is possible

**Sub-Section Number :** 5

**Sub-Section Id :** 640653119020

**Question Shuffling Allowed :** Yes

**Is Section Default? :**

null

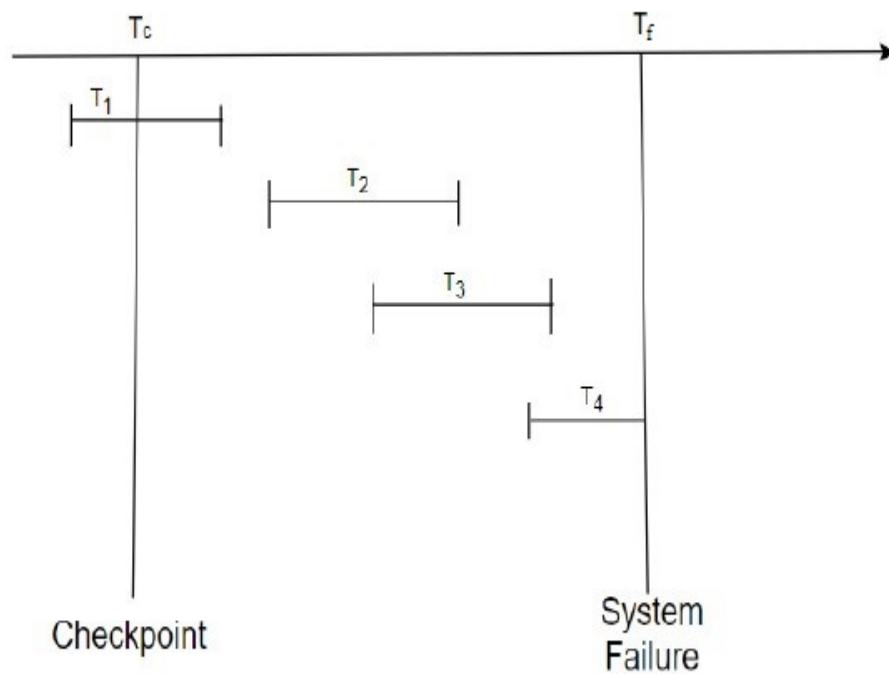
**Question Number : 211 Question Id : 640653816547 Question Type : MSQ Is Question**

**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 figure as shown below that consists of four transactions  $T_1, T_2, T_3$  and  $T_4$ .



Considering there is a system failure, choose the incorrect statement(s):

**Options :**

6406532735077. ✓  $T_1$  needs to be undone

6406532735078. ✓  $T_2$  can be ignored

6406532735079. ✗  $T_1, T_2$  and  $T_3$  need to be redone

6406532735080. ✗  $T_4$  needs to be undone

**Question Number : 212 Question Id : 640653816548 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 three transaction  $T_5, T_{10}, T_{15}$  having time-stamps 5, 10 and 15 respectively. Which of the following options is/are correct according to deadlock prevention Wound-Wait Scheme?

**Options :**

If  $T_{10}$  requests a data item held by  $T_5$ , then it will be preempted from  $T_5$  and  
6406532735081. ❌  $T_5$  will be suspended ("wounded")

If  $T_5$  requests a data item held by  $T_{10}$ , then it will be preempted from  $T_{10}$  and  
6406532735082. ✓  $T_{10}$  will be suspended ("wounded")

6406532735083. ✓ If  $T_{15}$  requests a data item held by  $T_{10}$ , then  $T_{15}$  will "wait"

6406532735084. ❌ If  $T_{10}$  requests a data item held by  $T_{15}$ , then  $T_{10}$  will "wait"

**Sub-Section Number :** 6

**Sub-Section Id :** 640653119021

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 213 Question Id : 640653816544 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 for the UEFA Champions League:

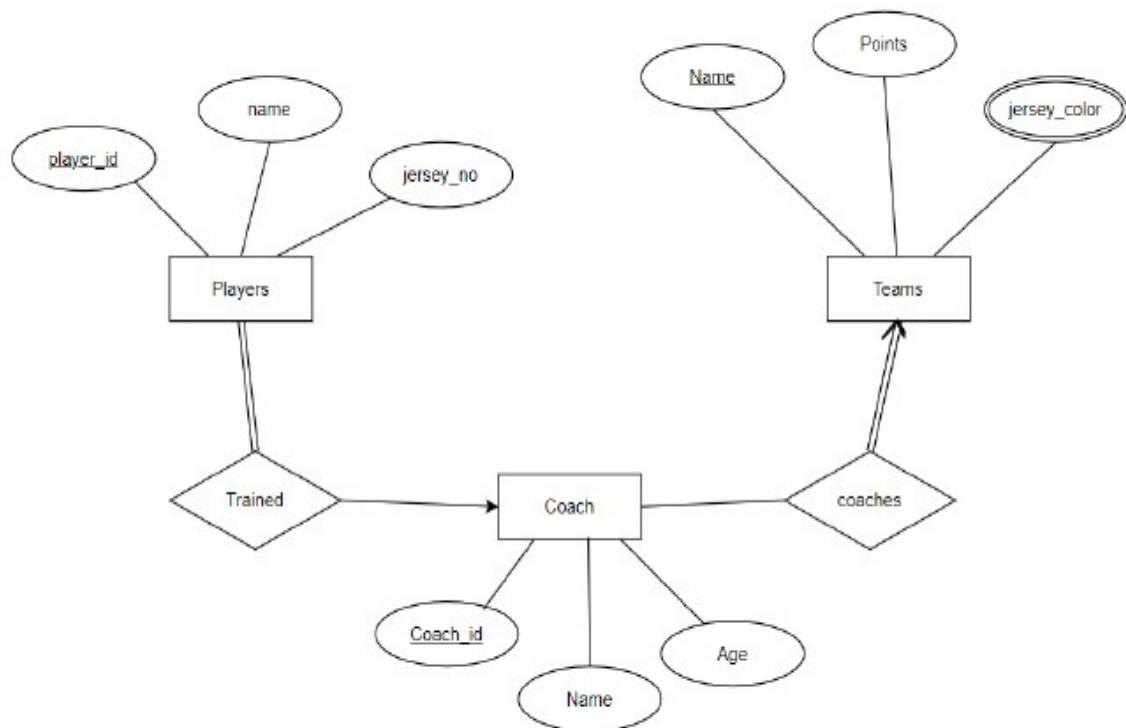


Figure 1: UCL ERD

Which of the following statements is/are true?

**Options :**

6406532735065. ✓ There can exist a coach who does not coach any team

6406532735066. ✓ A coach can be coaching at most one team

6406532735067. ✗ Every coach must be training at least one player

6406532735068. ✓ A player must have one coach

**Question Number : 214 Question Id : 640653816549 Question Type : MSQ Is Question**

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

**Correct Marks : 3 Max. Selectable Options : 0**

**Question Label : Multiple Select Question**

Consider the following two schedules S1 and S2 and three transactions  $T_1, T_2, T_3$ :

S1 :  $R_2(X); W_2(X); R_3(Y); W_3(Y); R_1(X); W_1(X); R_2(X); W_2(X);$   
S2 :  $R_3(X); W_3(X); W_2(X); W_2(Y); W_3(Z); R_1(Z); R_1(X); W_1(Y);$

where  $R_i(X)$  denotes a read operation by transaction  $T_i$  on a data item X,  $W_i(X)$  denotes a write operation by transaction  $T_i$  on a data item X.

Which among the following statements is/are correct?

**Options :**

6406532735085. ❌ Schedule S1 is Conflict Serializable.

6406532735086. ✓ Schedule S2 is Conflict Serializable.

6406532735087. ❌ Schedule S1 is View Serializable.

6406532735088. ✓ Schedule S2 is View Serializable.

**Question Number : 215 Question Id : 640653816550 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 relations:

players(pid, name, age, jersey\_no)

teams(team\_name, matches, points, pid)

Choose the correct TRC or DRC expression which is equivalent to the below SQL query.

```
SELECT p.pid, t.matches
FROM players p natural join teams t
WHERE p.age > 21
```

**Options :**

6406532735089. ✓  $\{x \mid \exists p \in \text{players} \exists t \in \text{teams}(p.pid = t.pid \wedge p.age > 21 \wedge x.pid = p.pid \wedge x.matches = t.matches)\}$

6406532735090. ❌  $\{x \mid \exists p \in \text{players} \exists t \in \text{teams}(p.pid = t.pid \wedge p.age > 21 \wedge x.matches = t.matches)\}$

$\{< a, n > | \exists a, b, c, d (< a, b, c, d > \in players \wedge c > 21) \wedge \exists m, n, o, p (< m, n, o, p > \in teams)\}$

6406532735091. ❌

$\{< a, n > | \exists a, b, c, d (< a, b, c, d > \in players \wedge c > 21) \wedge \exists m, n, o, p (< m, n, o, p > \in teams \wedge a = p)\}$

6406532735092. ✓

**Question Number : 216 Question Id : 640653816551 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 you are designing a database schema for a university management system. One of the key relations, R, represents information about courses offered, including details such as course code (X), instructor (Y), course title (Z), and maximum enrollment capacity (W). The functional dependencies for this relation are as follows:

$$\mathcal{F} = \{X \rightarrow Y, YZ \rightarrow W, W \rightarrow X, Y \rightarrow W\}$$

During the normalization process, you decide to decompose R into two relations: R1 and R2. Your goal is to ensure that this decomposition preserves all the information without any loss. Which of the following decomposition is lossless and dependency preserving? Choose the correct option(s).

**Options :**

6406532735093. ✓ R1(XY) and R2(YZW)

6406532735094. ✓ R1(XW) and R2(YZW)

6406532735095. ❌ R1(XW) and R2(YZ)

6406532735096. ❌ R1(XWZ) and R2(YZ)

**Question Number : 217 Question Id : 640653816552 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

Imagine you're designing a database for a library management system where books are categorized based on their genres, authors, and publication years. The schema includes a relation **Books**(*Title, Author, Genre, Year*) to store information about the books available in the library. We have two sets of functional dependencies as follows:

$$F1 = \{Title \rightarrow (Author, Genre, Year)\}$$

$$F2 = \{Title \rightarrow (Author, Genre), \text{Genre} \rightarrow Year\}$$

Choose the correct option(s).

**Options :**

6406532735097. ✓ If F1 is applicable to relation **Books**, then it is 3NF

6406532735098. ✓ If F2 is applicable to relation **Books**, then it is 2NF

6406532735099. ✗ If F2 is applicable to relation **Books**, then it is BCNF

6406532735100. ✗ If F1 is applicable to relation **Books**, then it is 3NF but not in BCNF

**Sub-Section Number :** 7

**Sub-Section Id :** 640653119022

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 218 Question Id : 640653816558 Question Type : SA Calculator : None**

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

**Correct Marks : 1**

Question Label : Short Answer Question

Consider the following schedule S with three transactions T1, T2, T3 and T4 :

S: R2(D); W2(D); R1(A); W1(A); R3(C); W3(C); W4(B)

The number of serial schedule for given schedule S is....

**Response Type :** Numeric

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

**24**

**Sub-Section Number :** 8

**Sub-Section Id :** 640653119023

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 219 Question Id : 640653816553 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 relational schema  $R(A, B, C, D, E, F, G)$  with the given list of functional dependencies:

$$\mathcal{F} = \{A \rightarrow BC, D \rightarrow A, E \rightarrow G, CD \rightarrow F\}$$

Calculate the number of prime attributes.

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

**2**

**Sub-Section Number :** 9

**Sub-Section Id :** 640653119024

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 220 Question Id : 640653816556 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 monthly backup schedule used by a company:

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

Let A be the number of backup sets that need to be loaded for a complete recovery, if there is a system failure on the 15th day of the month (after the backup for the day had been completed). Let B be the number of backup sets that need to be loaded for a complete recovery , if there is a system failure on the 30th day of the month (before the backup for the day had been completed).What will be the value of A-B?

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

**2**

**Question Number : 221 Question Id : 640653816557 Question Type : SA Calculator : None**

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

**Correct Marks : 3**

**Question Label : Short Answer Question**

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

S: R2(A), W2(A), W4(A), W4(B), R3(B), W3(C), R4(C), R1(C), R2(D), W3(D)

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

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

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

0

**Sub-Section Number :** 10

**Sub-Section Id :** 640653119025

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number :** 222 **Question Id :** 640653816554 **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 following key values are inserted into a  $B^+$  tree of order 3 in the given sequence.

The tree is initially empty.

5, 9, 13, 17, 3, 11, 1, 20, 14, 7

How many node splits will be there in total?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

5

**Question Number : 223 Question Id : 640653816555 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 table Students given below:

ID	Name	Department	Marks
001	Harry	Comp. Sci.	90
002	Louis	Maths	88
003	Liam	History	80
004	Niall	Comp. Sci.	86
005	Zayn	History	91
006	Luke	Geography	82
007	Ashton	Maths	87
008	Bradley	Music	78
009	Connor	Biology	92
010	Alex	Music	100

Let hash function  $h(x)$  generate 16-bit binary hash values for the distinct elements in *Department* attribute:

Comp. Sci.- 1100 0010 1110 0101

History- 1000 1010 0101 1110

Maths- 0111 1100 0011 0110

Geography- 1110 0101 0000 1101

Music- 0100 1010 1111 1011

Biology- 0011 1111 1010 0101

If we insert the records in the following order:

Harry, Liam, Niall, Connor, Bradley, Luke, Louis, Zayn, Alex, Ashton.

Considering bucket size as 2, using dynamic hashing technique, how many minimum number of buckets will be required to distribute all the records?

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

**Sub-Section Number :** 11  
**Sub-Section Id :** 640653119026  
**Question Shuffling Allowed :** No  
**Is Section Default? :** null

**Question Id : 640653816559 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 : (224 to 225)**

Question Label : Comprehension

Consider the table Points\_Table given below to answer the given subquestions.

Team_ID	Team_Name	Country	Wins	Losses	Draw	Total_Points
001	Barcelona	Spain	8	1	2	16
002	Real Madrid	Spain	6	3	3	12
003	Arsenal	England	5	4	3	10
004	Man United	England	4	5	2	8
005	PSG	France	4	4	3	8
006	Bayern	Germany	3	6	2	6
007	Man City	England	2	4	5	4

Table 1: Points\_Table

### Sub questions

**Question Number : 224 Question Id : 640653816560 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 SQL query:

```
SELECT Count(*)
FROM  ( ( SELECT Team_Name, Country
      FROM Points_Table) AS P
      NATURAL JOIN ( SELECT Country, Team_ID, Wins, Total_Points
                     FROM Points_Table) AS Q )
WHERE Wins>=5 and Total_Points>10
```

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

4

**Question Number : 225 Question Id : 640653816561 Question Type : MSQ Is Question**

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

**Correct Marks : 2 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Choose the correct expression(s) for the statement given below:

Name all the teams from Spain, with at least 2 losses and at most 3 draws.

**Options :**

6406532735108. ✓  $\{M | \exists P \in Points\_Table (P.Country = 'Spain' \wedge P.Losses \geq 2 \wedge P.Draw \leq 3 \wedge M.Team\_Name = P.Team\_Name)\}$

6406532735109. ✘  $\Pi_{Team\_Name} (\sigma_{Country='Spain' \wedge Losses \geq 2 \wedge Draw \geq 3} (Points\_Table))$

6406532735110. ✓  $\Pi_{Team\_Name} (\sigma_{Country='Spain' \wedge Losses \geq 2 \wedge Draw \leq 3} (Points\_Table))$

$\{M | \exists P \in Points\_Table (P.Country = 'Spain' \wedge P.Losses \geq 2 \wedge P.Draw \leq 6406532735111. \star 3)\}$

## PDSA

<b>Section Id :</b>	64065356708
<b>Section Number :</b>	8
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	24
<b>Number of Questions to be attempted :</b>	24
<b>Section Marks :</b>	100
<b>Display Number Panel :</b>	Yes
<b>Section Negative Marks :</b>	0
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	640653119027
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 226 Question Id : 640653816562 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 :**

6406532735112. ✓ YES

6406532735113. ✗ NO

**Sub-Section Number :** 2

**Sub-Section Id :** 640653119028

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 227 Question Id : 640653816563 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**

Here is a function to return the maximum value in a list of integers. There is a logical error in this function.

```
1 def max_bad(L):
2     mymax = 0
3     for i in range(len(L)):
4         if L[i] > mymax:
5             mymax = L[i]
6     return(mymax)
```

Select the input list for which `max_bad` produces incorrect output.

**Options :**

6406532735114.

✖ [11, 22, 33, 44]

6406532735115. ✖ [-11, 0, 21, -32]

6406532735116. ✓ [-11, -22, -33, -44]

6406532735117. ✖ [44, 33, 22, 11]

**Question Number : 228 Question Id : 640653816564 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

$$f_1(n) = O(\log n)$$

$$f_2(n) = O(1)$$

$$f_3(n) = O(n + n \log n)$$

$$f_4(n) = O(\sqrt{n})$$

$$f_5(n) = O(n^k)$$

Arrange the above functions in **increasing** order of asymptotic complexity.

**Options :**

6406532735118. ✖  $f_1(n), f_2(n), f_4(n), f_3(n), f_5(n)$

6406532735119. ✖  $f_1(n), f_2(n), f_3(n), f_4(n), f_5(n)$

6406532735120. ✓  $f_2(n), f_1(n), f_4(n), f_3(n), f_5(n)$

6406532735121. ✖  $f_2(n), f_1(n), f_3(n), f_4(n), f_5(n)$

**Question Number : 229 Question Id : 640653816565 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

How many swaps does selection sort require, in the worst case, on an input of size  $n$ ?

**Options :**

6406532735122. ✘  $O(\log n)$

6406532735123. ✓  $O(n)$

6406532735124. ✘  $O(n \log n)$

6406532735125. ✘  $O(n^2)$

**Question Number : 230 Question Id : 640653816567 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 sequence of stack operations is performed on a Stack:

```
1 Push(10)
2 Push(20)
3 Pop
4 Push(20)
5 Push(10)
6 Pop
7 Push(10)
8 Pop
9 Pop
10 Pop
```

The sequence of values popped from the Stack is:

**Options :**

6406532735131. ✘ 10, 10, 20, 10, 20

6406532735132. ✓ 20, 10, 10, 20, 10

6406532735133. ✘ 20, 20, 10, 10, 10

6406532735134. ✘ 10, 20, 10, 20, 10

**Question Number : 231 Question Id : 640653816568 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 hash table of size 9 (index 0 to 8) uses open addressing with hash function  $h(k) = k \bmod 9$ , and linear probing. The following elements are added into the hash table, which was initially empty.

18, 21, 90, 31, 45 and 55

The key value 55 is stored at which index of the hash table?

**Options :**

6406532735135. ✘ 2

6406532735136. ✘ 3

6406532735137. ✘ 4

6406532735138. ✓ 5

**Question Number : 232 Question Id : 640653816569 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 4**

Question Label : Multiple Choice Question

You are given a social network with users and their friendships represented as a graph. You want to find the shortest chain of friends between User A and User B. Which of the following algorithm is best suited and efficient for solving this problem?

**Options :**

6406532735139. ✓ Breadth-first search

6406532735140. ✗ Depth-first search

6406532735141. ✗ Dijkstra's Algorithm

6406532735142. ✗ Bellman-Ford algorithm

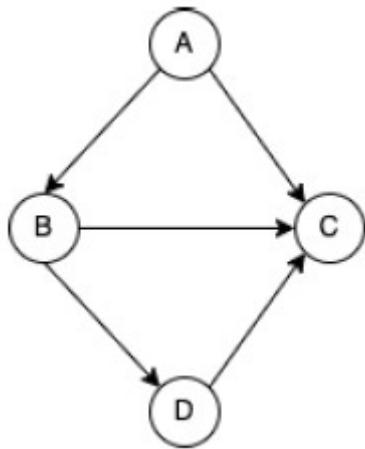
**Question Number : 233 Question Id : 640653816571 Question Type : MCQ Is Question**

**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 graph given below



Which of the following is the correct topological ordering of the given graph?

**Options :**

6406532735147. ❌ A - B - C - D

6406532735148. ❌ A - C - D - B

6406532735149. ❌ A - C - B - D

6406532735150. ✓ A - B - D - C

**Question Number : 234 Question Id : 640653816572 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 visited=[False for i in range(5)]
2 def fun(v,G):
3     print(v,end=",")
4     visited[v]=True
5
6     for i in range(5):
7         if not visited[i] and G[v][i]==1:
8             fun(i,G)
```

Consider the following adjacency matrix  $G$ .

$$G = \begin{bmatrix} 0, 0, 0, 1, 1 \\ 0, 0, 0, 0, 1 \\ 0, 0, 0, 1, 0 \\ 1, 0, 1, 0, 0 \\ 1, 1, 0, 0, 0 \end{bmatrix}$$

What will be the output produced by `fun(0,G)`?

**Options :**

6406532735151. ✘ 0,2,3,1,4,

6406532735152. ✘ 0,3,2,1,4,

6406532735153. ✘ 0,2,3,4,1,

6406532735154. ✓ 0,3,2,4,1,

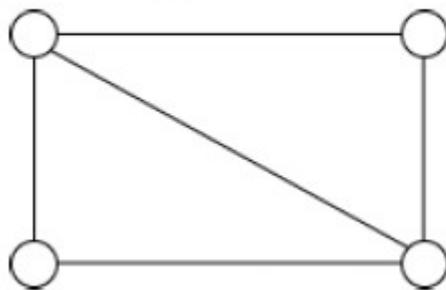
**Question Number : 235 Question Id : 640653816574 Question Type : MCQ Is Question**

**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 the given graph below, How many spanning trees can be formed?



**Options :**

6406532735156. ✘ 4

6406532735157. ✘ 6

6406532735158. ✘ 7

6406532735159. ✓ 8

**Question Number : 236 Question Id : 640653816576 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 elements **71, 65, 84, 69, 66, 81, and 62** inserted into empty binary search tree in the same sequence. Which element will be inserted in the lowest level?

**Options :**

6406532735161. ✘ 62

6406532735162. ✘ 69

6406532735163. ✓ 66

6406532735164. ✘ 81

**Question Number : 237 Question Id : 640653816577 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 Priority-Queue is implemented as a Max-Heap. Initially, the max-heap is [22, 19, 18, 15, 13]. Two new elements 31 and 24 are inserted in the given Max-Heap in that order. Max-Heap after the insertion of the elements is\_.

**Options :**

6406532735165. ❌ [31, 19, 24, 15, 13, 22, 18]

6406532735166. ✓ [31, 19, 24, 15, 13, 18, 22]

6406532735167. ❌ [31, 19, 24, 18, 15, 13, 22]

6406532735168. ❌ [31, 19, 24, 22, 18, 15, 13]

**Question Number : 238 Question Id : 640653816578 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 is the maximum height of a AVL tree with 12 nodes? Consider that the height of the tree with single node is 1.

**Options :**

6406532735169. ❌ 4

6406532735170. ✓ 5

6406532735171. ❌ 3

6406532735172. ❌ 7

**Sub-Section Number :** 3

**Sub-Section Id :** 640653119029

**Question Shuffling Allowed :**

Yes

**Is Section Default? :**

null

**Question Number : 239 Question Id : 640653816566 Question Type : MSQ Is Question**

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

**Correct Marks : 4 Max. Selectable Options : 0**

Question Label : Multiple Select Question

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

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

Let the linked list have `n` elements. Which of the following statement(s) is/are true?

**Options :**

6406532735126. ✓ first and last element can be directly accessed in the linked list in constant time.

6406532735127. ✓ Insertion of the new node at the end of the linked list takes constant time.

6406532735128. ✗ Insertion of the new node at the end of the linked list takes  $O(n)$  time.

6406532735129. ✗ Deletion of the last node of the linked list takes  $O(1)$  time.

6406532735130. ✗ If linked list is sorted, binary search takes  $O(\log n)$  time for search.

**Question Number : 240 Question Id : 640653816570 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 an undirected unweighted graph  $G$  with following set of vertices ( $V$ ) and edges ( $E$ ):

$$V = \{v_1, v_2, v_3, v_4, v_5, v_6, v_7\}$$

$$E = \{(v_1, v_2), (v_1, v_3), (v_1, v_4), (v_2, v_4), (v_2, v_5), (v_3, v_4), (v_5, v_7), (v_5, v_6), (v_2, v_7)\}.$$

A Breadth First Search(BFS) on the graph  $G$  is performed with  $v_1$  as start vertex. Which of the following is/are the tree edge(s)?

**Options :**

6406532735143. ✘  $(v_2, v_4)$

6406532735144. ✓  $(v_1, v_4)$

6406532735145. ✓  $(v_2, v_5)$

6406532735146. ✘  $(v_5, v_7)$

**Sub-Section Number :** 4

**Sub-Section Id :** 640653119030

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

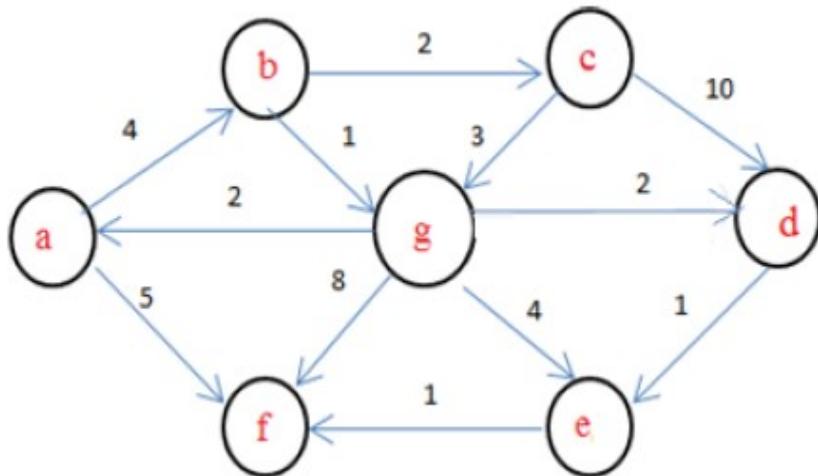
**Question Number : 241 Question Id : 640653816573 Question Type : SA Calculator : None**

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

**Correct Marks : 4**

Question Label : Short Answer Question

In the given graph below, what is the minimum cost to reach vertex **f** from vertex **c**?



**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

7

**Question Number :** 242 **Question Id :** 640653816575 **Question Type :** SA **Calculator :** None

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

**Correct Marks :** 4

**Question Label :** Short Answer Question

Consider a complete binary tree **T** with **19** nodes. The number of leaf nodes in **T** is \_\_\_\_.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

10

**Question Number :** 243 **Question Id :** 640653816579 **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**

An entire message is created using characters from the set  $S = \{A, B, C, D, E\}$ . The probability of occurrence of each character is given in the table below.

P	Q	R	S	T
0.08	0.11	0.25	0.43	0.13

How many bits will be used to encode the message `PQRST` using Huffman codes?

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

14

**Question Number : 244 Question Id : 640653816580 Question Type : SA Calculator : None**

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

**Correct Marks : 4**

**Question Label : Short Answer Question**

In a list `L`, two elements `L[i]` and `L[j]` form a inversion if `L[i] > L[j]` and `i < j`. The total number of inversions for the list `L = [3, 4, 8, 9, 7, 5, 1]` is \_\_\_\_.

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

11

**Question Number : 245 Question Id : 640653816581 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 function `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))
```

What median value will be returned by the given `MoM` function for the following list?

```
1 | [6,7,8,10,11,10,15,13,14,17,2,3,4,3,5]
```

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

**8**

**Question Number : 246 Question Id : 640653816585 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 two strings:

$$S_1 = abaabaa$$

$$S_2 = bababba$$

The length of the **longest common subsequence** for string  $S_1$  and  $S_2$  is \_\_\_\_.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

5

**Question Number :** 247 **Question Id :** 640653816586 **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 G be a simple graph with 25 vertices. The size of the maximum independent set of graph G is 15. What is the size of the minimum vertex cover of G?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

10

**Sub-Section Number :** 5

**Sub-Section Id :** 640653119031

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816582 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 : (248 to 249)**

Question Label : Comprehension

The **Longest Decreasing Subsequence** problem is defined as below.

Given a list `L` of size `n` non-negative integers, determine the Longest Decreasing Subsequence(LDS) i.e., the longest possible subsequence in which the elements of the subsequence are sorted in decreasing order.

Consider the following function `LDS` which takes list `L` as input and returns the length of the Longest Decreasing Subsequence.

```
1 def LDS(L):
2     n = len(L)
3
4     Lds = [1]*n #initialize with all 1's
5
6     for i in range(1, n):
7         for j in range(0, i):
8             if L[i] < L[j]:
9                 Lds[i] = ____ # check here
10
11 return max(Lds)
```

Based on the above data, answer the given subquestions.

### Sub questions

**Question Number : 248 Question Id : 640653816583 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 the given code, what expression should be placed at the place of `_____` so that it return the correct output?

**Options :**

6406532735176. ❌ `max(Lds[i], Lds[j])`

6406532735177. ✓ `max(Lds[i], Lds[j]+1)`

6406532735178. ✗ `max(Lds[i], Lds[j+1]+1)`

6406532735179. ✗ `max(Lds[i], Lds[j-1]+1)`

**Question Number : 249 Question Id : 640653816584 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 is the time complexity of function `Lds()` ?

**Options :**

6406532735180. ✓  $O(n^2)$

6406532735181. ✗  $O(n \log n)$

6406532735182. ✗  $O(\log n)$

6406532735183. ✗  $O(n)$

**Question Id : 640653816587 Question Type : COMPREHENSION Sub Question Shuffling**

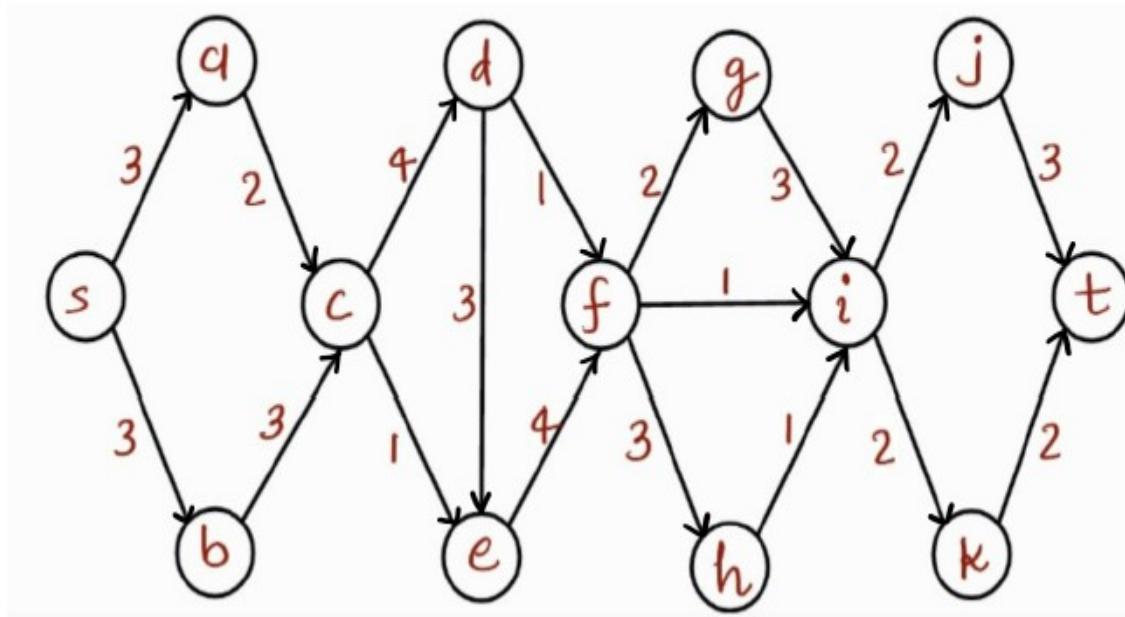
**Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix**

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

**Question Numbers : (250 to 251)**

Question Label : Comprehension

Consider the network given below with source  $s$  and sink  $t$ , with the numbers on the edges denoting maximum capacity across a particular edge.



Based on the above data, answer the given subquestions.

### Sub questions

**Question Number : 250 Question Id : 640653816588 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 we increase the capacity of both edges

( $i, j$ ) and ( $i, k$ ) by 1, the maximum

flow from  $s$  to  $t$  will increase by 1.

**Options :**

6406532735186. ✘ TRUE

6406532735187. ✓ FALSE

**Question Number : 251 Question Id : 640653816589 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 we Increase the capacity of both edges  
 $(h, i)$  and  $(i, j)$  by 1, the maximum flow  
from  $s$  to  $t$  will increase by 1.

**Options :**

6406532735188. ✓ TRUE

6406532735189. ✗ FALSE

## AppDev1

<b>Section Id :</b>	64065356709
<b>Section Number :</b>	9
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	32
<b>Number of Questions to be attempted :</b>	32
<b>Section Marks :</b>	100
<b>Display Number Panel :</b>	Yes
<b>Section Negative Marks :</b>	0
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	640653119032
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 252 Question Id : 640653816590 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 :**

6406532735190. ✓ YES

6406532735191. ✗ NO

**Sub-Section Number :** 2

**Sub-Section Id :** 640653119033

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 253 Question Id : 640653816591 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 3**

Question Label : Multiple Choice Question

Consider the following Python code snippet.

```
from string import Template as makeTemplate
from jinja2 import Template
import sys

var = sys.argv[0]

data = {"var1": "Data scientist", "var2": "programming",
        "var3": "statistical", "var4": "insights"}

temp = "{{var1}} creates $var2 code with $var3 knowledge to create
{{var4}}."

if var == "1":
    temp = makeTemplate(temp)
    output = temp.substitute(data)
    print(output)
else:
    temp = Template(temp)
    output = temp.render(data)
    print(output)
```

What will be printed on the terminal for the command `python app.py 1 2` ?

**Options :**

6406532735192. ✘ {{var1}} creates programming code with statistical knowledge to  
create {{var4}}.

6406532735193. ✘ {{var1}} creates \$var2 code with \$var3 knowledge to create {{var4}}

6406532735194. ✘ Data scientist creates programming code with statistical knowledge to  
create insights.

6406532735195. ✓ Data scientist creates \$var2 code with \$var3 knowledge to create  
insights.

<b>Sub-Section Number :</b>	3
<b>Sub-Section Id :</b>	640653119034
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 254 Question Id : 640653816592 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 flask application running locally on <http://127.0.0.1:5000> ?

```
from flask import Flask

app = Flask(__name__)

@app.route('/home/<string:url>')
def get_url_str(url):
    return "string "+url

@app.route('/home/<path:url>')
def get_url_pth(url):
    return "path "+url

app.run(debug = True)
```

Which of the following URLs will throw a 404 Not Found error?

**Options :**

6406532735196. ❌ <http://127.0.0.1:5000/home/modules>

6406532735197. ✓ <http://127.0.0.1:5000/modules/chapters/one>

6406532735198. ❌ <http://127.0.0.1:5000/home/library/modules/chapters/one>

6406532735199.

✖ None

**Question Number : 255 Question Id : 640653816594 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 view function.

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

@app.route('/student', methods = ['GET', 'POST'])
def show_details():
    cred = request.args
    details = {
        'Stream': cred['dept'],
        'Roll': cred['roll'],
        'Course': cred['course']
    }
    return details

app.run()
```

If this flask app is running locally on `http://127.0.0.1:5000`, which of the following URLs will be handled by the controller correctly?

**Options :**

6406532735204. ✖ `http://127.0.0.1:5000?dept=data_science&roll=cs1001&course=cs2003`

6406532735205. ✓ `http://127.0.0.1:5000/student?dept=data_science&roll=cs1001&course=cs2003`

6406532735206. ✖ `http://127.0.0.1:5000/data_science/cs1001/cs2003`

6406532735207. ✖ `http://127.0.0.1:5000/student/data_science/cs1001/cs2003`

**Question Number : 256 Question Id : 640653816607 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

Which of the following is not a frontend framework?

**Options :**

6406532735252. ❌ Vue JS

6406532735253. ❌ React JS

6406532735254. ✓ Node JS

6406532735255. ❌ Angular JS

**Question Number : 257 Question Id : 640653816613 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

Consider the following statements and select the correct option:

**Statement 1:** In a database, an index can only be created on one column of a table.

**Statement 2:** Indexes cannot be created on columns which have duplicate values.

**Options :**

6406532735276. ❌ Statement 1 is true & statement 2 is false

6406532735277. ❌ Statement 2 is true & statement 1 is false

6406532735278. ❌ Both statements 1 and 2 are true

6406532735279. ✓ Both statements 1 and 2 are false

**Question Number : 258 Question Id : 640653816623 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 2**

Question Label : Multiple Choice Question

Match the type of service approaches from column A to their correct examples in column B.

	Column A		Column B
a	SaaS	1	Replit
b	PaaS	2	Office 365
c	IaaS	3	Amazon Web Services

**Options :**

6406532735316. ❌ a-2, b-3, c-1

6406532735317. ✓ a-2, b-1, c-3

6406532735318. ❌ a-1, b-2, c-3

6406532735319. ❌ a-1, b-3, c-2

**Sub-Section Number :** 4

**Sub-Section Id :** 640653119035

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 259 Question Id : 640653816595 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 3**

Question Label : Multiple Choice Question

In the code snippet given below, what should come in place of **code 1** and **code 2** such that one book can have multiple sections and the converse does not hold true?

```
from sqlalchemy import ForeignKey
from sqlalchemy import Integer, Column
from sqlalchemy.orm import DeclarativeBase
from sqlalchemy.orm import relationship

class Base(DeclarativeBase):
    pass

class Section(Base):
    __tablename__ = "section_table"
    id = Column(Integer, primary_key=True)
    # write your code 1 here

class Book(Base):
    __tablename__ = "book_table"
    id = Column(Integer, primary_key=True)
    # write your code 2 here
```

### Options :

code 1: book\_id=Column(Integer, ForeignKey("book\_table.id"))  
code 2: books = relationship("Section")

6406532735208. ✘

code 1: books = relationship("Section")  
code 2: section\_id=Column(Integer, ForeignKey("book\_table.id"))

6406532735209. ✘

code 1: book\_id=Column(Integer, ForeignKey("book\_table.id"))  
code 2: sections = relationship("Book")

6406532735210. ✓

code 1: books = relationship("Book")  
code 2: section\_id=Column(Integer, ForeignKey("section\_table.id"))

6406532735211. ✘

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

**Time : 0**

**Correct Marks : 3**

Question Label : Multiple Choice Question

Consider the following flask app and Jinja2 template.

app.py

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

@app.route('/')
def index():
    return render_template("index.html", data=['Harry', 'Karl', 'John',
'Jason', 'Ros'])

app.run()
```

index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>Macro</title>
</head>
<body>
    {% macro unordered_list(items)%}
        <ul>
            {% for item in items %}
                {% if item|length >= 5 %}>
                    <li>{{item}}</li>
                {% endif %}
            {% endfor %}
        </ul>
    {% endmacro %}
    {{ unordered_list(data) }}
</body>
</html>
```

If the flask app is running locally on <http://127.0.0.1:5000>. What will be the output on the browser for the base URL?

**Options :**

6406532735216. \*

- Harry
- Karl
- John
- Jason
- Ros

- Karl
- John

6406532735217. ✘

- Harry
- Jason

6406532735218. ✓

- Karl
- John
- Ros

6406532735219. ✘

**Question Number : 261 Question Id : 640653816602 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 3**

Question Label : Multiple Choice Question

Match the following types of testing with their functionality.

A. Regression testing	1. Beta Testing
B. User Acceptance testing	2. Considers internal functioning of the system
C. White Box Testing	3. Simulates actual user interaction, allows to script browser
D. System testing Automation	4. Type of testing that runs after every change to ensure that the change introduces no unintended breaks.

Which of the following is the correct matching?

**Options :**

6406532735232. ✘ A → 1, B → 2, C → 3, D → 4

6406532735233. ✘ A → 4, B → 3, C → 2, D → 1

6406532735234. ✓ A → 4, B → 1, C → 2, D → 3

6406532735235. ✘ A → 3, B → 2, C → 1, D → 4

**Question Number : 262 Question Id : 640653816603 Question Type : MCQ Is Question**

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

**Correct Marks : 3**

Question Label : Multiple Choice Question

Consider the following flask application.

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

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

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

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

If this flask app is running locally on <http://localhost:5000>, what is the output for the URL <http://localhost:5000/?num=4> ?

**Options :**

6406532735236. ✘ 4

6406532735237. ✘ 44

6406532735238. ✘ ValueError

6406532735239. ✓ 4444

**Question Number : 263 Question Id : 640653816606 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 3**

Question Label : Multiple Choice Question

Consider the following Python code snippet.

log.py

```
import logging
import sys

logging.basicConfig(level=logging.WARNING,
                    format='%(asctime)s - %(levelname)s - %(message)s')

def check_val(value):
    if value < 0:
        raise ValueError("Invalid value: Please enter a positive value.")
    else:
        logging.info("Value added: %s", value)

try:
    input_value = -int(sys.argv[1])
    check_val(input_value)
except ValueError as ve:
    logging.exception("Exception occurred: %s", str(ve))
```

What will be the output on the terminal for the command: python log.py -12 ?

**Options :**

6406532735248. ✘ 2023-08-14 21:01:05,684 - INFO - Value added: 12

6406532735249. ✘ 2023-08-14 21:01:05,684 - WARNING - Value added: -12

Error: Exception occurred: Invalid value: Please enter a positive value.

6406532735250. ❌

6406532735251. ✓ None.

**Question Number : 264 Question Id : 640653816608 Question Type : MCQ Is Question 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 lens of an HDD can read data on the rotating disk with the speed of 42,000 bits per second. The disk is designed such that 600 bits pass under the lens for every revolution of the disk, what should be the maximum speed of disk in RPM so that the lens does not miss any data?

**Options :**

6406532735256. ❌ 70 RPM

6406532735257. ❌ 100 RPM

6406532735258. ✓ 4200 RPM

6406532735259. ❌ 6000 RPM

**Question Number : 265 Question Id : 640653816609 Question Type : MCQ Is Question**

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

**Correct Marks : 3**

Question Label : Multiple Choice Question

Consider the following python code snippet.

```
from string import Template

statement = "The $animal jumped over the $obstacle."

temp = Template(statement)

print(== OUTPUT ==)
```

Which of the following statements, when substituted in place of == OUTPUT ==, will throw a KeyError?

**Options :**

6406532735260. ✓ `temp.substitute({"animal": "cat"})`

6406532735261. ✗ `temp.safe_substitute({"animal": "dog", "obstacle": "fence"})`

6406532735262. ✗ `temp.safe_substitute({"animal": "rabbit"})`

6406532735263. ✗ `temp.safe_substitute({"obstacle": "wall", "place": "park town"})`

**Question Number : 266 Question Id : 640653816615 Question Type : MCQ Is Question**

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

**Correct Marks : 3**

Question Label : Multiple Choice Question

What will be the output of the following Python code?

```
from jinja2 import Template
my_statement = Template("The special series is:{% for n in
range(1,15)%} {{n//3}}" "% endfor %")
out = my_statement.render()
print(out)
```

**Options :**

6406532735284. ✘ The special series is: 0 0 0 1 1 1 2 2 2 3 3 3 4 4 4

6406532735285. ✘ The special series is: 1 2 0 1 2 0 1 2 0 1 2 0 1 2

6406532735286. ✓ The special series is: 0 0 1 1 1 2 2 2 3 3 3 4 4 4

6406532735287. ✘ The special series is: 0.33 0.67 1.0 1.33 1.67 2.0 2.33 2.67 3.0 3.33 3.67 4.0 4.33  
4.67

**Question Number : 267 Question Id : 640653816616 Question Type : MCQ Is Question**

**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 that there are two HTML files.

- i) index.html - Home page of the application
- ii) login.html - Login page of the application

Which of the following code will navigate the user between index.html and login.html, and vice versa?

**Options :**

```
<!-- index.html contains-->
<a src="index.html">Signin</a>

<!-- Login.html contains -->
<a src="login.html">Home</a>
```

6406532735288. ✘

6406532735289. ✘

```
<!-- index.html contains -->
<a href="index.html">Signin</a>

<!-- Login.html contains -->
<a href="login.html">Home</a>
```

```
<!-- index.html contains -->
<a src="login.html">Signin</a>

<!-- Login.html contains -->
<a src="index.html">Home</a>
```

6406532735290. ✘

```
<!-- index.html contains -->
<a href="login.html">Signin</a>

<!-- Login.html contains -->
<a href="index.html">Home</a>
```

6406532735291. ✓

**Question Number : 268 Question Id : 640653816617 Question Type : MCQ Is Question**

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

**Correct Marks : 3**

Question Label : Multiple Choice Question

In an OpenAPI documentation, which field contains all the endpoints (routes) of the API?

**Options :**

6406532735292. ✓ paths

6406532735293. ✘ schema

6406532735294. ✘ info

6406532735295. ✘ responses

**Question Number : 269 Question Id : 640653816621 Question Type : MCQ Is Question**

**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 two data models Author and Book using SQLite database.

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

class Book(db.Model):
    id = db.Column(db.Integer(), primary_key=True)
    title = db.Column(db.String())
    publisher = db.Column(db.String())
    written_by = db.Column(db.Integer(), db.foreign_key("author.id"),unique=True)
```

What kind of relationship exists between Author and Book classes?

**Options :**

6406532735308. ✓ One Book to one Author relationship

6406532735309. ✗ One Author to many Books relationship

6406532735310. ✗ Many Authors to one Book relationship

6406532735311. ✗ Many Books to many Author relationship

**Sub-Section Number :** 5

**Sub-Section Id :** 640653119036

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 270 Question Id : 640653816604 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 4.5**

## Question Label : Multiple Choice Question

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

Filename: test\_file.py

```
import pytest
def func(x,y):
    out = x**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) == 13

    def case_test3(self):
        assert func(6,2) == 38

class Test_class1():
    def test_case1(self):
        assert func(5,2) == 29

    def case_test2(self):
        assert func(1,1) == 2
```

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

pytest test\_file.py -k Test\_class

### Options :

== 1 failed, 4 passed in 0.17s ===  
6406532735240. ✘

== 2 passed, 3 deselected in 0.17s ===  
6406532735241. ✘

== 2 passed in 0.07s ===  
6406532735242. ✓

== 3 failed, 2 passed in 0.17s ===  
6406532735243. ✘

**Question Number : 271 Question Id : 640653816605 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 app.py, the html files, base.html and home.html residing in "templates" folder.

app.py

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

home.html

```
{% extends "base.html" %}
{% block content %}
<p>MAD I</p>
<span>MAD II</span>
<p>DBMS</p>
{% endblock %}
```

base.html

```
<!DOCTYPE html>
<html lang="en">
<head>
    <title>IITM</title>
</head>
<body>
    <h2 style="color: violet;"> Diploma Courses </h2>
    {% block content %}
    {% endblock %}
</body>
</html>
```

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

**Options :**

MAD I

MAD II

6406532735244. ✘ DBMS

## Diploma Courses

MAD I

MAD II

DBMS

6406532735245. ✓

## Diploma Courses

MAD I

MAD II DBMS

6406532735246. ✘

MAD I

6406532735247. ✘ MAD II DBMS

**Question Number : 272 Question Id : 640653816610 Question Type : MCQ Is Question**

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

**Correct Marks : 4.5**

Question Label : Multiple Choice Question

Consider the below Flask Restful API code snippet:

#### app.py

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

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

data_info = [
    {"name": "IITM", "mail": "abc@study.iitm.ac.in"}
]

class Data(Resource):
    def get(self):
        return data_info

    def post(self):
        name = request.json["name"]
        mail = request.json["mail"]
        data = {}
        data["name"] = name
        data["mail"] = mail
        data_info.append(data)
        return "Saved data", 200
api.add_resource(Data, "/")
if __name__ == "__main__":
    app.run()
```

Assume that above **app.py** is running on <http://127.0.0.1:5000/>. What will be the outputs of the below sequence of **CURL** commands:

i)

```
curl -X POST -H "Content-Type: application/json" -H "Accept-Type:
application/json" -d "{\"name\":\"Javed\", \"mail\":\"javed@study.iitm.ac.in\"}"
"http://127.0.0.1:5000/"
```

ii)

```
curl -X GET "http://127.0.0.1:5000"
```

#### Options :

6406532735264. ✓

i) "Saved data"

ii)

```
[  
  {  
    "name": "IITM",  
    "mail": "abc@study.iitm.ac.in"  
  },  
  {  
    "name": "Javed",  
    "mail": "javed@study.iitm.ac.in"  
  }  
]
```

i)

```
[  
  {  
    "name": "IITM",  
    "mail": "abc@study.iitm.ac.in"  
  },  
  {  
    "name": "Javed",  
    "mail": "javed@study.iitm.ac.in"  
  }  
]
```

6406532735265. ✖ ii) "Saved data"

6406532735266. ✖

i)

```
[  
  {  
    "name": "Javed",  
    "mail": "javed@study.iitm.ac.in"  
  }  
]
```

ii)

```
[  
  {  
    "name": "IITM",  
    "mail": "abc@study.iitm.ac.in"  
  }  
]
```

i)

```
[  
  {  
    "name": "IITM",  
    "mail": "abc@study.iitm.ac.in"  
  }  
]
```

ii)

```
[  
  {  
    "name": "Javed",  
    "mail": "javed@study.iitm.ac.in"  
  }  
]
```

6406532735267. \*

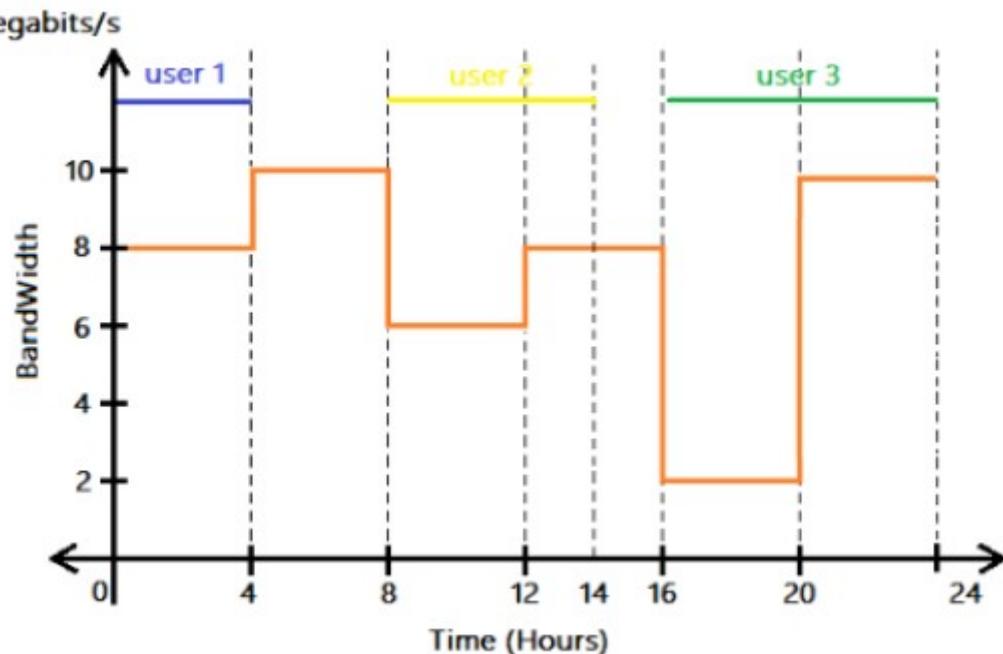
**Question Number : 273 Question Id : 640653816612 Question Type : MCQ Is Question**

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

**Correct Marks : 4.5**

**Question Label : Multiple Choice Question**

Consider the following graph that represents the variation in bandwidth of a network for an entire day (24 hours). Three users were connected to the network at three different times of the day. What is the total data consumed in GigaBytes by all the users in 24 hrs?



**Options :**

6406532735272. ✘ 633.6 GB

6406532735273. ✓ 54 GB

6406532735274. ✘ 120 GB

6406532735275. ✘ 432GB

**Question Number : 274 Question Id : 640653816614 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**

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

CSS Code:

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

HTML Code:

```
<!DOCTYPE html>  
<html>  
<head>  
    <title>Document</title>  
    <link href="style.css" rel="stylesheet">  
    <style>  
        body{font-weight: bold;}  
        p{color: violet !important ;}  
    </style>  
</head>  
<body>  
    <span id="one">Content 1</span>  
    <p class="two" id="two" >Content 2</p>  
    <span id="three">Content 3</span>  
</body>  
</html>
```

Options :

**Content 1 Content 2**

**Content 3**

6406532735280. \*

**Content 1**

**Content 2**

**Content 3**

6406532735281. \*

**Content 1 Content 2**

**Content 3**

6406532735282. \*

**Content 1**

**Content 2**

**Content 3**

6406532735283. ✓

**Question Number : 275 Question Id : 640653816618 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 two python files code snippets *app.py* and *test\_app\_route.py*.

*app.py*

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

@app.route("/greet/<string:name>")
def home(name):
    return "Hello, " + name

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

*test\_app\_route.py*:

```
import pytest, requests

@pytest.fixture
def get_response():
    resp = requests.get("http://127.0.0.1:5000/greet/IITM")
    return resp

def test_response(get_response):
    assert get_response.text == "Hello, IITM"
```

Assume that *app.py* and *test\_app\_route.py* are running on two different terminals. And also all required modules are installed. Which of the below statement(s) are True?

i) Executing the command `pytest test_app_route.py` on the terminal returns

`===== 1 passed =====`

ii) Executing the command `pytest test_app_route.py` on the terminal returns

`===== 1 failed =====`

iii) Executing the command `pytest test_app_route.py` on the terminal returns

`===== 1 selected, 1 passed =====`

iv) Executing the command `pytest test_app_route.py` on the terminal returns

`===== 1 deselected =====`

**Options :**

6406532735296. ✓ Only statement i is correct

6406532735297. ✗ Only statement ii is correct

6406532735298. ✗ Statements i and iii are correct

6406532735299. ✗ Statements ii and iv are correct

<b>Sub-Section Number :</b>	6
<b>Sub-Section Id :</b>	640653119037
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 276 Question Id : 640653816596 Question Type : MSQ Is Question**

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

**Correct Marks : 2 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Which of the following is true about the term “stateful” in the client-server model?

**Options :**

6406532735212. ✓ The server responds to the client based on the previous state.

6406532735213. ✓ The server uses FTP protocol to respond to the client's request.

6406532735214. ❌ Network performance may reduce because of the large amount of data sent out repetitively.

6406532735215. ❌ Server is not required to maintain any state of client or session during transactions between client and server.

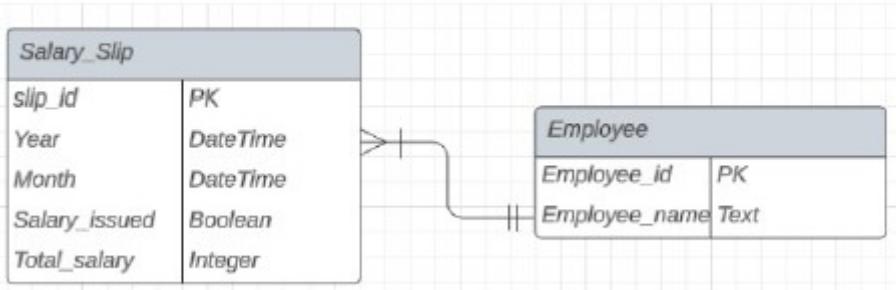
**Question Number : 277 Question Id : 640653816598 Question Type : MSQ Is Question**

**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 can be inferred from the Entity-Relationship Diagram below:



**Options :**

6406532735220. ❌ An employee can exist without having any salary slips

6406532735221. ❌ A salary slip can exist without belonging to any employee

6406532735222. ✓ An employee needs to have at least one salary slip

6406532735223. ✓ A salary slip must belong to one and only one employee

**Question Number : 278 Question Id : 640653816622 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 is the name of the branch that we start with when we create a new git repository?

**Options :**

6406532735312. ✓ main

6406532735313. ✓ master

6406532735314. ❌ develop

6406532735315. ❌ feature

**Sub-Section Number :** 7

**Sub-Section Id :** 640653119038

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 279 Question Id : 640653816619 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 statements are true?

**Options :**

6406532735300. ✘ HTML5 is based on SGML

6406532735301. ✓ XHTML is based on XML which in turn is based on SGML

6406532735302. ✘ HTML5 is not backwards compatible with older versions of HTML

6406532735303. ✓ XML is both human and machine readable

**Question Number : 280 Question Id : 640653816620 Question Type : MSQ Is Question**

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

**Correct Marks : 3 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Consider a client 'C' and a server 'S', separated by distance 'D' are connected by a fictitious medium in which the speed of light is 'v' m/sec. If 'N' is the number of consecutive requests that can be made in a second by the client 'C' (i.e A new request can be made only after receiving the response from the previous request.), Which of the following changes would halve the number 'N'?

**Options :**

6406532735304. ✓ A change of medium where the speed of light is  $v/2$  m/sec.

6406532735305. ✘ A change of medium where the speed of light is  $2v$  m/sec.

6406532735306. ✘ Reduce the distance between C and S from D to  $D/2$ .

6406532735307. ✓ Increase the distance between C and S from D to  $2D$ .

**Sub-Section Number :** 8

**Sub-Section Id :** 640653119039

**Question Shuffling Allowed :**

Yes

**Is Section Default? :**

null

**Question Number : 281 Question Id : 640653816593 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 app. Given that `test_request_context()` allows text to be printed on the terminal, which of the following statements is/are correct?

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

@app.route('/library')
def home():
    return 'Select your course!'

@app.route('/student/<username>/<roll>')
def dashboard(username):
    return f'{username}\'s dashboard'

with app.test_request_context():
    #== print statement ==#
```

**Options :**

6406532735200. ✘ `If #== print statement ==# is replaced by:  
print(url_for('home', user = "mad1_cs2003")),  
the output on the terminal will be;  
/library/mad1_cs2003.`

6406532735201. ✓ `If #== print statement ==# is replaced by:  
print(url_for('home', user = "mad1_cs2003")),  
the output on the terminal will be;  
/library?user=mad1_cs2003.`

If `== print statement ==` is replaced by:  
`print(url_for('dashboard', username = "mad1", roll = "cs2003", term = "jan2024"))`,  
the output on the terminal will be;  
`/student/mad1/cs2003/jan2024.`

6406532735202. ❌

If `== print statement ==` is replaced by:  
`print(url_for('dashboard', username = "mad1", roll = "cs2003", term = "jan2024"))`,  
the output on the terminal will be;  
`/student/mad1/cs2003?term=jan2024.`

6406532735203. ✓

**Question Number : 282 Question Id : 640653816611 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 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(10) == 100

@pytest.mark.marker2
def testcase_2():
    assert square(4) == 4

@pytest.mark.marker3
def testcase_3():
    assert square(5) == 25

@pytest.mark.marker4
def testcase_4():
    assert square(6) == 6
```

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

```
===== 1 passed, 3 deselected, 4 warnings in 0.04s =====
```

What command will result into the outcome given above?

**Options :**

6406532735268. ✓      pytest test\_file.py -m marker4

6406532735269. ✗      pytest test\_file.py -m marker1

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

6406532735270. ✓

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

6406532735271. ✘

**Sub-Section Number :** 9

**Sub-Section Id :** 640653119040

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816599 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 : (283 to 284)**

Question Label : Comprehension

Consider the following Python code snippet.

file.py

```
import sys
courses = {
    1: "App Dev I",
    2: "App Dev II",
    3: "App Dev III",
    4: "DevOps"
}
if courses[int(sys.argv[2])] in "App Dev III":
    i = 1
    while i <= int(sys.argv[2]):
        print("course found",courses[i])
        i+=1
else:
    print("No course found!")
```

Based on the above data, answer the given subquestions.

## **Sub questions**

**Question Number : 283 Question Id : 640653816600 Question Type : MCQ Is Question**

**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 output on the terminal

for the command

python file.py course 4?

**Options :**

course found App Dev I  
course found App Dev II  
course found App Dev III  
course found DevOps

6406532735224. ✘

course found App Dev I  
course found App Dev II  
course found App Dev III

6406532735225. ✘

No course found!

6406532735226. ✓

IndexError: list index out of range

6406532735227. ✘

**Question Number : 284 Question Id : 640653816601 Question Type : MCQ Is Question**

**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 output on the terminal

for the command

python file.py course 1?

Options :

6406532735228. ✘

No course found!

6406532735229. ✓

course found App Dev I

6406532735230. ✘

course found App Dev I  
course found App Dev II  
course found App Dev III  
course found DevOps

6406532735231. ✘

IndexError: list index out of range

## AppDev2

**Section Id :** 64065356710

**Section Number :** 10

**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

<b>Section Negative Marks :</b>	0
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	640653119041
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 285 Question Id : 640653816624 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 :**

6406532735320. ✓ YES

6406532735321. ✗ NO

<b>Sub-Section Number :</b>	2
<b>Sub-Section Id :</b>	640653119042
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 286 Question Id : 640653816625 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 Script embedded in an HTML document.

```
let langName = 'Python';
function showLanguage() {
    let langName = "JavaScript";
    let message = 'Learn ' + langName;
    console.log(message);
}

let message = 'Learn ' + langName;
console.log(message)
console.log(showLanguage());
```

What will be the output on console, if the HTML document is rendered using a browser?

**Options :**

6406532735322. ✘ Learn Python

Learn JavaScript  
Learn JavaScript

6406532735323. ✘ undefined

6406532735324. ✘ Learn JavaScript

Learn Python  
Learn JavaScript

6406532735325. ✓ undefined

**Question Number : 287 Question Id : 640653816626 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 Script embedded in an HTML document.

```
let x = [1, 'p', a => a + 1];

for (const i = 0; i<x.length; i++) {
    console.log(i, x[i], typeof(x[i]))
}
```

Which of the following statement is correct, if the HTML document is rendered using a browser?

**Options :**

6406532735326. ❌ It will throw error on the console for the very first iteration.

6406532735327. ✓ It will display the index, value and type of the value for the first item of array and then will throw error for the next value.

6406532735328. ❌ It will display the indices, values and types of all the items of the array.

6406532735329. ❌ None of these.

**Question Number : 288 Question Id : 640653816632 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

Assuming the URL gives a valid json response, what will be the output in the console?

```
fetch('https://study.iitm.ac.in/api/data')
  .then(response => response.json())
  .then(data => console.log(data))
  .catch(error => console.error(error));

console.log('End of script');
```

**Options :**

6406532735350. ❌ The JSON data from the specified URL followed by "End of script".

6406532735351. ✓ "End of script" will be logged first, followed by the JSON data.

6406532735352. ❌ An error will be logged, and the script will terminate.

6406532735353. ❌ "End of script" will be logged, but the JSON data retrieval will fail.

**Question Number : 289 Question Id : 640653816638 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

Which of the following statements is false regarding JavaScript and its behavior?

**Options :**

6406532735374. ❌ The language supports both first class and higher order functions.

6406532735375. ✓ The language supports higher order functions, but not first class functions.

6406532735376. ❌ A variable declared without keywords "var", "let" or "const" is not hoisted at all.

6406532735377. ❌ The variables declared using keywords "let" and "const" are also hoisted.

**Question Number : 290 Question Id : 640653816640 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

Where is system state commonly stored in a web application?

**Options :**

6406532735382. ❌ Client Side local storage

6406532735383. ❌ In Memory Cache

6406532735384. ❌ Session Cookies

6406532735385. ✓ Server Side Database

**Question Number : 291 Question Id : 640653816641 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 technology is commonly used to manage application state in a Vue.js application?

**Options :**

6406532735386. ❌ Vue.js

6406532735387. ❌ React.js

6406532735388. ✓ Vuex

6406532735389. ❌ Redux

6406532735390. ❌ Express.js

6406532735391. ❌ Angular

**Sub-Section Number :** 3

**Sub-Section Id :** 640653119043

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 292 Question Id : 640653816627 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 Script embedded in an HTML document.

```
let myQual = {
    degree: "B-tech",
    college: "IIT Delhi",
    get qualification(){
        return `degree: ${this.degree}, college: ${this.college}`
    },
    set qualification(q){
        let components = q.split(' ');
        this.degree = components[0];
        this.college = components[1];
    }
}
```

Which of the following statements will throw an error on the console when the HTML document is rendered using a browser?

**Options :**

6406532735330. ✓ `console.log(myQual.qualification())`

6406532735331. ✗ `console.log(myQual.qualification)`

6406532735332. ✗ `console.log(myQual.qualification = 'M-tech IIT-Madras')`

6406532735333. ✓ `console.log(myQual.qualification('M-tech IIT-Madras'))`

**Question Number : 293 Question Id : 640653816635 Question Type : MSQ Is Question**

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

Time : 0

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following two HTML documents and the Vue app created in script.js file and select the correct option(s).

index1.html

```
<body>
  <div id="app">
    <h1 v-if="result">Hello am I visible?</h1>
  </div>
  <script src=".//script.js"></script>
</body>
```

index2.html

```
<body>
  <div id="app">
    <h1 v-show="final">Hello am I visible?</h1>
  </div>
  <script src=".//script.js"></script>
</body>
```

script.js

```
var app = new Vue({
  el: '#app',
  data: {
    result: false,
    final: false
  }
})
```

Options :

The raw HTML created with index1.html and index2.html will be exactly the same  
6406532735362. ✖ for the current state of data.

6406532735363. ✓ When the directive v-if is falsy, it removes the entire element from the DOM.

6406532735364. ✖ When the directive v-show is falsy, it removes the entire element from the DOM.

The raw HTML created with `index1.html` and `index2.html` will be exactly the same when the values of both “result” and “final” are set to true.  
6406532735365. ✓

**Question Number : 294 Question Id : 640653816636 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 Vue application and the rendered HTML output below.

Filename: script.js

```
var app = new Vue({
  el: '#app',
  data: {
    items:[
      {id: 1, name:"mad 1"},
      {id: 2, name:"mad 2"},
      {id: 3, name:"mad 3"}
    ]
  }
})
```

Rendered output:

mad 1

mad 2

mad 3

What should be the content of `<div id = “app”></div>` in `index.html` that generates the given rendered output?

**Options :**

`<h2 v-for="item in items">{{item.name}}</h2>`

6406532735366. ✓

6406532735367. ✘

```
<h2 v-for="item in items" {{item.id}}>{{item.name}}</h2>
```

6406532735368. ✓

```
<h2 v-for="item in items" :id="item.id">{{item.name}}</h2>
```

6406532735369. ✘

```
<h2 v-for="items" :id="item.id">item.name</h2>
```

**Question Number : 295 Question Id : 640653816646 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 HTTP status code(s) is/are commonly used in RESTful APIs for successful responses?

**Options :**

6406532735409. ✓ 200

6406532735410. ✓ 201

6406532735411. ✘ 400

6406532735412. ✘ 404

6406532735413. ✘ 500

**Question Number : 296 Question Id : 640653816652 Question Type : MSQ Is Question**

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

**Correct Marks : 3 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Which of the following is/are potential benefit(s) of using caching in web applications?

**Options :**

6406532735434. ✓ Reduced latency and faster response times

6406532735435. ✓ Lower server load and reduced bandwidth usage

6406532735436. ✓ Improved scalability and better handling of traffic spikes

6406532735437. ❌ Enhanced security and protection against DDoS attacks

**Sub-Section Number :** 4

**Sub-Section Id :** 640653119044

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 297 Question Id : 640653816628 Question Type : MCQ Is Question**

**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 Script embedded in an HTML document.

```
class Twowheeler {  
    constructor(name){  
        this.name = name;  
        this.gear = 4;  
        this.seating = 2;  
    }  
    get description(){  
        return `${this.name} has ${this.gear} gear and has  
        ${this.engine} engine.`  
    }  
}  
  
class Moped extends Twowheeler {  
    constructor(name){  
        super(name);  
        this.engine = '4 stroke'  
    }  
}  
  
let myBike = new Twowheeler("Discover")  
let myDrive = new Moped("Activa")  
console.log(myDrive.description)  
console.log(myBike.description)
```

What will be the output on console, if the HTML document is rendered using a browser?

**Options :**

6406532735334. ❌

Discover has 4 gear and has 4 stroke engine.  
Activa has 4 gear and has 4 stroke engine.

6406532735335. ❌

Activa has 4 gear and has undefined engine.  
Discover has 4 gear and has 4 stroke engine.

6406532735336. ✓

Activa has 4 gear and has 4 stroke engine.  
Discover has 4 gear and has undefined engine.

Discover has 4 gear and has undefined engine.  
Activa has 4 gear and has undefined engine.

6406532735337. ✘

**Question Number : 298 Question Id : 640653816630 Question Type : MCQ Is Question**

**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 Script embedded in an HTML document.

```
function parentFunc(name) {  
    return {  
        sayHello: () => "Hi! " + name,  
        sayBye: () => "Bye! " + name,  
        changeName: (newName) => {  
            name = newName;  
        },  
    };  
}  
const arpan = parentFunc("Arpan");  
const beli = parentFunc("Beli");  
  
console.log(arpan.sayHello());  
console.log(beli.sayHello());  
arpan.changeName("Beli");  
console.log(arpan.sayBye());
```

What will be the output on console, if the HTML document is rendered using a browser?

**Options :**

Hi! Arpan  
Bye! Arpan

6406532735342. ✘

6406532735343. ✓

Hi! Arpan

Hi! Beli

Bye! Beli

Hi! Arpan  
reference Error

6406532735344. ✖

6406532735345. ✖ Reference Error

**Question Number : 299 Question Id : 640653816631 Question Type : MCQ Is Question**

**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 text displayed in a web page if the Vue app given below is running in a development mode?

Filename: index.html

```
<div id="app1">
  <h1>{{ title }}</h1>
  <h4>{{ greetings() }}</h4>
</div>
<div id="app2">
  <h1>{{ title }}</h1>
  <h4>{{ greetings }}</h4>
</div>
```

Filename: app.js

```
new Vue({
  el: "#app1",
  data: { title: "App No 1" },
  computed: {
    greetings() {
      return "hello from " + this.title;
    },
  },
});
new Vue({
  el: "#app2",
  data: { title: "App No 2" },
  computed: {
    greetings() {
      return "hello from " + this.title;
    },
  },
});
```

**Options :**

**App No 1**  
**hello from App No 1**

**App No 2**  
6406532735346. ✖ **hello from App No 2**

6406532735347. ✓

## App No 2

hello from App No 2

App No 1

App No 2

6406532735348. \*

6406532735349. \* Blank page

**Question Number : 300 Question Id : 640653816634 Question Type : MCQ Is Question**

**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 Script embedded in an HTML document.

```
var var1 = 25;
var var2 = 35;

const myObj = {
    var2: 45,
    var1: 35,
    ObjFunc: function(var3){
        let var4 = var3**2;
        return 10 + this.var2 + var4;
    }
}

let m = myObj.ObjFunc
console.log(m.bind()(5))
console.log(m.call(myObj,6))
```

What will be the output on console, if the HTML document is rendered using a browser?

**Options :**

6406532735358. \*

70  
81

70  
91

6406532735359. ✓

80  
81

6406532735360. ✗

80  
91

6406532735361. ✗

**Question Number : 301 Question Id : 640653816644 Question Type : MCQ Is Question**

**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 does the “finally” method do in promises?

**Options :**

6406532735401. ✗ The method is executed when the promise is fulfilled.

6406532735402. ✗ The method is executed when the promise is rejected.

6406532735403. ✓ The method is executed regardless of whether the promise is fulfilled or rejected.

6406532735404. ✗ The method can not be used with promises at all.

**Question Number : 302 Question Id : 640653816647 Question Type : MCQ Is Question**

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

**Correct Marks : 3**

Question Label : Multiple Choice Question

Which of the following statements regarding Celery task execution is correct?

**Options :**

6406532735414. ❌ Celery tasks are executed synchronously by default.

6406532735415. ❌ Celery tasks can only be executed on the same machine where the flask application is running.

6406532735416. ✓ Celery tasks are executed asynchronously by default.

6406532735417. ❌ Celery tasks can only be executed once they are defined as part of a flask application.

**Question Number : 303 Question Id : 640653816648 Question Type : MCQ Is Question**

**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 primary objective of using a message broker?

**Options :**

6406532735418. ❌ Eliminates the need for network communication

6406532735419. ✓ Decouples producers and consumers

6406532735420. ❌ Decreases CPU utilization

6406532735421. ❌ Reduces the need for data serialization

**Question Number : 304 Question Id : 640653816649 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 3**

Question Label : Multiple Choice Question

In a message broker system, what does the term "topic" refer to?

**Options :**

6406532735422. ❌ The physical location where messages are stored.

6406532735423. ❌ A unique identifier for a message.

6406532735424. ❌ The process of encrypting messages.

6406532735425. ✓ A channel to which messages are published.

**Question Number : 305 Question Id : 640653816650 Question Type : MCQ Is Question**

**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 primary advantage of using server-sent events over traditional polling?

**Options :**

6406532735426. ❌ Server-sent events support bidirectional communication.

6406532735427. ❌ Server-sent events can handle larger payloads.

6406532735428. ✓ Server-sent events reduce server load by eliminating the need for frequent polling.

6406532735429. ❌ Server-sent events provide lower latency compared to polling.

**Question Number : 306 Question Id : 640653816651 Question Type : MCQ Is Question**

**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 protocols is commonly used for implementing polling?

**Options :**

6406532735430. ✓ HTTP

6406532735431. ✗ Web Sockets

6406532735432. ✗ FTP

6406532735433. ✗ SMTP

**Question Number : 307 Question Id : 640653816653 Question Type : MCQ Is Question**

**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 primary purpose of CORS in web security?

**Options :**

6406532735438. ✗ To prevent unauthorized access to confidential data

6406532735439. ✗ To mitigate cross-site scripting (XSS) attacks

6406532735440. ✓ To enable controlled access to resources from different origins

6406532735441. ✗ To protect against SQL injection attacks

**Sub-Section Number :** 5

**Sub-Section Id :** 640653119045

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 308 Question Id : 640653816629 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 Script embedded in an HTML document.

```
let Obj1 = {  
    subject:'Mechanics',  
    stream:'Physics'  
}  
  
let Obj2 = Obj1;  
let Obj3 = {};  
  
for (let key in Obj1){  
    Obj3[key] = Obj1[key];  
}  
  
Obj2.subject = 'Thermodynamics'  
Obj3.stream = 'Chemistry'  
  
console.log(Obj1)
```

What will be the output on console, if the HTML document is rendered using a browser?

**Options :**

```
{  
    subject:'Thermodynamics',  
    stream:'Physics'  
}
```

6406532735338. ✓

```
{  
    subject:'Mechanics',  
    stream:'Chemistry'  
}
```

6406532735339. ✘

```
{  
    subject:'Mechanics',  
    stream:'Physics'  
}
```

6406532735340. \*

```
{  
    subject:'Thermodynamics',  
    stream:'Chemistry'  
}
```

6406532735341. \*

**Question Number : 309 Question Id : 640653816633 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 Script embedded in an HTML document.

```
var var1 = 25;

const exObj = {
    var2: 45,
    var1: 35,
    inObj : {
        var1: 45,
        inObjFunc: ()=>{
            return "Value is " + this.var1;
        }
    },
    exObjFunc: function(){
        let var2 = 10;
        return "Value is " + this.var2;
    }
}

let x = exObj.inObj
console.log(x.inObjFunc())
console.log(exObj.exObjFunc())
```

What will be the output on console, if the HTML document is rendered using a browser?

**Options :**

Value is 35  
Value is 10

6406532735354. ✘

Value is 35  
value is 45

6406532735355. ✘

value is 25  
value is 10

6406532735356. ✘

6406532735357. ✓

Value is 25

Value is 45

**Question Number : 310 Question Id : 640653816637 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 Script "script.js" embedded in an HTML document, "index.html" and an external script "app.js" given below.

Filename: index.html

```
<html lang="en">
<head></head>
<body>
    <script src=".//script.js"></script>
</body>
</html>
```

Filename: script.js

```
function loadScript(src, cbf){
    let script = document.createElement('script');
    script.src = src;
    script.onload = () => cbf();
    document.head.append(script);
}

let cbf = function(){
    console.log("callback function executed here.");
    extFunc()
}

loadScript("./support_m6.js", cbf)
extFunc()
```

Filename: app.js

```
console.log("Now I am loaded, let's support")

function extFunc(){
    console.log("loaded and run from external script")
}
```

What will be the output on console, if the HTML document is rendered using a browser?

**Options :**

Now I am loaded, let's support  
callback function executed here.  
loaded and run from external script  
loaded and run from external script

6406532735370. \*

loaded and run from external script  
Now I am loaded, let's support  
callback function executed here.  
loaded and run from external script

6406532735371. \*

Now I am loaded, let's support  
callback function executed here.  
loaded and run from external script  
**Uncaught ReferenceError: extFunc is not defined**

6406532735372. \*

**Uncaught ReferenceError: extFunc is not defined**  
Now I am loaded, let's support  
callback function executed here.  
loaded and run from external script

6406532735373. ✓

**Question Number : 311 Question Id : 640653816639 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.

```
Array.prototype.double = function (arr) {  
    const res = [];  
    for (let i=0; i<placeholder.length; i++)  
        res.push(placeholder[i] * 2);  
    return res;  
}  
  
const arr = [2, 3, 7, 8];  
console.log(arr.double());
```

What of the following can be used in place of “placeholder” in the above program so that the program yields the below output array?

[ 4, 6, 14, 16 ]

**Options :**

6406532735378. ✘ arr

6406532735379. ✘ Array

6406532735380. ✓ this

6406532735381. ✘ The program cannot yield such an output, and is implemented in a wrong way.

**Question Number : 312 Question Id : 640653816643 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.

```
const fetchData = (url) => {
  return new Promise((resolve, reject) => {
    setTimeout(() => {
      if (url.includes("success")) {
        resolve(`Data fetched successfully from: ${url}`);
      } else {
        reject(`Error fetching data: ${url}`);
      }
    }, 1000);
  });
};

const processData = (data) => {
  return new Promise((resolve) => {
    setTimeout(() => {
      resolve(`Processed data: ${data.toUpperCase()}`);
    }, 500);
  });
};

const handleError = (error) => {
  return new Promise((resolve) => {
    setTimeout(() => {
      resolve(`Handled Error: ${error}`);
    }, 300);
  });
};

fetchData("https://example.com/success")
  .then(processData)
  .then(fetchData)
  .then(handleError)
  .then((result) => {
    console.log(result);
})
  .catch((error) => {
    console.error(error);
});
```

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

#### Options :

Handled Error: Processed data: DATA FETCHED SUCCESSFULLY FROM:  
6406532735396. ❌ HTTPS://EXAMPLE.COM/SUCCESS

Error fetching data: Processed data: DATA FETCHED SUCCESSFULLY FROM:  
6406532735397. ✓ HTTPS://EXAMPLE.COM/SUCCESS

6406532735398. ✖ Handled Error: ERROR FETCHING DATA FROM: UNDEFINED

6406532735399. ✖ Handled Error: ERROR FETCHING DATA FROM: [HTTPS://EXAMPLE.COM/SUCCESS](https://EXAMPLE.COM/SUCCESS)

6406532735400. ✖ Error fetching data: Processed data: UNDEFINED

**Question Number : 313 Question Id : 640653816645 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 Vuex module definition for managing a shopping cart.

```
const cartModule = {
  state: {
    items: []
  },
  mutations: {
    addItem(state, item) {
      state.items.push(item);
    },
  },
  actions: {
    async addToCart({ commit }, item) {
      // TODO: Implement adding item to cart
    },
  },
}
```

Which of the following options correctly completes the code for the “addToCart” action function?

**Options :**

```
addCart({ commit }, item) {
  commit('addItem', item);
}
```

6406532735405. ✓

```
addToCart({ state, commit }, item) {
  const existingItem = state.items.find(i => i.id === item.id);
  if (existingItem) {
    commit('addItem', existingItem);
  } else {
    commit('addItem', item);
  }
}
```

6406532735406. ✘

```
addToCart({ commit }, item) {
  commit('addItem', { ...item });
}
```

6406532735407. ✘

6406532735408. ✘ All of these

**Question Number : 314 Question Id : 640653816654 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 = "subject" @input = "compute_marks">
    <p> {{marks}} </p>
</div>
<script scr = "app.js"></script>
```

app.js:

```
new Vue({
  el : "#app",
  data : {
    subject : "AppDev",
    marks : 50,
  },
  mounted () {
    this.subject = "AppDev";
    this.marks = 50;

    if (localStorage.marks) {
      this.subject += "1";
      this.marks = parseInt(localStorage.marks) + 20;
      localStorage.marks = this.marks;
      localStorage.subject = this.subject;
    }
    else {
      this.subject += "2";
      this.marks += 20;
    }
  },
  methods : {
    compute_marks() {
      localStorage.setItem("subject", this.subject);
      localStorage.setItem("marks", this.marks + 10);
    }
  }
})
```

Suppose you open “index.html” file in a browser, and type the text “EndTermExam” in the text box shown (after removing the previous text, if any), and hard refresh the page thrice, without clicking anywhere. What will be the value shown in the text box, and the “marks” placeholder, respectively?

### Options :

6406532735442. ✘ AppDev1, 120

6406532735443. ✘ AppDev2, 120

6406532735444. ✓ AppDev1, 140

6406532735445. ✘ AppDev2, 140

**Question Number : 315 Question Id : 640653816655 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">
  <router-link :to="{ name: 'user', params: { id: 'Jyoti' }}>User
Profile</router-link>
  <router-view></router-view>
</div>
<script src="app.js"></script>
```

app.js:

```
const UserProfile = {
  template: `
    <div>
      <h1>User Profile</h1>
      <p>User ID: {{ id }}</p>
    </div>
  `,
  props: ['id']
};

const routes = [
  { path: '/user/:id', name: 'user', component: UserProfile, props: true }
];

const router = new VueRouter({
  routes
});

new Vue({
  el: '#app',
  router,
});
```

Based on this setup, what will be displayed in the browser when the user clicks on the "User Profile" link?

**Options :**

6406532735446. ✘ An error indicating that the id prop is not defined.

6406532735447. ✓ User Profile

User ID: Jyoti

6406532735448. ✘ An error indicating that the data object is not defined.

6406532735449. ✘ An error indicating that the route does not exist.

6406532735450. ✘ User Profile

User ID:

**Sub-Section Number :** 6

**Sub-Section Id :** 640653119046

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 316 Question Id : 640653816642 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 built in Vue.js lifecycle hook(s)?

**Options :**

6406532735392. ✘ beforeLoad

6406532735393. ✘ preUpdate

6406532735394. ✓ mounted

6406532735395. ✓ updated

**Question Number : 317 Question Id : 640653816656 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 JavaScript method(s) is/are used to remove data from the session storage?

**Options :**

6406532735451. ✓ clear()

6406532735452. ✓ removeItem()

6406532735453. ✗ deleteItem()

6406532735454. ✗ unSet()

## MLT

**Section Id :** 64065356711

**Section Number :** 11

**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 :** 640653119047

**Question Shuffling Allowed :** No

**Is Section Default? :**

null

**Question Number : 318 Question Id : 640653816657 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 :**

6406532735455. ✓ YES

6406532735456. ✗ NO

**Sub-Section Number :** 2

**Sub-Section Id :** 640653119048

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 319 Question Id : 640653816660 Question Type : MCQ Is Question**

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

**Correct Marks : 3**

Question Label : Multiple Choice Question

Imagine a dataset characterized by two features, Feature 1 and Feature 2, demonstrating a perfect negative correlation of -1. When applying k-means clustering with k = 3 to this dataset, what is the most likely arrangement of cluster centers that minimizes the within-cluster sum of squares

(WCSS)?

**Options :**

6406532735462. ✘ An equilateral triangle centered around the mean of the data.

6406532735463. ✓ Cluster centers positioned along a straight line.

6406532735464. ✘ A triangle with two acute angles, positioned strategically within the data distribution.

6406532735465. ✘ A right-angled triangle with one center at the origin.

**Question Number : 320 Question Id : 640653816663 Question Type : MCQ Is Question**

**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 two models fitted on a one-dimensional dataset:

Model 1:  $\hat{y} = w_0 + w_1x$

Model 2:  $\hat{y} = w_1x^2 + w_2x + w_3$

If both models are trained on the same one-dimensional dataset and evaluated on the same test dataset, which model is more likely to have higher bias and lower variance?

**Options :**

6406532735471. ✓ Model 1

6406532735472. ✘ Model 2

6406532735473. ✘ Both models are equally sensitive to outliers

6406532735474. ✘ Insufficient data

**Sub-Section Number :** 3

**Sub-Section Id :** 640653119049

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 321 Question Id : 640653816667 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 a logistic regression model for a binary classification problem with two features  $x_1$  and  $x_2$ . The feature vector is  $\begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$  and labels lie in  $\{0, 1\}$ . The threshold for inference is 0.5. The dummy feature and the weight corresponding to it can be ignored for this problem. Let  $x_1$  be the horizontal axis and  $x_2$  be the vertical axis. You are given two feature vectors:

$$\mathbf{x}_1 = \begin{bmatrix} 1 \\ \sqrt{3} \end{bmatrix}, \mathbf{x}_2 = \begin{bmatrix} -1 \\ \sqrt{3} \end{bmatrix}$$

The weight vector makes an angle of  $\theta$  with the positive  $x_1$  axis (horizontal). Each  $\theta$  corresponds to a different classifier. For what range of values of  $\theta$  are both  $\mathbf{x}_1$  and  $\mathbf{x}_2$  predicted to belong to class-1?

**Hints:**

- To draw the weight vector  $\mathbf{w} = \begin{bmatrix} w_1 \\ w_2 \end{bmatrix}$ , plot the point  $(w_1, w_2)$  and draw an arrow starting at the origin to this point.
- $\tan(60^\circ) = \sqrt{3}$

**Options :**

6406532735478. ✓  $30^\circ < \theta < 150^\circ$

6406532735479. ✗  $0^\circ < \theta < 60^\circ$

6406532735480. ✗  $60^\circ < \theta < 180^\circ$

6406532735481. ✗  $0^\circ < \theta < 180^\circ$

6406532735482. ✗  $0 < \theta < 360^\circ$

<b>Sub-Section Number :</b>	4
<b>Sub-Section Id :</b>	640653119050
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 322 Question Id : 640653816659 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 accurately describes the characteristics of kernel functions?

Assume the dataset to be mean-centered.

**Options :**

6406532735458. ❌ Kernel PCA can reconstruct original PCA if the kernel function is  $k(x_i, x_j) = (x_i^T x_j + 1)^2$ .

6406532735459. ❌ The dimensionality of the transformed dataset  $\phi(X)$ , computed using the kernel function, is always smaller than the original feature space.

6406532735460. ✓ The dimensionality of the transformed dataset  $\phi(X)$ , computed using the kernel function, can exceed the original feature space.

6406532735461. ✓ The dimension of the transformed dataset  $\phi(X)$ , whose inner products the kernel function computes, can be infinite.

**Question Number : 323 Question Id : 640653816662 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  $X$  be a data matrix of the shape  $(d, n)$  and  $y$  be the associated label vector of shape  $(n, 1)$ . Assume that a linear regression model with loss as the sum of squared error is trained on the data  $\{X, y\}$ . In which of the following cases, the loss on the training data will necessarily be zero? Assume that the solution of the model is obtained by the normal equation that is  $w^* = (XX^T)^{-1}Xy$ .

#### Options :

6406532735467. ✓ If  $y$  lies in the space spanned of row vectors of  $X$ .

6406532735468. ✗ If  $y$  lies in the space spanned of row vectors of  $X^T$ .

If all the data points satisfy the equality  $x_1 + x_2 + \dots + x_d = 0$ , where  $x_i$  is  
6406532735469. ✓ the  $i$ th feature and  $y = 0$  for all the data points.

If all the data points satisfy the equality  $x_1^3 + x_2^3 + \dots + x_d^3 = 0$ , where  $x_i$  is  
6406532735470. ✗ the  $i$ th feature and  $y = 0$  for all the data points.

**Question Number : 324 Question Id : 640653816669 Question Type : MSQ Is Question**

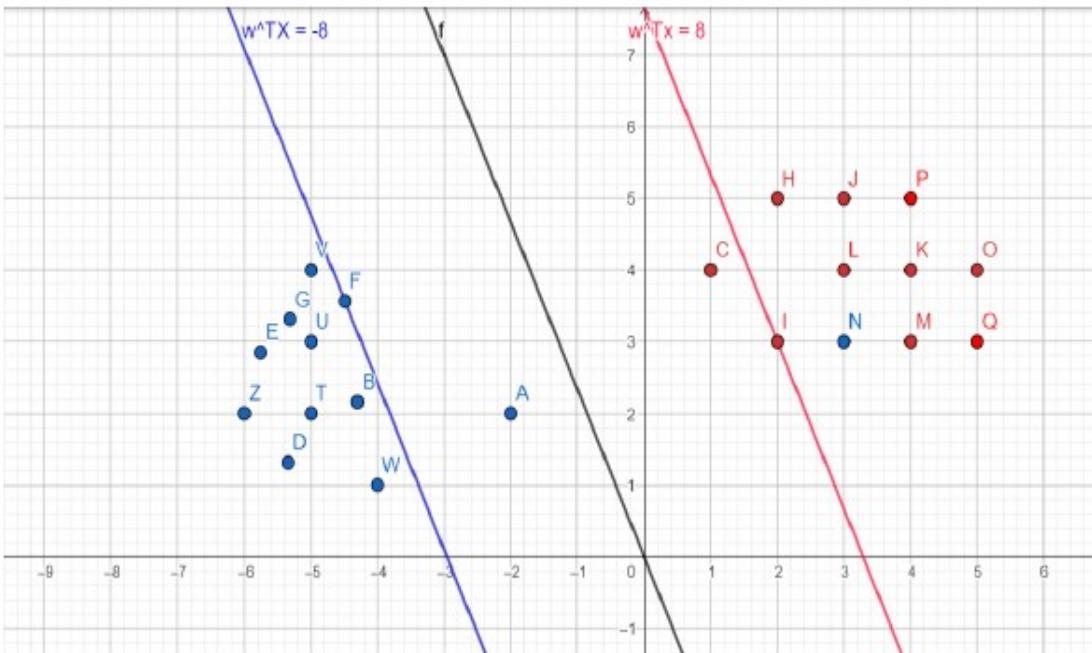
**Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction**

**Time : 0**

**Correct Marks : 3 Max. Selectable Options : 0**

Question Label : Multiple Select Question

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



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

**Options :**

6406532735489. ❌ Points {F, A, C, I} are the only support vectors.

6406532735490. ✓ Points {A, N} are a subset of support vectors.

6406532735491. ✓ Points {F, A, N} are a subset of support vectors.

6406532735492. ✓ Points except {F, A, C, I, N} do not play any role in determining optimal weight vector.

6406532735493. ❌ Points except {F, A, C, I} do not play any role in determining optimal weight vector.

**Question Number : 325 Question Id : 640653816671 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

Given a two-dimensional data set where points from class 1 are:

$\{(-2, 3), (-1, 1), (-1, 2), (-1, 4)\}$

And points from class 0 are:

$\{(1, 3), (1, 4) (2, 4), (2, 2)\}$

Which of the following statements are true?

**Options :**

The given data points from classes 1 and 0 can be linearly separated using a Hard-margin SVM.  
6406532735495. ✓

A perceptron model and a hard margin SVM can give different decision boundary for this dataset.  
6406532735496. ✓

A Soft-margin SVM would be a more robust choice than a Hard-margin SVM for this dataset as the dataset is not linearly separable.  
6406532735497. ✗

The width of the separation between the two supporting hyperplanes is 4.  
(Hint: Calculate width using formulae  $\frac{2}{\|w\|}$ )  
6406532735498. ✗

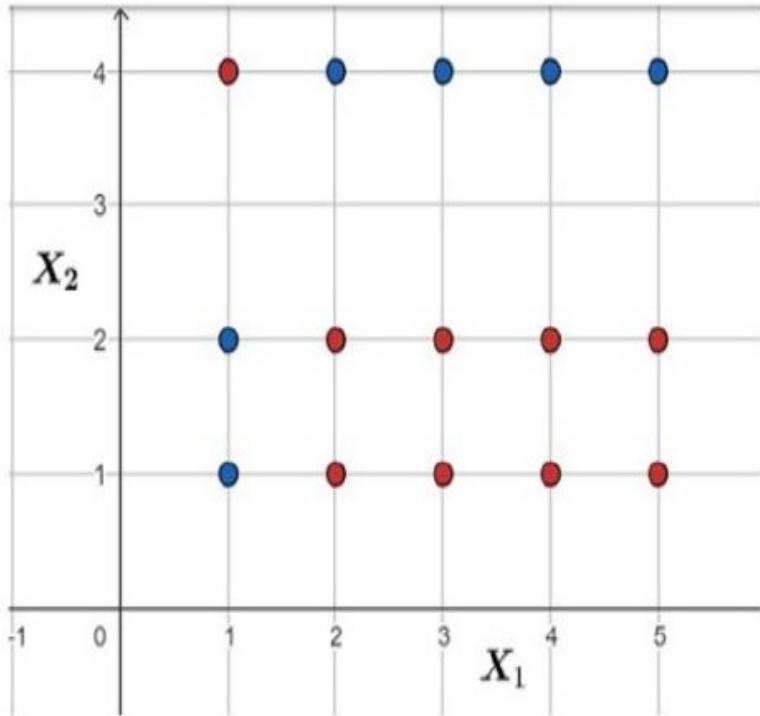
**Question Number : 326 Question Id : 640653816672 Question Type : MSQ Is Question**

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

**Correct Marks : 3 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Consider the following two-dimensional dataset with two classes: +1 for blue points and -1 for red points. An AdaBoost algorithm was run on this dataset using decision stumps as weak learners.



When training the new weak learner  $h_t(x)$  (decision stump at  $t^{th}$  iteration), we choose the split that minimizes the weighted miss-classification error with respect to current weights  $D_t$  i.e. choose  $h_t$  that minimizes  $\sum_{i=1}^n D_t(i) \mathbb{1}(h_t(x_i) \neq y_i)$ .  
 Based on the above data, answer the below given question.

To train the second decision stump, which pair of points will be assigned equal weights to create the training data-set?

**Options :**

6406532735499. ❌  $[2, 2]^T, [1, 2]^T$

6406532735500. ❌  $[2, 2]^T, [1, 4]^T$

6406532735501. ✓  $[1, 1]^T, [1, 4]^T$

6406532735502. ✓  $[3, 1]^T, [3, 4]^T$

**Sub-Section Number :**

5

**Sub-Section Id :**

640653119051

**Question Shuffling Allowed :**

Yes

**Is Section Default? :**

null

**Question Number : 327 Question Id : 640653816668 Question Type : MSQ Is Question**

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

**Correct Marks : 4 Max. Selectable Options : 0**

**Question Label : Multiple Select Question**

Consider a 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.

Let  $w^*$ ,  $\xi^*$  be the optimal solutions, and  $\alpha^*$ ,  $\beta^*$  be the optimal dual solutions of the soft margin SVM problem.

Which of the following statements about the soft-margin SVM is correct?

**Options :**

6406532735483. ❌ If  $i^{th}$  data point lies on one of the supporting hyperplanes, then  $\alpha_i^* = 0$ .

6406532735484. ✓ If  $i^{th}$  data point lies on the correct supporting hyperplane, it does not pay any bribes.

6406532735485. ❌ A smaller value of  $C$  allows for a larger margin, potentially leading to less misclassifications on the training data.

6406532735486. ✓ For a dataset with  $n$  data-points, there are  $2n$  constraints for soft-margin SVM.

6406532735487. ✓ As  $C$  approaches  $\infty$  the soft margin SVM is equal to the hard margin SVM.

6406532735488. \*  $C$  can be negative, as long as the bribe( $\xi$ ) each data point pays is non-negative.

**Sub-Section Number :** 6

**Sub-Section Id :** 640653119052

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 328 Question Id : 640653816658 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 dataset  $X$  in  $\mathbb{R}^3$ . The dataset  $X$  consists of 4 samples with 3 features each. The covariance matrix  $C$  of this dataset has three non-zero eigenvalues which follow the given linear equations:

$$2\lambda_1 + 3\lambda_2 - \lambda_3 = 5$$

$$\lambda_1 - 2\lambda_2 + 4\lambda_3 = 8$$

$$3\lambda_1 + \lambda_2 - 2\lambda_3 = 3$$

Determine the variance of the given dataset.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

5

**Question Number : 329 Question Id : 640653816661 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 dataset of  $n$  observations  $\{x_1, x_2, \dots, x_n\}$ , where each  $x_i$  follows a Bernoulli distribution with parameter  $p$ , i.e.,  $x_i \sim \text{Bernoulli}(p)$  for  $i = 1, 2, \dots, n$ . However, you have reason to believe that the parameter  $p$  might differ for two distinct groups within the dataset. You suspect that there are two groups in the dataset, each with its own parameter ( $p_1$  and  $p_2$ ). Now, develop an algorithm to estimate the parameters  $p_1$  and  $p_2$  using maximum likelihood estimation. Then, apply your algorithm to a dataset with the following observations and corresponding group labels:  $\{0, 1, 1, 0, 1\}$  and  $\{1, 0, 1, 0, 1\}$  for group 1 and group 2 respectively.

Calculate the maximum likelihood estimates of  $p_1$  and rounded to two decimal places.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

0.6

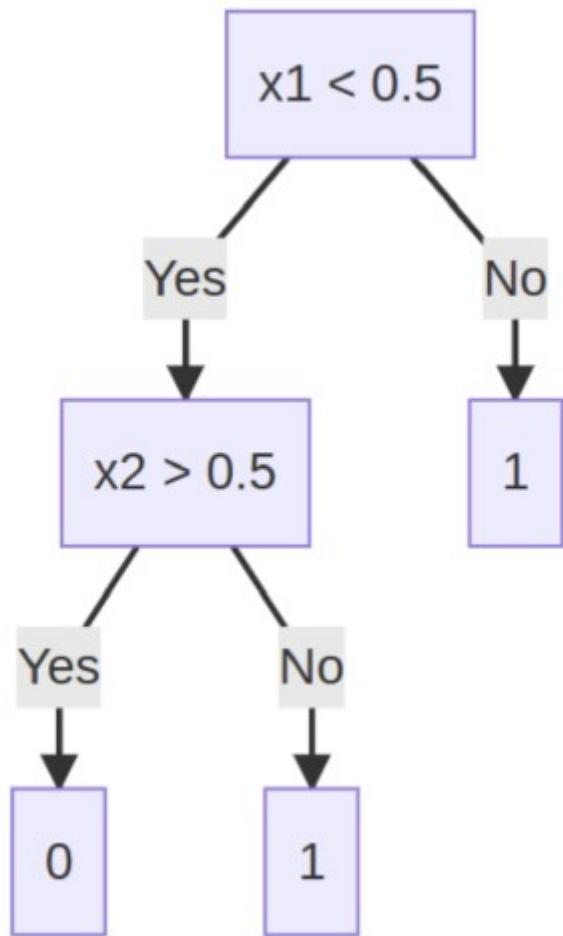
**Question Number :** 330 **Question Id :** 640653816664 **Question Type :** SA **Calculator :** None

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

**Correct Marks :** 3

Question Label : Short Answer Question

Consider the following decision tree for a classification problem in which all the data-points are constrained to lie in the unit square in the first quadrant. That is  $0 \geq x_1, x_2 \leq 1$ . If a point is picked uniformly at random from the unit square, what is the probability that the decision tree predicts this point as belonging to class 1?



**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

0.75

**Question Number :** 331 **Question Id :** 640653816665 **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 dataset with 6 samples along with the corresponding labels. Each sample has three binary features  $f_1$ ,  $f_2$  and  $f_3$ .

sample	$f_1$	$f_2$	$f_3$	$y$
$x_1$	1	1	0	1
$x_2$	0	1	0	1
$x_3$	1	1	1	0
$x_4$	0	1	1	0
$x_5$	1	0	1	0
$x_6$	1	1	1	1

Assume that the features are conditionally independent given the label  $y$ . Suppose the test sample is  $x_{test} = [0, 1, 0]^T$ .

What is the estimated probability that the test point belongs to class 0 (that is,  $p(y = 0|x_{test})$ )?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

0

**Question Number :** 332 **Question Id :** 640653816666 **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 linearly separable binary classification data set with 1000 data points and 100 features. Assume that there exists a  $w$  such that  $\|w\| = 1$ ,  $y_i(w^T x_i) \geq 0.5 \forall i$ . Also assume that  $\|x\|_2 \leq 2 \forall i$ . What is the maximum number of mistakes that the Perceptron algorithm can make in this data set?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

16

**Question Number :** 333 **Question Id :** 640653816670 **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 single iteration of the AdaBoost algorithm that was run on three sample points, starting with uniform weights on the sample points. The labels are either +1 or -1. In the table below, some values have been omitted.

Data point	True label	Predicted label	Initial weight	Updated weight
$x_1$	?	1	$\frac{1}{3}$	$\frac{1}{2}$
$x_2$	-1	-1	$\frac{1}{3}$	?
$x_3$	-1	?	$\frac{1}{3}$	$\frac{1}{4}$

Based on the above data, what will be the updated weight for point  $x_2$ ?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

0.25

**Question Number :** 334 **Question Id :** 640653816673 **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 simple neural network with one hidden layer. The network has the following architecture:

Input layer with 3 neurons. Hidden layer with 2 neurons, using the sigmoid activation function.

Output layer with 1 neuron, using the linear activation function.

The weights and biases for the network are as follows:

Hidden Layer:

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

Bias: 0.1

Neuron 2: Weights: [0.4, 0, 0.2]

Bias: -0.4

Output Layer:

Neuron 1: Weights: [0.2, 0.4]

Bias: -0.3

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

Calculate output of Neuron 1 in hidden layer

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

0.70 to 0.80

## BDM

<b>Section Id :</b>	64065356712
<b>Section Number :</b>	12
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	20
<b>Number of Questions to be attempted :</b>	20
<b>Section Marks :</b>	30
<b>Display Number Panel :</b>	Yes
<b>Section Negative Marks :</b>	0
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	640653119053
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 335 Question Id : 640653816674 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 :**

6406532735504. ✓ YES

6406532735505. ✗ NO

**Sub-Section Number :** 2

**Sub-Section Id :** 640653119054

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 336 Question Id : 640653816675 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 distinguishes an inferior good regarding its relationship with income?

**Options :**

6406532735506. ✗ Demand increases with rising income

6406532735507. ✓ Demand decreases as income increases

6406532735508. ✗ Its demand curve remains unaffected by income changes

6406532735509. ✗ It has no substitutes in the market

**Question Number : 337 Question Id : 640653816677 Question Type : MCQ Is Question**

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

**Correct Marks : 1**

Question Label : Multiple Choice Question

A manufacturer finds that over the past year, there has been a shift in consumer preference within

the two-wheeler market: the demand for scooters has decreased by 10%, whereas the demand for motorcycles, especially higher-capacity models, has increased by 15%. Given this trend, how should the manufacturer adjust its product portfolio?

**Options :**

6406532735514. ❌ Increase production of scooters to clear out existing inventories.

6406532735515. ✓ Shift manufacturing focus towards higher-capacity motorcycles to meet rising demand.

6406532735516. ❌ Keep the production rates the same, expecting the market to stabilize.

6406532735517. ❌ Focus exclusively on high-capacity motorcycles and cease scooter production.

**Question Number : 338 Question Id : 640653816678 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 a pivot table analysis reveals that a lender's portfolio has shifted from predominantly commercial loans to a more diversified portfolio including significant amounts of retail and microfinance loans over the years, what might this indicate about the lender's strategic shift?

**Options :**

6406532735518. ❌ Diversification to mitigate risk

6406532735519. ❌ Shifting market demand

6406532735520. ❌ Regulatory Changes Influencing Lending Practices

6406532735521. ✓ Not enough data is given in the situation to determine

**Question Number : 339 Question Id : 640653816679 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

Identifying and eliminating outliers in revenue data is crucial because they can:

**Options :**

6406532735522. ✓ Significantly skew overall data analysis and interpretation.

6406532735523. ✗ Improve the accuracy of the data set.

6406532735524. ✗ Decrease the workload involved in data processing.

6406532735525. ✗ They do not provide any useful insights

**Question Number : 340 Question Id : 640653816680 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 does an increase in the ordering cost per order affect the EOQ?

**Options :**

6406532735526. ✓ It increases the EOQ.

6406532735527. ✗ It decreases the EOQ.

6406532735528. ✗ It does not affect the EOQ.

6406532735529. ✗ It causes the EOQ to fluctuate unpredictably.

**Question Number : 341 Question Id : 640653816686 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 an example of the anchoring effect used as a nudge on e-commerce websites?

**Options :**

6406532735545. ✓ Presenting a high initial price next to the sale price to make the discount appear more significant

6406532735546. ✖ Offering every product at a flat discount rate

6406532735547. ✖ Displaying the most expensive items exclusively

6406532735548. ✖ Always showing only the lowest price available for every product

**Question Number : 342 Question Id : 640653816687 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 underlying rationale for PayBuddy offering a BNPL service without charging interest or late fees?

**Options :**

6406532735549. ✖ To accumulate a large unpaid debt that can be written off for tax benefits.

6406532735550. ✓ To engage customers more deeply, increasing transaction volumes and platform loyalty.

6406532735551. ✖ Assuming that late fees and interest can be retroactively applied for long-term profit.

6406532735552. ✖ To attract regulatory scrutiny as a marketing stunt to gain public attention.

**Question Number : 343 Question Id : 640653816689 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 a company identifies a seasonal pattern in their sales data, how should this influence their inventory management strategy?

**Options :**

6406532735554. ❌ Increase inventory levels uniformly throughout the year to avoid any potential stockouts.

6406532735555. ✓ Adjust inventory levels based on historical sales data to match the anticipated seasonal demand.

6406532735556. ❌ Reduce inventory levels during peak seasons to minimize holding costs.

6406532735557. ❌ Keep inventory levels constant, ignoring seasonal trends to simplify logistics.

**Question Number : 344 Question Id : 640653816691 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 does the concept of homogeneous regions benefit the sampling process in surveys?

**Options :**

6406532735562. ❌ Ensures a diversity of samples by mixing different regions indiscriminately

6406532735563. ✓ Eliminates bias by selecting samples from areas with similar characteristics

6406532735564. ❌ Focuses solely on urban areas for increased data accuracy

6406532735565. ❌ Prioritizes high-income regions to reflect economic prosperity

**Question Number : 345 Question Id : 640653816692 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 strategic manpower planning, which of the factors is the least relevant for determining the number of employees needed?

**Options :**

6406532735566. ❌ The historical turnover rate within the industry

6406532735567. ❌ The predicted revenue for the next fiscal year

6406532735568. ❌ The specific business objectives and forthcoming projects

6406532735569. ✓ The current unemployment rate in the market

**Question Number : 346 Question Id : 640653816693 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 IT services, what is the primary purpose of maintaining a bench or buffer of employees?

**Options :**

6406532735570. ✓ To have resources readily available for unforeseen project needs.

6406532735571. ❌ To keep underperforming employees off critical projects.

6406532735572. ❌ To reduce the company's overall payroll expenses.

6406532735573. ❌ To comply with industry-standard HR practices.

**Sub-Section Number :** 3

**Sub-Section Id :** 640653119055

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816682 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**

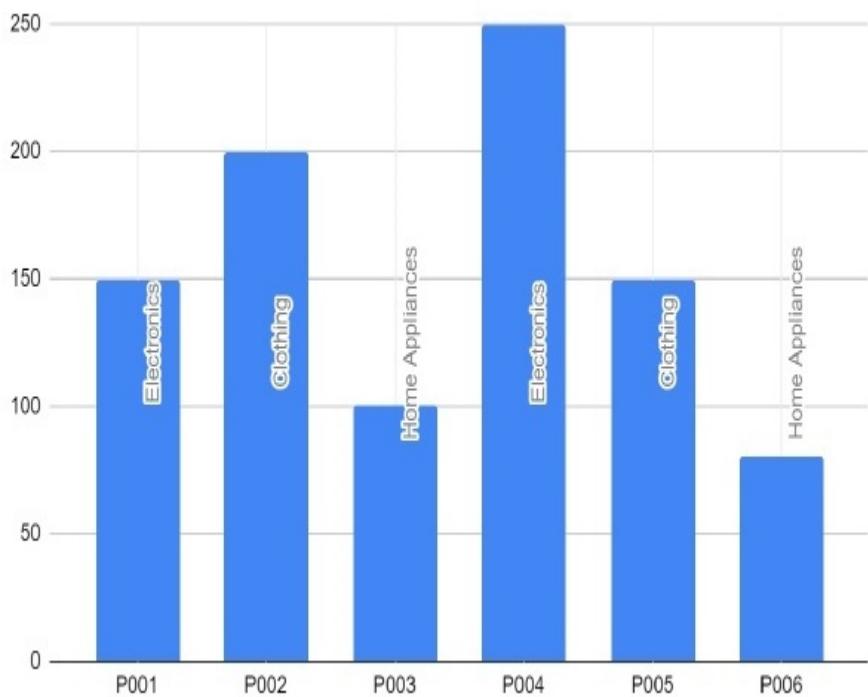
**Question Numbers : (347 to 348)**

Question Label : Comprehension

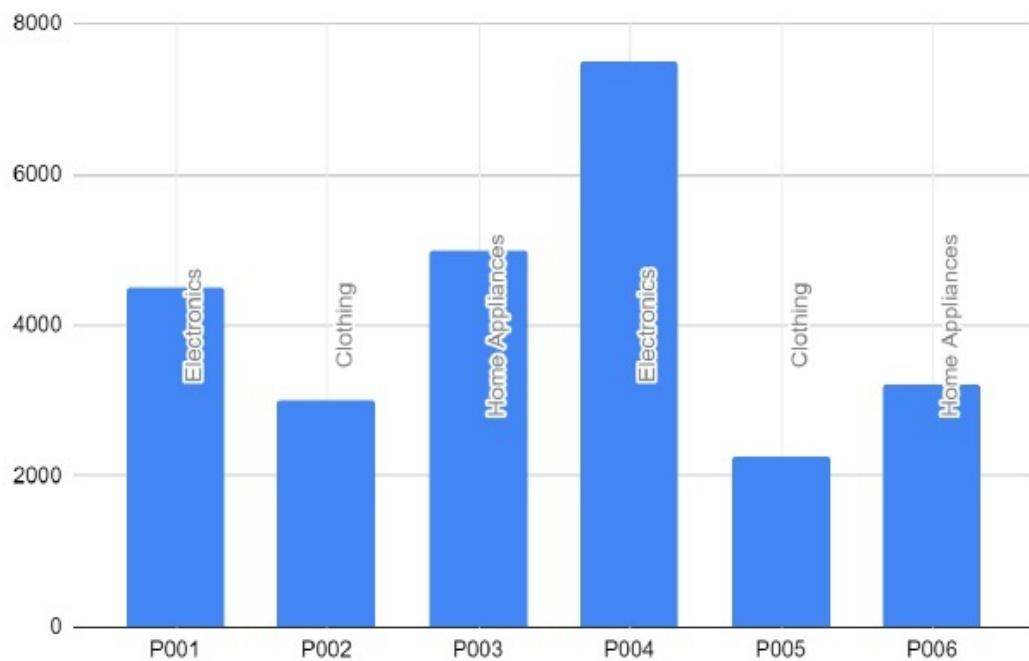
Consider the following table and scatter plot and answer the questions

Product ID	Product Category	Sales Quantity	Revenue (\$)
P001	Electronics	150	4500
P002	Clothing	200	3000
P003	Home Appliances	100	5000
P004	Electronics	250	7500
P005	Clothing	150	2250
P006	Home Appliances	80	3200

Sales V/S Product Plot



## Revenue V/S Product Plot



## Scatter Plot



Based on the above data, answer the given subquestions.

### Sub questions

Question Number : 347 Question Id : 640653816683 Question Type : MCQ Is Question

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

**Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

If you color-code the data points on the scatter plot by "Product Category," which of the following statements would likely be true?

**Options :**

6406532735534. ❌ All categories will cluster together, showing no distinct grouping.

6406532735535. ✓ Electronics might form a cluster with higher revenue compared to other categories.

6406532735536. ❌ Clothing will show the highest sales quantity and revenue.

6406532735537. ❌ Home Appliances will demonstrate the least variability in sales quantity and revenue.

**Question Number : 348 Question Id : 640653816684 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

Considering the given data, which category has the highest average revenue per unit?

**Options :**

6406532735538. ✓ Home Appliances

6406532735539. ❌ Clothing

6406532735540. ❌ Electronics

**Sub-Section Number :** 4

**Sub-Section Id :** 640653119056

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 349 Question Id : 640653816676 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

The teacher wants to assign students grades based on their Maths marks using the IF function.

Which Excel formula represents the correct structure for this conditional grading?

**Options :**

6406532735510. ❌ =IF(C2<20, "A", IF(C2>15, "B", IF(C2>10, "C", "D")))

6406532735511. ❌ =IF(C2<20, "A", IF(C2<15, "B", IF(C2<10, "C", "D")))

6406532735512. ✓ =IF(C2>=20, "A", IF(C2>=15, "B", IF(C2>=10, "C", "D")))

6406532735513. ❌ =IF(C2<=20, "A", IF(C2<=15, "B", IF(C2<=10, "C", "D")))

**Sub-Section Number :** 5

**Sub-Section Id :** 640653119057

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 350 Question Id : 640653816681 Question Type : MCQ Is Question**

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

**Correct Marks : 3**

Question Label : Multiple Choice Question

Four candidates are being considered for a Software Engineer position. The hiring committee has rated them based on the number of relevant skills they possess, the number of days they can join in, the number of relevant certificates they hold, and their years of relevant experience. Give all the criteria the same weightage. Evaluate the data below and determine which candidate should

be ranked the highest based on the given criteria (more skills, more certificates, more experience are better; fewer days to join is better).

Candidate A:

- Number of relevant skills: 12
- Days to join: 30
- Number of relevant certificates: 5
- Years of relevant experience: 3

Candidate B:

- Number of relevant skills: 15
- Days to join: 45
- Number of relevant certificates: 3
- Years of relevant experience: 4

Candidate C:

- Number of relevant skills: 10
- Days to join: 20
- Number of relevant certificates: 7
- Years of relevant experience: 5

Candidate D:

- Number of relevant skills: 14
- Days to join: 15
- Number of relevant certificates: 4
- Years of relevant experience: 6

Choose the correct ranking of the candidates from most suitable to least suitable:

**Options :**

6406532735530. ✓ Candidate D > Candidate C > Candidate A or Candidate B

6406532735531. ✗ Candidate B > Candidate A > Candidate C, Candidate D

6406532735532. ✗ Candidate D > Candidate A > Candidate C > Candidate B

6406532735533. ❖ Candidate C > Candidate D > Candidate A or Candidate B

<b>Sub-Section Number :</b>	6
<b>Sub-Section Id :</b>	640653119058
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 351 Question Id : 640653816685 Question Type : MSQ Is Question**

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

**Correct Marks : 1 Max. Selectable Options : 0**

Question Label : Multiple Select Question

A company has noticed that its average days of inventory are significantly lower than the industry standard. Which of the following statements describes the potential consequences of this situation?

**Options :**

6406532735541. ❖ Increased carrying costs due to holding excess inventory.

6406532735542. ✓ Higher likelihood of stockouts, leading to possible lost sales.

6406532735543. ✓ Less need for warehouse space, reducing storage cost inefficiencies.

6406532735544. ❖ Lower inventory obsolescence risks and reduced waste.

<b>Sub-Section Number :</b>	7
<b>Sub-Section Id :</b>	640653119059
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 352 Question Id : 640653816690 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

Considering the sales data and inventory levels for SKU cities (distribution centres) like Hyderabad, Cochin, and Madras, what could be a significant risk if the average sales drastically change over a short period?{Select All that apply}

**Options :**

6406532735558. ✓ Overestimation of inventory needs leading to excess stock.

6406532735559. ✓ Underestimation of lead times for inventory replenishment.

6406532735560. ✓ Inaccurate calculation of the total opening stock.

6406532735561. ✓ Misalignment between sales forecasts and actual sales data.

**Question Number : 353 Question Id : 640653816694 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 best describes the strategic advantage of internal sourcing?{Select All that apply}

**Options :**

6406532735574. ✗ It eliminates the need for an external recruitment process entirely.

6406532735575. ✗ It guarantees a 100% success rate in employee performance post-transition.

6406532735576. ✓ Could speed up the process of staffing the job position

6406532735577. ✓ Better familiarity reduces the risk that selected person may turn out to be incompetent

**Sub-Section Number :** 8

**Sub-Section Id :** 640653119060

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 354 Question Id : 640653816688 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

Imagine, you are an efficiency consultant hired by ABC Corp, a company that manufactures automotive parts. Your first assignment is to evaluate the performance of their primary production line. The provided data includes:

- The planned production time for last quarter was 700 hours.
- Unexpectedly, the line experienced 60 hours of lost time.
- The expected assembly rate of the line was 200 units per hour.
- However, the actual rate achieved was 180 units per hour.
- Over the quarter, 14,000 units were assembled.
- Out of these, 700 units were found to be defective.

Calculate the OEE for ABC Corp's production line and provide the result.

Hint:

$$\text{OEE} = \text{Availability} \times \text{Performance} \times \text{Quality}$$

If your calculations result in 0.2856 as the answer, please enter 28.56 and not 28.56%, or 0.2586

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

77 to 79

**Sub-Section Number :** 9

**Sub-Section Id :** 640653119061

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816695 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 : (355 to 358)**

Question Label : Comprehension

Let's consider a mobile gaming company that has launched a feature test to see the impact of a new game tutorial version aimed at improving player retention and in-game purchases.

User_ID	Group	Daily_Playtime_Minutes	In_Game_Purchase	Game_Version	Player_Experience_Level
1	A	40	0	Old	Beginner
2	B	30	1	New	Intermediate
3	A	35	1	Old	Advanced
4	B	30	0	New	Beginner
5	A	50	0	Old	Intermediate
6	B	50	1	New	Advanced
7	A	20	1	Old	Beginner
8	B	55	0	New	Intermediate
9	A	75	1	Old	Advanced
10	B	30	1	New	Beginner
11	A	70	1	Old	Intermediate
12	B	45	1	New	Advanced
13	A	50	0	Old	Beginner
14	B	65	0	New	Intermediate
15	A	75	1	Old	Advanced
16	B	35	1	New	Beginner
17	A	80	0	Old	Intermediate
18	B	80	1	New	Advanced
19	A	65	1	Old	Beginner
20	B	70	0	New	Intermediate

Based on the above data, answer the given subquestions.

**Sub questions**

**Question Number : 355 Question Id : 640653816696 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

Evaluate the influence of the new game tutorial on player engagement. How does the average Daily\_Playtime\_Minutes compare between the two groups?

**Options :**

6406532735578. ❌ Group B has significantly higher average playtime, indicating the new tutorial is more engaging.

6406532735579. ✓ Group A shows higher average playtime, suggesting the old tutorial is more effective.

6406532735580. ❌ No significant difference in playtime between the groups, indicating the new tutorial has minimal impact.

6406532735581. ❌ The average playtime is higher in Group B, but not significantly, suggesting a slight advantage of the new tutorial.

**Question Number : 356 Question Id : 640653816697 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 Player\_Experience\_Level benefited most from the new game tutorial in terms of In\_Game\_Purchase?

**Options :**

6406532735582. ❌ Beginners are making much more purchases with the new tutorial.

6406532735583. ❌ Intermediate players show a significant increase in purchases.

6406532735584. ❌ Advanced players have a higher purchase rate with the new tutorial.

6406532735585. ✓ There's no noticeable difference in purchase behavior across experience levels.

**Question Number : 357 Question Id : 640653816698 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

Considering the new tutorial's impact, which statement best reflects the data observed?

**Options :**

6406532735586. ✗ The new tutorial has universally improved in-game purchases across all player levels.

6406532735587. ✗ Only advanced players show a significant uptick in daily playtime with the new tutorial.

6406532735588. ✓ All players have decreased their playtime, potentially indicating a dislike for the new tutorial.

6406532735589. ✗ Beginners and advanced players show increased engagement, but intermediate players do not.

**Question Number : 358 Question Id : 640653816699 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 does the distribution of In\_Game\_Purchases in Group B suggest about the new tutorial's effectiveness?

**Options :**

6406532735590. ✗ It's highly effective, as most players increased their purchases.

6406532735591. ✗ Effectiveness is moderate; only some players increased their purchases.

6406532735592.

\* The new tutorial has no clear impact on purchase behavior.

6406532735593. ✓ It is less effective; fewer players made purchases after the introduction of the new tutorial.

## Business Analytics

<b>Section Id :</b>	64065356713
<b>Section Number :</b>	13
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	16
<b>Number of Questions to be attempted :</b>	16
<b>Section Marks :</b>	45
<b>Display Number Panel :</b>	Yes
<b>Section Negative Marks :</b>	0
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	640653119062
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 359 Question Id : 640653816700 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 :**

6406532735594. ✓ YES

6406532735595. ✗ NO

**Sub-Section Number :** 2

**Sub-Section Id :** 640653119063

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 360 Question Id : 640653816702 Question Type : MCQ Is Question**

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

**Time : 0**

**Correct Marks : 1**

Question Label : Multiple Choice Question

The p-value of the chi-square goodness of fit test represents \_\_\_\_\_

**Options :**

6406532735600. ✗ The chance of observing the sample when the null hypothesis is false

6406532735601. ✗ The chance of observing the sample when the alternative hypothesis is true

6406532735602. ✗ The chance of observing the sample at the specified level of significance

6406532735603. ✓ The chance of observing the sample when the null hypothesis is true

6406532735604. ✗ The chance of observing the sample when the alternative hypothesis is false

6406532735605. ✘ None of these

**Sub-Section Number :** 3

**Sub-Section Id :** 640653119064

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 361 Question Id : 640653816709 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**

Swami ji (our beloved course instructor), is not convinced with this model (he is a very adamant perfectionist), and wants to improve the model further.

So, he **ADDS** a new variable to the model and the partial excel regression output for this model is provided in Figure-2. Then,

Regression Statistics	
Multiple R	0.948
R Square	
Adjusted R Square	
Standard Error	
Observations	19

Figure-2

**Options :**

6406532735614. ✘ Yes, Swami ji is a Genius and has selected the correct variable to be added to the model

6406532735615. ✓ No, Swami ji is just a Show-off and has not chosen the correct variable to be added to the model

6406532735616. ✘ Cannot say, as sufficient information is not available

**Question Number : 362 Question Id : 640653816725 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

Assume 5 Chai outlets having same resources in terms of budget.

But, the outputs are different as mentioned below:

S.No	Sales	Loyal Customers
Outlet A	₹ 1,00,000	150
Outlet B	₹ 1,10,000	160
Outlet C	₹ 95,000	190
Outlet D	₹ 98,000	160
Outlet E	₹ 1,01,000	185

Which of the following Chai outlets are efficient?

**Options :**

6406532735632. ✘ ABD

6406532735633. ✘ BCD

6406532735634. ✘ ACD

6406532735635. ✘ AED

6406532735636. ✓ BCE

**Sub-Section Number :** 4

**Sub-Section Id :** 640653119065

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 363 Question Id : 640653816736 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 a conjoint problem with 5 products and 2 attributes, how many unique pair-wise preferences

are possible?

**Options :**

6406532735648. ✘ 8

6406532735649. ✓ 10

6406532735650. ✘ 16

6406532735651. ✘ 12

**Question Number : 364 Question Id : 640653816737 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

If 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 :**

6406532735652. ✘ Regression approach

6406532735653. ✘ Statistical approach

6406532735654. ✓ Optimization approach

6406532735655. ✘ Regression approach & Statistical approach

**Question Number : 365 Question Id : 640653816738 Question Type : MCQ Is Question**

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

**Correct Marks : 2**

Question Label : Multiple Choice Question

The part worth can be defined as:

**Options :**

6406532735656.

\* Level utilities

6406532735657. \* The utility for that level of attribute

6406532735658. \* Utility for separate parts of the products

6406532735659. \* Both Level utilities & The utility for that level of attribute

6406532735660. ✓ All of these

**Sub-Section Number :** 5

**Sub-Section Id :** 640653119066

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 366 Question Id : 640653816701 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 **required** to build an empirical distribution?

**Options :**

6406532735596. ✓ PDF or PMF

6406532735597. ✓ Sample data

6406532735598. ✓ Summary Statistics

6406532735599. \* None of these

**Sub-Section Number :** 6

**Sub-Section Id :** 640653119067

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 367 Question Id : 640653816726 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 6 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 5 has obtained an efficiency of 0.7 and business unit 6 has obtained an efficiency of 1 with the optimal weights of business unit 5. Which of the following statements is correct?

**Options :**

6406532735637. ❌ Business unit 5 may be efficient

6406532735638. ✓ Business unit 6 will be efficient

6406532735639. ✓ Business unit 5 may be inefficient

6406532735640. ❌ Business unit 6 will be inefficient

**Sub-Section Number :** 7

**Sub-Section Id :** 640653119068

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 368 Question Id : 640653816724 Question Type : MSQ Is Question**

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

**Correct Marks : 2 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Which of the following is true:

**Options :**

6406532735628. ❌ Productive efficiency focuses on maximizing the given output under given constraints by optimally allocating the products.

6406532735629. ✓ Productive efficiency frontiers are all combinations of outputs such that the production of one unit cannot be increased without sacrificing the other.

6406532735630. ✓ Organizations that find themselves on the Economic frontier are called efficient economic units.

6406532735631. ✘ DEA focuses on technology to improve productive efficiency.

<b>Sub-Section Number :</b>	8
<b>Sub-Section Id :</b>	640653119069
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Id : 640653816721 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 : (369 to 370)**

Question Label : Comprehension

“BA Books” sells its popular book titled “PJs” to the learners in the BSc programme. The demand for the book is modelled by a curve which is captured as  $23000 - 10 \times P_1$  (where “ $P_1$ ” is the selling price of the book). With this information, answer the given subquestions.

**Sub questions**

**Question Number : 369 Question Id : 640653816722 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 maximize revenue, then what should be the value of  $P_1$ ?

**NOTE:** Enter your answer to the nearest integer.

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

1150

**Question Number : 370 Question Id : 640653816723 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**

The cost of printing a book is Rs. 420. If the aim is to maximize profit, then what should be P1?

**NOTE:** Enter your answer to the nearest integer.

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

440

**Sub-Section Number :** 9

**Sub-Section Id :** 640653119070

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816717 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 373)**

**Question Label : Comprehension**

Suppose a factory manufactures products on four machines A, B, C and D. Suppose 60% of total output comes from machine A, 22% of total output comes from machine B, 7% of total output comes from machine C and rest are from machine D. From the past data, it is known that 12% of products by machine A are defectives, 17% of products by machine B are defectives, 8% of

products by machine C are defectives and 10% of products by machine D are defective. With this information, answer the given subquestions

### Sub questions

**Question Number : 371 Question Id : 640653816718 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 probability that the product has come from machine B given that it is defective?

*(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 :**

0.28 to 0.31

**Question Number : 372 Question Id : 640653816719 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 probability of finding a non-defective product in any given lot (a lot has products manufactured from A, B, C and D)?

*(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 :**

0.85 to 0.89

**Question Number :** 373 **Question Id :** 640653816720 **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 a production lot of 10000 products are manufactured (from all machines), then how many products in the lot will **BE defective**?

*(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 :**

1255 to 1257

**Question Id :** 640653816727 **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 :** (374 to 375)

**Question Label :** Comprehension

There are 6 business units where we measure the efficiency based on two outputs and one input. You are solving the optimization problem for business unit 6 and find that the efficiency is 0.75. You find that the dual variables corresponding to the constraints of business units 4 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 4 and 5 are 0.35 and 0.4 respectively. You are given the following table where sales and loyal customers are the two outputs.

	Sales	Loyal Customers
BU 3	11000	150
BU 5	9000	130

Based on the above data answer the given subquestion.

### **Sub questions**

**Question Number : 374 Question Id : 640653816728 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**

How much is the sales in BU 4?

**Hint:** Round-off up to 2 decimal places

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Range**

**Text Areas : PlainText**

**Possible Answers :**

**9933 to 9934**

**Question Number : 375 Question Id : 640653816729 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**

How many loyal customers in BU 4?

Hint: Round-off up to 2 decimal places

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

139 to 140

**Sub-Section Number :** 10

**Sub-Section Id :** 640653119071

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816703 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 : (376 to 380)**

Question Label : Comprehension

A demand response curve is built using linear regression. The partial regression output is given in Figure-1 below. Given this information, answer the given subquestions.

ANOVA		
	<i>df</i>	<i>SS</i>
Regression		179700.8
Residual		
Total	18	200679.7
	<i>Coefficients</i>	<i>Standard Error</i>
Intercept	912.8670899	
Price	-3.836221412	

Figure-1

**Sub questions**

**Question Number : 376 Question Id : 640653816704 Question Type : SA Calculator : None**

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

**Correct Marks : 1**

Question Label : Short Answer Question

What is the elasticity of the demand response curve? (*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 :**

3.82 to 3.86

**Question Number : 377 Question Id : 640653816705 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 market size? (*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 :**

912 to 913

**Question Number : 378 Question Id : 640653816706 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 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 : Range**

**Text Areas : PlainText**

**Possible Answers :**

237 to 239

**Question Number : 379 Question Id : 640653816707 Question Type : MCQ Is Question**

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

**Correct Marks : 0.5**

Question Label : Multiple Choice Question

Based on the elasticity, which of the following statements are **TRUE**?

**Options :**

6406532735609. ✓ The demand is elastic

6406532735610. ✗ The demand is inelastic

6406532735611. ✗ The price is elastic

6406532735612. ✗ The price is inelastic

**Question Number : 380 Question Id : 640653816708 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 percentage of the total linear variability in demand is captured by this model (given in figure-1) of the demand response curve?

(Note: Enter the answer in "%" rounded to two decimal places without the percentage sign.

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 :**

89 to 90

**Sub-Section Number :** 11

**Sub-Section Id :** 640653119072

**Question Shuffling Allowed :** No

**Is Section Default? :** null

**Question Id : 640653816710 Question Type : COMPREHENSION Sub Question Shuffling**

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

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

**Question Numbers : (381 to 386)**

**Question Label : Comprehension**

The BA discourse is often cluttered with queries / requests related to solutions for Past Year Question Papers (PYQP). The course instructor, Dr. Milo, had been informing that students need to put in effort to find solutions by searching the discourse. However, the results seem to disappointing. Therefore, Dr. Milo wanted to do a few basic analytics on discourse behaviour of students. Past student data was collected for the analysis.

Past data was collected for the BA terms in Jan-2022, May-2022, Sep-2022, Jan-2023, May-2023 and Sep-2023. For each term, 100 randomly selected unique student IDs were sampled. Of the 100 student IDs, 50 were "Male" and the remaining were "Female". The learners in the discourse have either "followed the instructions" or "not followed the instructions" or "have not accessed the discourse at all" (these three are referred to as access categories). Specifically, for the sample data in the different terms (in sequence of earliest term to later term i.e. Jan-2022 to Sep-2023) it was observed that

1. For the Male sample: 20, 30, 25, 45, 25 and 35 had not followed the instructions (respectively in each term i.e 20 male learners had followed the instructions in Jan-2022 term and so on)
2. For the Male sample: 2, 10, 5, 4, 5 and 3 had not accessed discourse at all (respectively in each term i.e 2 male learners had not accessed discourse at all in Jan-2022 term and so on)
3. For the female sample: 15, 22, 32, 25, 20 and 20 had followed the instructions (respectively in each term i.e 15 female learners had followed the instructions in Jan-2022 term and so on) and the rest of the learners in the respective samples had not followed the instructions

Moreover, Dr. Milo assumes **that all learners in the "followed the instructions" category** are Normally distributed with a mean of 18 and standard deviation of 4. Each BA term is taken as a sample point to identify the required counts (for this specific analysis). A binning of data is performed with the following three bins (which capture the number of learners who follow the instructions in a sample). These bins, divide the solution space into equal areas.

Bin-1: [less than or equal to 35]

Bin-2: [36 to less than or equal to 50]

Bin-3: [51 to less than or equal to 100]

Given this information, answer the given subquestions

### **Sub questions**

**Question Number : 381 Question Id : 640653816711 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 expected number of “Female Learners” who should be in the “not followed the instructions” category, if Dr. Milo was interested to see if there is independence between the learners in different gender in different access categories in different terms (*Hint: all the categorical variables must be taken separately*).  
*(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 :**

27 to 28

**Question Number :** 382 **Question Id :** 640653816712 **Question Type :** SA **Calculator :** None

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

**Correct Marks :** 2

**Question Label :** Short Answer Question

If Dr. Milo is interested to see **only if** “Male Learners” in different “Access Categories” in different terms are independent, then what is the value of the 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 :**

48 to 52

**Question Number :** 383 **Question Id :** 640653816713 **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 observed frequency in “Bin-1” of Dr. Milo’s analysis?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

3

**Question Number :** 384 **Question Id :** 640653816714 **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 frequency in “Bin-2” of Dr. Milo’s analysis?

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

2

**Question Number : 385 Question Id : 640653816715 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 the computed test statistic which will be used to check if Dr. Milo's assumption that all learners in the "followed the instructions" category are Normally distributed?

*(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 : 386 Question Id : 640653816716 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 hypothesis test used to check if Dr. Milo's assumption that all learners in the "followed the instructions" category are Normally distributed?

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

<b>Sub-Section Number :</b>	12
<b>Sub-Section Id :</b>	640653119073
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Id : 640653816730 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 : (387 to 391)**

Question Label : Comprehension

An automotive company wants to understand its model performance of a classification problem where the task is to classify loyal customers and those Not Loyal. Using the table given below, answer the given subquestions

S.No	y_actual	y_pred
1	Loyal	Loyal
2	Not Loyal	Loyal
3	Loyal	Not Loyal
4	Loyal	Loyal
5	Loyal	Loyal
6	Not Loyal	Loyal
7	Loyal	Loyal
8	Loyal	Not Loyal
9	Not Loyal	Loyal
10	Not Loyal	Not Loyal
11	Not Loyal	Not Loyal
12	Loyal	Loyal

### Sub questions

**Question Number : 387 Question Id : 640653816731 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 accuracy of the model? (in percentage)

*Hint: Round your answer to two decimal places and answer them in terms of percentage. Example: If your answers is 0.735, write it as 73.50.*

**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 :** 388 **Question Id :** 640653816732 **Question Type :** SA **Calculator :** None

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

**Correct Marks :** 2

Question Label : Short Answer Question

What is the precision of class 1? (in percentage)

*Hint: Round your answer to two decimal places and answer them in terms of percentage. Example: If your answers is 0.735, write it as 73.50.*

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

62.2 to 66.7

**Question Number :** 389 **Question Id :** 640653816733 **Question Type :** SA **Calculator :** None

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

**Correct Marks : 2**

Question Label : Short Answer Question

What is the recall of class 1? (in percentage)

*Hint: Round your answer to two decimal places and answer them in terms of percentage. Example: If your answers is 0.735, write it as 73.50.*

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Range

**Text Areas :** PlainText

**Possible Answers :**

71.1 to 71.7

**Question Number : 390 Question Id : 640653816734 Question Type : SA Calculator : None**

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

**Correct Marks : 2**

Question Label : Short Answer Question

What is the precision of class 0? (in percentage)

*Hint: Round your answer to two decimal places and answer them in terms of percentage. Example: If your answers is 0.735, write it as 73.50.*

**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 : 391 Question Id : 640653816735 Question Type : SA Calculator : None**

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

**Correct Marks : 2**

Question Label : Short Answer Question

What is the recall of class 0? (in percentage)

*Hint: Round your answer to two decimal places and answer them in terms of percentage. Example: If your answers is 0.735, write it as 73.50.*

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Range**

**Text Areas : PlainText**

**Possible Answers :**

39.9 to 40.1

## System Commands

<b>Section Id :</b>	64065356714
<b>Section Number :</b>	14
<b>Section type :</b>	Online
<b>Mandatory or Optional :</b>	Mandatory
<b>Number of Questions :</b>	16
<b>Number of Questions to be attempted :</b>	16
<b>Section Marks :</b>	100
<b>Display Number Panel :</b>	Yes
<b>Section Negative Marks :</b>	0
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0

<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	640653119074
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 392 Question Id : 640653816739 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 :**

6406532735661. ✓ YES

6406532735662. ✘ NO

<b>Sub-Section Number :</b>	2
<b>Sub-Section Id :</b>	640653119075
<b>Question Shuffling Allowed :</b>	Yes
<b>Is Section Default? :</b>	null

**Question Number : 393 Question Id : 640653816740 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 6**

Question Label : Multiple Choice Question

Select the script to find and kill the process which is consuming more than 80% of the CPU.

Hint:

```
$ ps -eo pid,%cpu --sort=-%cpu
    PID %CPU
243099 88.2
  9640  7.0
  9814  3.1
  2824  2.8
242251  2.4
  9822  1.2
  3140  0.7
  2654  0.7
  9902  0.6
```

- `xargs` is used to pass the stdout of one command as arguments to another command.

### Options :

6406532735663. ✓ `ps -eo pid,%cpu --sort=-%cpu | awk '$2 > 80 {print $1}' | xargs kill`

6406532735664. ✗ `ps -eo pid,%cpu --sort=-%cpu | awk '$2 < 80 {print $1}' | xargs kill`

6406532735665. ✗ `ps -eo pid,%cpu --sort=-%cpu | awk '$0 > 80 {print $1}' | xargs kill`

6406532735666. ✗ `ps -eo pid,%cpu --sort=-%cpu | awk '$0 < 80 {print $1}' | xargs kill`

**Question Number : 394 Question Id : 640653816741 Question Type : MCQ Is Question**

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

**Correct Marks : 6**

**Question Label : Multiple Choice Question**

What does the following script do?

```
while read -r line; do
    [ "$line" = EOF ] && break
    echo $line
done <file1 >file2
```

**Options :**

6406532735667. ✘ Copies the contents of file1 to file2 .

Copies the contents of file1 to file2 until the line EOF is encountered and the line EOF is not copied.

6406532735668. ✓ Copies the contents of file1 to file2 until the line EOF is encountered, the line EOF is copied.

Copies the contents of file1 to file2 until the last occurrence of the line EOF is encountered and the line EOF is not copied.

**Question Number : 395 Question Id : 640653816744 Question Type : MCQ Is Question**

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

**Correct Marks : 6**

Question Label : Multiple Choice Question

What does the following script do?

```
#!/bin/bash

x=0
for number in {10..20}; do
    # The ends of the range are inclusive
    if ((number % 2 != 0)); then
        x=$((x + number))
    fi
done
echo $x
```

**Options :**

6406532735673. ✘ Prints the count of even numbers between 10 and 20.

6406532735674. ✘ Prints the count of odd numbers between 10 and 20.

6406532735675. ✘ Prints the sum of even numbers between 10 and 20.

6406532735676. ✓ Prints the sum of odd numbers between 10 and 20.

**Question Number : 396 Question Id : 640653816745 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 PATH environment variable:

- Stores a list of directories separated by colons ("").
- The shell searches for executable commands in these directories, one by one, in the order they appear in the variable PATH.

Select the command that does the following:

Here, the script `my-script` is taken as an **example**. If the command `my-script` is run:

1. Check for `my-script` in `~/.local/bin`:
  - If an executable file named `my-script` exists in the `~/.local/bin` directory, run that specific file.
2. Check for `my-script` in `/opt/extr/bin` (if not found in step 1):
  - If the executable file `my-script` doesn't exist in `~/.local/bin` but exists in `/opt/extr/bin`, run the one from `/opt/extr/bin`.
3. The same flow should be followed if the command is run from a script.

**Options :**

6406532735677. ✘ `export PATH=/opt/extr/bin:~/.local/bin:$PATH`

6406532735678. ✓ `export PATH=~/local/bin:/opt/extr/bin:$PATH`

6406532735679. ✘ `PATH=/opt/extr/bin:~/local/bin:$PATH`

6406532735680. ✘ PATH=~/.local/bin:/opt/extra/bin:\$PATH

**Question Number : 397 Question Id : 640653816746 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 6**

Question Label : Multiple Choice Question

Consider the following shell script:

```
# myscript.sh
for file in *.txt; do
    echo "Processing $file"
    cp "$file" "backup_${file}"
done
```

What does this script do?

**Options :**

6406532735681. ✘ Renames all .txt files by adding the prefix “backup\_” to their names.

6406532735682. ✘ Deletes all .txt files.

6406532735683. ✓ Creates backup copies of all .txt files.

6406532735684. ✘ Moves all .txt files to a backup directory.

**Question Number : 398 Question Id : 640653816747 Question Type : MCQ Is Question Mandatory : No Calculator : None Response Time : N.A Think Time : N.A Minimum Instruction Time : 0**

**Correct Marks : 6**

Question Label : Multiple Choice Question

What environment variable stores the path to the directory containing the commands?

**Options :**

6406532735685. ❌ \$HOME

6406532735686. ✓ \$PATH

6406532735687. ❌ \$USER

6406532735688. ❌ \$PWD

**Question Number : 399 Question Id : 640653816748 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

In a text file, you want to replace the **second occurrence** of the word "apple" with "banana". Which sed command would you use?

**Options :**

6406532735689. ✓ sed 's/apple/banana/2' filename

6406532735690. ❌ sed 's/apple/banana/g2' filename

6406532735691. ❌ sed '2s/apple/banana/' filename

6406532735692. ❌ sed '2s/apple/banana/g' filename

**Sub-Section Id :** 640653119076

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 400 Question Id : 640653816750 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

You want to find lines in a text file where the third field is a numeric value between 57 and 93 inclusive. Which command(s) would you use?

**Options :**

6406532735697. ✓ `awk '$3 >= 57 && $3 <= 93 {print $0}' filename`

6406532735698. ✗ `awk '$3 ~ /^[57-93]+$/ {print}' filename`

6406532735699. ✗ `awk '$3 ~ /^[0-9]{2}$/ {print}' filename`

6406532735700. ✓ `awk '$3 >= 57 && $3 <= 93' filename`

6406532735701. ✓ `awk '$3 ~ /[[[:digit:]]+&& $3 >= 57 && $3 <= 93 {print}' filename`

**Question Number : 401 Question Id : 640653816751 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

Select the correct option(s) to validate whether a string variable contains only digits, dot and

minus in a bash script.

**Options :**

6406532735702. ✓ [[ \$variable =~ ^[0-9.\-]+\\$ ]]

6406532735703. ✗ [[ \$variable =~ ^[0-9.\-]\*\\$ ]]

6406532735704. ✓ [[ \$variable =~ ^[[[:digit:]].\.-]+\\$ ]]

6406532735705. ✗ [[ \$variable =~ ^[[[:digit:]].\.-]\*\\$ ]]

**Sub-Section Number :** 4

**Sub-Section Id :** 640653119077

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 402 Question Id : 640653816749 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**

You need to extract all lines which contain URLs from an HTML document. Which regular expression (ERE) would you use?

### Hint

Use the sample input and output for your reference.

### sample input

```
<!doctype html>
<html>
<head>
  <title>Sample HTML Document</title>
</head>
<body>
  <h1>Welcome to my website!</h1>
  <p>Here are some links:</p>
  <ul>
    <li><a href="https://www.example.com">Example Website</a></li>
    <li><a href="http://www.test.com/page1">Test Page 1</a></li>
    <li><a href="https://www.test.com/page2">Test Page 2</a></li>
    <li><a href="ftp://ftp.example.com">FTP Server</a></li>
    <li><a href="mailto:info@example.com">Contact Us</a></li>
  </ul>
</body>
</html>
```

### Sample output

```
<li><a href="https://www.example.com">Example Website</a></li>
<li><a href="http://www.test.com/page1">Test Page 1</a></li>
<li><a href="https://www.test.com/page2">Test Page 2</a></li>
<li><a href="ftp://ftp.example.com">FTP Server</a></li>
<li><a href="mailto:info@example.com">Contact Us</a></li>
```

### Options :

6406532735693. ❌ <a href="([^\"]+)">

6406532735694. ✓ <a href="([^\"]\*?)">

6406532735695. ❌ <a href="([^\"]\*)">

6406532735696. ✓ <a href="([^\"]+?)">

**Question Number : 403 Question Id : 640653816752 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

Arrange the following steps in the correct order to create an AWK script that calculates the mean, median, and mode of a given dataset stored in a text file named "data.txt":

1. Use awk to read the data from the text file and store it in an array.
2. Calculate the mean by summing up all the values in the array and dividing by the total number of values.
3. Sort the array to find the median value.
4. Calculate the mode by counting the frequency of each unique value in the array.
5. Determine the value with the highest frequency as the mode.
6. Print the mean, median, and mode to the terminal.
7. Prompt the user to enter the filename containing the dataset.
8. Check if the specified file exists and is accessible.

**Options :**

6406532735706. ✓ 7 -> 8 -> 1 -> 2 -> 3 -> 4 -> 5 -> 6

6406532735707. ✗ 7 -> 8 -> 1 -> 4 -> 2 -> 3 -> 5 -> 6

6406532735708. ✗ 8 -> 7 -> 1 -> 2 -> 3 -> 4 -> 5 -> 6

6406532735709. ✗ 8 -> 7 -> 1 -> 4 -> 2 -> 3 -> 5 -> 6

6406532735710. ✓ 7 -> 8 -> 1 -> 3 -> 2 -> 4 -> 5 -> 6

**Question Number : 404 Question Id : 640653816753 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**

Choose the corner case(s) from stdin that makes this SED command fail to replace all the three-character month names with the corresponding numbers.

```
#!/bin/bash

# Associative array
declare -A month_to_number

month_to_number=(
    ["Jan"]=1 ["Feb"]=2 ["Mar"]=3 ["Apr"]=4
    ["May"]=5 ["Jun"]=6 ["Jul"]=7 ["Aug"]=8
    ["Sep"]=9 ["Oct"]=10 ["Nov"]=11 ["Dec"]=12
) # ([key]=value)

read -r line
for m in "${!month_to_number[@]}"; do
    # get from stdin
    [[ "$line" =~ $m ]] || continue
    echo "$line" | sed "s/$m/${month_to_number[$m]}/"
done
```

**Options :**

6406532735711. ✘ 12/Jan/2017

6406532735712. ✘ 22-Aug-1999 Morning

6406532735713. ✓ 17/Feb/1888, 7/May/1999

6406532735714. ✓ 18/jul/2047

6406532735715. ✘ 19 Sep 2023 18:00

**Sub-Section Id :** 640653119078

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 405 Question Id : 640653816742 Question Type : SA Calculator : None**

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

**Correct Marks : 7**

Question Label : Short Answer Question

How long will the following script run?

Hint:

- \$! expands to the PID of the most recently executed **background command**.
- Provide the answer in integer format.

```
for i in {6..15}; do
    sleep 3 &
    sleep 1 && kill $!
done
```

**Response Type : Numeric**

**Evaluation Required For SA : Yes**

**Show Word Count : Yes**

**Answers Type : Equal**

**Text Areas : PlainText**

**Possible Answers :**

10

**Question Number : 406 Question Id : 640653816743 Question Type : SA Calculator : None**

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

**Correct Marks : 7**

Question Label : Short Answer Question

What will be the output of the last command? [NAT]

Note: The answer is case-sensitive, so provide it without leading or trailing spaces.

```
$ cat data.txt
Hello World
$ cat data.txt | while read -r line; do
    echo "${line% *}"
done
```

**Response Type :** Alphanumeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Answers Case Sensitive :** No

**Text Areas :** PlainText

**Possible Answers :**

Hello

**Sub-Section Number :** 6

**Sub-Section Id :** 640653119079

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number :** 407 **Question Id :** 640653816754 **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

What will be the output from the following script?

Note: Provide the answer in integer format.

```
awk '
{
    x[NR] = $1; y[NR] = $2
    x_+ += $1; y_+ += $2
}
END {
    x_ = x_ / NR; y_ = y_ / NR
    denx_2 = 0; deny_2 = 0
    for (i in x) {
        num += (x[i] - x_)*(y[i] - y_)
        denx_2 += (x[i] - x_)^2
        deny_2 += (y[i] - y_)^2
    }
    print num/(denx_2^0.5 * deny_2^0.5)
}
' << EOF
1 2
3 4
5 6
7 8
EOF
```

**Response Type :** Numeric

**Evaluation Required For SA :** Yes

**Show Word Count :** Yes

**Answers Type :** Equal

**Text Areas :** PlainText

**Possible Answers :**

1

**TDS**

**Section Id :** 64065356715

**Section Number :** 15

**Section type :** Online

**Mandatory or Optional :** Mandatory

<b>Number of Questions :</b>	19
<b>Number of Questions to be attempted :</b>	19
<b>Section Marks :</b>	19
<b>Display Number Panel :</b>	Yes
<b>Section Negative Marks :</b>	0
<b>Group All Questions :</b>	No
<b>Enable Mark as Answered Mark for Review and Clear Response :</b>	Yes
<b>Maximum Instruction Time :</b>	0
<b>Sub-Section Number :</b>	1
<b>Sub-Section Id :</b>	640653119080
<b>Question Shuffling Allowed :</b>	No
<b>Is Section Default? :</b>	null

**Question Number : 408 Question Id : 640653816755 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 :**

6406532735717. ✓ YES

6406532735718. ✗ NO

**Sub-Section Id :** 640653119081

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 409 Question Id : 640653816756 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 :**

6406532735719. ✓ Trend Line in Line Chart

6406532735720. ✓ SLOPE function

6406532735721. ✗ None of these

**Question Number : 410 Question Id : 640653816759 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 :**

6406532735730. ✓ data\_df.book.unique()

6406532735731. ✗ data\_df.book.category\_name()

6406532735732. ✗ data\_df['book'].distinct()

6406532735733. ✓ data\_df['book'].unique()

**Question Number : 411 Question Id : 640653816761 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 :**

6406532735738. ✘ Elements

6406532735739. ✓ network

6406532735740. ✘ Source

6406532735741. ✓ Application

**Question Number : 412 Question Id : 640653816762 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 :**

6406532735742. ✓ Geopandas

6406532735743. ✘ QGIS

6406532735744. ✓ Folium

6406532735745. ✘ OpenStreetMap

**Sub-Section Number :** 3

**Sub-Section Id :** 640653119082

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 413 Question Id : 640653816757 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 :**

6406532735722. ✓ Adds a button to trigger an action

6406532735723. ✗ Displays the current status of the app

6406532735724. ✗ Resets all input fields

6406532735725. ✗ Turns the app into full-screen mode

**Question Number : 414 Question Id : 640653816758 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 :**

6406532735726. ✗ The text will be split based on spaces

6406532735727. ✓ The text will not be split, and the original content remains unchanged

6406532735728. ✗ An error message will be displayed

6406532735729. ✗ The text will be split into individual characters

**Question Number : 415 Question Id : 640653816760 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 :**

6406532735734. ❌ ARIMA(..., trend = (4,1,0))

6406532735735. ✓ ARIMA(..., order = (4,1,0))

6406532735736. ❌ ARIMA(..., order = (0,4,1))

6406532735737. ❌ ARIMA(..., trend = (0,4,1))

**Question Number : 416 Question Id : 640653816763 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 :**

6406532735746. ❌ algorithm

6406532735747. ❌ max\_iter

6406532735748. ❌ n\_clusters

6406532735749. ✓ n\_init

**Question Number : 417 Question Id : 640653816764 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 :**

6406532735750. ❌ There is no relationship between variables

6406532735751. ❌ The analysis is inconclusive

6406532735752. ✓ The relationship between variables is statistically significant

6406532735753. ❌ The model is overfitting

**Question Number : 418 Question Id : 640653816765 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 :**

6406532735754. ✓ Data cleaning and transformation

6406532735755. ❌ Data compression and storage

6406532735756. ❌ Real-time data analysis

6406532735757. ❌ Open source refined data

**Question Number : 419 Question Id : 640653816766 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 :**

6406532735758. ✘ TRUE

6406532735759. ✓ FALSE

**Question Number : 420 Question Id : 640653816767 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 :**

6406532735760. ✘ Elements

6406532735761. ✘ Console

6406532735762. ✘ Sources

6406532735763. ✓ Network

6406532735764. ✘ APILogs

**Question Number : 421 Question Id : 640653816768 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 :**

6406532735765. ✘ Right click, choose View page-source

6406532735766. ✓ Right click, choose Inspect

6406532735767. ✘ Settings, more tools and choose Developer Tools

6406532735768.

\* Settings, extensions and search for devtools

**Question Number : 422 Question Id : 640653816769 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 :**

6406532735769. ✓ TRUE

6406532735770. ✘ FALSE

**Question Number : 423 Question Id : 640653816770 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 :**

6406532735771. ✘ st.add\_text()

6406532735772. ✓ st.text()

6406532735773. ✘ st.insert\_text()

6406532735774. ✘ st.display\_text()

**Question Number : 424 Question Id : 640653816771 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 :**

6406532735775. ❌ A workbook created in Microsoft Excel

6406532735776. ✓ A Tableau file containing sheets, dashboards, and stories

6406532735777. ❌ A spreadsheet in Tableau

6406532735778. ❌ A summary of visualizations

**Question Number : 425 Question Id : 640653816772 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 :**

6406532735779. ✓ By selecting a function from the "Summarize Values by" in the "Value Field settings"

6406532735780. ❌ By right-clicking the cell and choosing "Change Calculation"

6406532735781. ❌ By dragging a new field into the "Values" area

6406532735782. ❌ By adjusting the cell formatting in the "Values" area

**Sub-Section Number :** 4

**Sub-Section Id :** 640653119083

**Question Shuffling Allowed :** Yes

**Is Section Default? :** null

**Question Number : 426 Question Id : 640653816773 Question Type : MSQ Is Question**

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

**Time : 0**

**Correct Marks : 2 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Using 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 :**

6406532735783. ❌ have higher bias

6406532735784. ✓ have higher variance

6406532735785. ✓ have lower bias

6406532735786. ❌ have lower variance

6406532735787. ✓ overfit the data compared to your solution

6406532735788. ❌ underfit the data compared to your solution