

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 AN EXAM QDF3 7 July 2024
Subject Name :	2024 July07: IIT M AN EXAM QDF3
Creation Date :	2024-07-01 17:48:31
Duration :	180
Total Marks :	726
Display Marks:	Yes
Share Answer Key With Delivery Engine :	Yes
Actual Answer Key :	Yes
Calculator :	Scientific
Magnifying Glass Required? :	No
Ruler Required? :	No
Eraser Required? :	No
Scratch Pad Required? :	No
Rough Sketch/Notepad Required? :	No
Protractor Required? :	No
Show Watermark on Console? :	Yes
Highlighter :	No
Auto Save on Console?	Yes
Change Font Color :	No
Change Background Color :	No
Change Theme :	No
Help Button :	No
Show Reports :	No
Show Progress Bar :	No

Group I

Group Number :	1
Group Id :	64065319010
Group Maximum Duration :	0
Group Minimum Duration :	90

Show Attended Group? :	No
Edit Attended Group? :	No
Break time :	0
Group Marks :	726
Is this Group for Examiner? :	No
Examiner permission :	Cant View
Show Progress Bar? :	No
Revisit allowed for group Instructions? :	Yes
Maximum Instruction Time :	0
Minimum Instruction Time :	0
Group Time In :	Minutes
Revisit Section :	Yes
Action on Revisit Section :	View and Edit
Navigate To Group Summary From Last Question? :	No
Disable Submit Button During Assessment? :	No
Section Selection Time? :	0
No of Optional sections to be attempted :	0

Sem1 CT

Section Id :	64065359295
Section Number :	1
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	14
Number of Questions to be attempted :	14
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123260
Question Shuffling Allowed :	No

Question Number : 1 Question Id : 640653826813 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406532779223. ✓ YES

6406532779224. ✗ NO

Question Number : 2 Question Id : 640653826814 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

Olympics

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

Three sample cards out of 30 for Shopping Bills dataset

Item List



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

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

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

Options :

6406532779225. ✓ Useful Data has been mentioned above.

6406532779226. ✗ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number :

2

Sub-Section Id :

640653123261

Question Shuffling Allowed :

Yes

Question Number : 3 Question Id : 640653826815 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

The given information represents "Scores" dataset and it may have some mistakes with respect to the sanity of data. Identify all rows with such mistakes. It is a Multiple Select Question (MSQ).

Row no.	Field	Value
Row 1	Card number	1
Row 2	Name	Harish
Row 3	Gender	M
Row 4	Date of Birth	30 November
Row 5	Mathematics	62
Row 6	Physics	145
Row 7	Chemistry	91
Row 8	Total	398

Options :

6406532779227. ❌ Row 1: Incorrect data type of card number

6406532779228. ✓ Row 4: Invalid Date of Birth

6406532779229. ✓ Row 6: Physics score is out of range

6406532779230. ✓ Row 8: Total score is out of range

Sub-Section Number : 3

Sub-Section Id : 640653123262

Question Shuffling Allowed : Yes

Question Number : 4 Question Id : 640653826816 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

The given pseudocode is executed using "Scores" dataset. Let **B** be a positive integer. What does the procedure **DoSomething** compute?

```
1 Procedure DoSomething (B)
2     C = 0, D = 101
3     while(Table 1 has more rows){
4         Read the first row X in Table 1
5         if(X.Physics > C){
6             C = X.Physics
7         }
8         if(X.Chemistry < D){
9             D = X.Chemistry
10        }
11        Move X to Table 2
12    }
13    if(C - D >= B){
14        return (False)
15    }
16    else{
17        return(True)
18    }
19 End DoSomething
```

Options :

6406532779231. ❌ Returns "True" if and only if the difference between the maximum Physics marks and the minimum Chemistry marks is at least **B**

6406532779232. ❌ Returns "True" if and only if the difference between the maximum Chemistry marks and the minimum Physics marks is at most **B**

6406532779233. ✓ Returns "True" if and only if the difference between the maximum Physics marks and the minimum Chemistry marks is less than **B**

6406532779234. ❌ Returns "True" if and only if the difference between the maximum Chemistry marks and the minimum Physics marks is less than **B**

Question Number : 5 Question Id : 640653826824 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

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

```
1 A = 0
2 while(Pile 1 has more cards){
3     Read the top card X from Pile 1
4     A = A + isInSeq(X)
5     Move X to Pile 2
6 }
7 Procedure isInSeq(X)
8     if(X.Physics < X.Mathematics){
9         if(X.Mathematics < X.Chemistry){
10            return(1)
11        }
12    }
13    return(0)
14 End isInSeq
```

Options :

6406532779257. ✓ Number of students with highest marks in Chemistry and lowest marks in Physics.

6406532779258. ✗ Number of students with highest marks in Mathematics and lowest marks in Physics.

6406532779259. ✗ Number of students with highest marks in Physics among the three subjects.

6406532779260. ✗ Number of students with lowest marks in Physics and highest marks in Mathematics.

Question Number : 6 Question Id : 640653826826 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

The following pseudocode is executed using the "Library" dataset.

```
1 A = 0, count = 0
2 while(Table 1 has more rows){
3     Read the first row X from Table 1
4     if(X.Year > A){
5         A = X.Year
6     }
7     Move X to Table 2
8 }
9 while(Table 2 has more rows){
10    Read the first row Y from Table 2
11    if(Y.Year != A){
12        count = count + 1
13    }
14    Move Y to Table 1
15 }
```

What will **count** represent at the end of execution of the above pseudocode?

Options :

- 6406532779265. ❌ Number of books which were published after the least recent year.
- 6406532779266. ❌ Number of books which were published in the least recent year.
- 6406532779267. ✓ Number of books which were published after the most recent year.
- 6406532779268. ❌ Number of books which were published in the most recent year.

Sub-Section Number : 4

Sub-Section Id : 640653123263

Question Shuffling Allowed : Yes

Question Number : 7 Question Id : 640653826817 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

The following pseudocode is executed using the "Words" dataset. At the end of the execution, A captures the number of nouns with letter count at least four and at most eight. Choose the correct code fragment(s) to complete the pseudocode. It is a Multiple Select Question (MSQ).

```
1 A = 0
2 while(Table 1 has more cards){
3     Read the first row X from Table 1
4     if(checksomething(X, 4, 8)){
5         A = A + 1
6     }
7     Move X to Table 2
8 }
9 Procedure CheckSomething(Y, C1, C2,)
10    if(Y.PartofSpeech == "Noun"){
11        ****Fill the code*****
12    }
13    else{
14        return(False)
15    }
16 End CheckSomething
```

Options :

```
1 if(C1 >= Y.LetterCount and Y.LetterCount <= C2){
2     return(True)
3 }
4 else{
5     return(False)
6 }
7
```

6406532779235. ❌

```
1 if(C1 <= Y.LetterCount and Y.LetterCount <= C2){
2     return(True)
3 }
4 else{
5     return(False)
6 }
7
```

6406532779236. ✓

6406532779237. ❌

```

1 if(c1 <= Y.LetterCount and Y.LetterCount <= c2){
2     return(False)
3 }
4 else{
5     return(True)
6 }
7

```

```

1 if(c1 > Y.LetterCount or Y.LetterCount > c2){
2     return(False)
3 }
4 else{
5     return(True)
6 }
7

```

6406532779238. ✓

Question Number : 8 Question Id : 640653826818 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

The following pseudocode is executed using the "Words" table. At the end of the execution, **count** stores the number of pairs of verbs such that both verbs have either the same letter count or both end with a full stop, but not both. Choose the correct code fragment to complete the pseudocode.

```

1 count = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     Move X to Table 2
5     if(X.Partofspeech == "Verb"){
6         while(Table 1 has more rows){
7             Read the first row Y in Table 1
8             Move Y to Table 3
9             if(X.Partofspeech == Y.Partofspeech){
10                 *****
11                 *****Fill the Code*****
12                 *****
13             }
14         }
15         Move all rows from Table 3 to Table 1
16     }
17 }

```

Options :

6406532779239. ✓

```
1 if(X.LetterCount == Y.LetterCount){  
2     count = count + 1  
3 }  
4 else{  
5     if(X.Word and Y.Word end with a full stop){  
6         count = count + 1  
7     }  
8 }
```

```
1 if(X.LetterCount == Y.LetterCount){  
2     count = count + 1  
3 }  
4 if(X.Word and Y.Word end with a full stop){  
5     count = count + 1  
6 }  
7  
8
```

6406532779240. ✘

```
1 if(X.Word and Y.Word end with a full stop){  
2     count = count + 1  
3 }  
4 else{  
5     if(X.LetterCount == Y.LetterCount){  
6         count = count + 1  
7     }  
8 }
```

6406532779241. ✓

```
1 if(X.LetterCount == Y.LetterCount or X.Word and Y.Word end with a full stop){  
2     count = count + 1  
3 }  
4
```

6406532779242. ✘

Question Number : 9 Question Id : 640653826823 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

In the "Shopping Bills" dataset, the procedure **countBills** counts the number of bills from Big Bazaar with total amount more than the average total bill amount. Assume that the variable **Avg** holds the value of the average total bill amount. Choose the correct code fragment(s) to complete the procedure. It is a Multiple Select Question (MSQ).

```
1 Procedure countBills()
2     Count = 0
3     while(Pile 1 has more cards){
4         Read the top card x from Pile 1
5         *****
6         ** Fill the code    **
7         *****
8         Move card X to Pile 2
9     }
10    return(count)
11 End countBills
```

Options :

```
1 if(x.ShopName == "BigBazaar"){
2     if(x.TotalBillAmount > Avg){
3         Count = Count + 1
4     }
5 }
```

6406532779253. ✓

```
1 if(x.TotalBillAmount > Avg){
2     if(x.ShopName == "BigBazaar"){
3         Count = Count + 1
4     }
5 }
```

6406532779254. ✓

```
1 if(x.TotalBillAmount > Avg or x.ShopName == "BigBazaar"){
2     Count = Count + 1
3 }
```

6406532779255. ✘

```
1 if(x.TotalBillAmount > Avg and x.ShopName == "BigBazaar"){
2     Count = Count + 1
3 }
```

6406532779256. ✓

Sub-Section Number :

5

Sub-Section Id :

640653123264

Question Shuffling Allowed :

Yes

Question Number : 10 Question Id : 640653826819 Question Type : MSQ

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

The following pseudocode is executed using the "Words" dataset. At the end of the execution, A represent number of sentences with average letter count less than the average letter count of dataset. Identify all such mistakes (if any). Assume that all statements not listed in the options below are free of errors. It is a Multiple Select Question (MSQ).

```
1 SumT = 0, CountT = 0, B = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     CountT = CountT + 1
5     SumT = SumT + X.LetterCount
6     Move X to Table 2
7 }
8 B = SumT / CountT
9 SumS = 0, Counts = 0, A = 0, C = 0
10 while(Table 2 has more rows){
11     Read the first row X in Table 2
12     Counts = Counts + 1
13     SumS = SumS + X.LetterCount
14     if(X.word ends with a full stop){
15         C = SumS / CountT
16         if(c > B){
17             A = A + 1
18         }
19         SumS = 0, Counts = 0
20     }
21     Move X to Table 1
22 }
```

Options :

6406532779243. ❌ Line 8: Incorrect expression for B

6406532779244. ✓ Line 15: Incorrect expression for C

6406532779245. ✓ Line 16: Incorrect conditional statement

6406532779246. ❌ No mistake

Question Number : 11 Question Id : 640653826822 Question Type : MSQ

Correct Marks : 5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Two words are said to be conjugate if they fulfill following conditions:

- They are different words.
- Number of vowels are same in both words.
- Number of consonants are different in both words.

For a row X in the "Words" dataset, assume that `vCount(X)` return the number of vowels in `X.Word`. At the end of the execution, `count` stores the number of conjugate pairs. Choose the correct code fragment(s) to complete the pseudocode. It is a Multiple Select Question (MSQ).

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

Options :

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

6406532779249. ✘

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

6406532779250. ✓

6406532779251. ✘

```

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

```

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

6406532779252. ✓

Sub-Section Number :

6

Sub-Section Id :

640653123265

Question Shuffling Allowed :

Yes

Question Number : 12 Question Id : 640653826820 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

Consider the procedure **mSum** as shown below.

```

1 Procedure mSum(A, B, C)
2     Sum = 0
3     if(A >= C and A >= B){
4         Sum = B + C
5     }
6     else{
7         if(B >= C and B >= A){
8             Sum = A + C
9         }
10    else{
11        Sum = A + B
12    }
13 }
14 return(Sum)
15 End mSum
```

What will be the value of **mSum(4,4,2)** ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Sub-Section Number : 7

Sub-Section Id : 640653123266

Question Shuffling Allowed : Yes

Question Number : 13 **Question Id :** 640653826821 **Question Type :** SA

Correct Marks : 5

Question Label : Short Answer Question

The following pseudocode is executed using a dataset similar to the "Words" dataset, based on the following paragraph.

"Surrounded by nature, Susan often takes a stroll, savoring the soothing sounds of chirping birds. Rustlings in the trees suggest squirrels beginning their day, searching for sustenance. Surely, the beauty of a sunrise holds unparalleled magic."

```
1 count = 0, flag = True
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     Move X to Table 2
5     if(flag){
6         if(1st letter of x.word == 's'){
7             if(2nd letter of x.word == 'u'){
8                 count = count + 1
9             }
10        }
11    }
12    if(x.word ends with full stop){
13        flag = False
14    }
15 }
```

What would be the value of **count** at the end of the execution of the above pseudocode?

Assume that upper case and lower case are ignored during comparison of letters.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sub-Section Number :	8
Sub-Section Id :	640653123267
Question Shuffling Allowed :	Yes

Question Number : 14 Question Id : 640653826825 Question Type : MCQ

Correct Marks : 5

Question Label : Multiple Choice Question

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

```

1 count = 0
2 while(Table 1 has more rows){
3     Read the first row X in Table 1
4     Move X to Table 2
5     while(Table 1 has more rows){
6         Read the first row Y in Table 1
7         Move Y to Table 3
8         count = count + findPair(X, Y)
9     }
10    Move all rows from Table 3 to Table 1
11 }
12 Procedure findPair(X, Y)
13     A = False, B = False
14     if(X.Gender == Y.Gender){
15         A = True
16     }
17     if(X.CityTown == Y.CityTown){
18         B = True
19     }
20     if((A and B) or (not A and not B)){
21         return(1)
22     }
23     return(0)
24 End findPair

```

Options :

6406532779261. ❌ **count** represents the number of pairs of students having either the same gender or from the same city or both.

6406532779262. ❌ **count** represents the number of pairs of students having the same gender and from the same city.

6406532779263. ✓ **count** represents the number of student pairs who either share the same gender and come from the same city, or who share neither the same gender nor the same city.

6406532779264. ❌ **count** represents the number of pairs of students having the same gender but not from the same city.

Sem1 English1

Section Id :	64065359296
Section Number :	2
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	24
Number of Questions to be attempted :	24
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 :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123268
Question Shuffling Allowed :	No

Question Number : 15 Question Id : 640653826827 Question Type : MCQ

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 :

6406532779269. ✓ YES

6406532779270. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653123269
Question Shuffling Allowed :	No

Question Id : 640653826828 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Question Numbers : (16 to 25)

Question Label : Comprehension

Read the following passage and answer the given subquestions.

User traffic on Twitter has slowed since the launch of Meta's text-based platform Threads, which has already surpassed 100 million sign-ups since its debut last week.

Threads launched in the U.S. on Wednesday and is being touted by Meta executives like Instagram chief Adam Mosseri as a more positive "public square" for communities "that never really embraced Twitter." So far, users seem to be on board.

"Threads reached 100 million sign ups over the weekend. That's mostly organic demand and we haven't even turned on many promotions yet. Can't believe it's only been 5 days!" Meta CEO Mark Zuckerberg said in a post Monday.

Twitter appears to have taken a hit. Matthew Prince, CEO of Cloudflare, shared a screenshot to Twitter Sunday showing that traffic on the platform was "tanking."

According to Similarweb, a data company that specializes in web analytics, web traffic to Twitter was down 5% for the first two full days. Threads was generally available compared with the previous week. The company said Twitter's web traffic is down 11% compared with the same days in 2022.

Twitter responded to CNBC's request for comment with an automated response. Meta didn't offer additional comment beyond Zuckerberg's post.

Source: cnbc.com - Twitter traffic is 'tanking' as Meta's Threads hits 100 million users - Ashley Capoot

Sub questions

Question Number : 16 Question Id : 640653826829 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

What is the synonym of the word *surpassed*?

Options :

6406532779271. ✓ Exceed

6406532779272. ✗ Pass through

6406532779273. ✗ Go under

6406532779274. ✗ Come second to

Question Number : 17 Question Id : 640653826830 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Choose an appropriate option to replace the word *touted*.

Options :

6406532779275. ✗ Changed paths

6406532779276. ✓ Promoted

6406532779277. ✘ Criticized

6406532779278. ✘ Edited

Question Number : 18 Question Id : 640653826831 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

That's mostly organic demand and we haven't even turned on many promotions yet.

What meaning do the phrases *organic demand* and *[not many] promotions* convey here?

Options :

6406532779279. ✘ Meta has been mindful of climate change in meeting demands.

6406532779280. ✓ The company Meta hasn't tried many marketing tactics to popularize Threads.

6406532779281. ✘ Meta has withheld any promotions to employees in its company.

Question Number : 19 Question Id : 640653826832 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Twitter appears to have taken a hit.

What is the meaning of the phrase *taken a hit*?

Options :

6406532779282. ✓ Be affected badly

6406532779283. ✘ Be popular among its users

6406532779284. ✘ Has made a huge profit

Question Number : 20 Question Id : 640653826833 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

What is the synonym of the word *tanking*?

Options :

6406532779285. ✘ Shooting

6406532779286. ✘ Weighing

6406532779287. ✘ Grateful

6406532779288. ✓ Failing

Question Number : 21 Question Id : 640653826834 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

The company said Twitter's web traffic is down 11% compared with the same days in 2022

What is the meaning of the phrase *down 11%*?

Options :

6406532779289. ✘ The traffic has reduced to 11%

6406532779290. ✘ The traffic has reduced from 11%

6406532779291. ✓ The traffic has reduced by 11%

Question Number : 22 Question Id : 640653826835 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

What is the meaning of the phrase *automated response*?

Options :

6406532779292. ✓ Predetermined reply

6406532779293. ✘ Responsible driving of automobiles

6406532779294. ✘ Highly private message

Question Number : 23 Question Id : 640653826836 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Meta didn't offer additional comment beyond Zuckerberg's post.

What part of speech is the word *beyond* here?

Options :

6406532779295. ✘ Adjective

6406532779296. ✘ Interjection

6406532779297. ✓ Preposition

6406532779298. ✘ Adverb

Question Number : 24 Question Id : 640653826837 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

...users seem to be on board.

What is the meaning of the phrase *on board* here?

Options :

6406532779299. ✘ Enter a vehicle

6406532779300. ✘ Be available

6406532779301. ✓ Agree with

Question Number : 25 Question Id : 640653826838 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

What is the meaning of the word *debut*?

Options :

6406532779302. ✘ Reply in opposite

6406532779303. ✓ First appearance

6406532779304. ✘ Alternative

6406532779305. ✩ Momentum

Sub-Section Number :

3

Sub-Section Id :

640653123270

Question Shuffling Allowed :

Yes

Question Number : 26 Question Id : 640653826839 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the word without an "ii" sound from the following.

Options :

6406532779306. ✩ Meet

6406532779307. ✩ Lead

6406532779308. ✓ Wet

6406532779309. ✩ Wheat

Question Number : 27 Question Id : 640653826840 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the word with an "oo" sound from the following.

Options :

6406532779310. ✓ Court

6406532779311. ✩ Loot

6406532779312. ✩ Cat

6406532779313. ✩ Feat

Question Number : 28 Question Id : 640653826841 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Which semi-vowel occurs in the transition between the words 'me' and 'off' in the sentence 'he pushed me off the chair'?

Options :

6406532779314. ✩ /w/

6406532779315. ✓ /y/

Question Number : 29 Question Id : 640653826842 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Which among the following is a word without a diphthong?

Options :

6406532779316. ✩ Mouth

6406532779317. ✘ South

6406532779318. ✘ Pout

6406532779319. ✓ Moot

Question Number : 30 Question Id : 640653826843 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Pick the odd one out based on the initial sound: near, dear, tear, gear.

Options :

6406532779320. ✘ Near

6406532779321. ✘ Dear

6406532779322. ✘ Tear

6406532779323. ✓ Gear

Question Number : 31 Question Id : 640653826844 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Pick the odd one out based on the initial sound: peat, beat, clear, pear.

Options :

6406532779324. ✘ Peat

6406532779325. ✘ Beat

6406532779326. ✓ Clear

6406532779327. ✘ Pear

Question Number : 32 Question Id : 640653826845 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Select the option which identifies the noun in the sentence:

Raghav is going for a walk.

Options :

6406532779328. ✓ Raghav

6406532779329. ✘ Going

6406532779330. ✘ For

Question Number : 33 Question Id : 640653826846 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the part of speech of the underlined word:

They were quick to throw up their hands in surrender.

Options :

6406532779331. ✘ Noun

6406532779332. ✓ Pronoun

6406532779333. ✘ Verb

6406532779334. ✘ Conjunction

Question Number : 34 Question Id : 640653826847 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Complete sentence by choosing the correct form of the verb given in brackets:

They ____ (buy) the house last year.

Options :

6406532779335. ✘ Buy

6406532779336. ✓ Bought

6406532779337. ✘ Will buy

6406532779338. ✘ Buying

Question Number : 35 Question Id : 640653826848 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the part of speech of the underlined word:

The house at the end of the street was painted yellow.

Options :

6406532779339. ✓ Adjective

6406532779340. ✘ Adverb

6406532779341. ✘ Verb

6406532779342. ✘ Conjunction

Question Number : 36 Question Id : 640653826849 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the adverb in the following sentence:

Joseph ran faster than everyone else in the relay team.

Options :

6406532779343. ✘ Joseph

6406532779344. ✘ Ran

6406532779345. ✓ Faster

Question Number : 37 Question Id : 640653826850 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the appropriate option:

The fruits are _ the fridge.

Options :

6406532779347. ✎ At

6406532779348. ✎ For

6406532779349. ✓ In

6406532779350. ✎ None of these

Question Number : 38 Question Id : 640653826851 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the conjunction in the following sentence:

'He was an excellent orator and an even better salesman.'

Options :

6406532779351. ✎ He

6406532779352. ✎ Was

6406532779353. ✎ Excellent

6406532779354. ✓ And

Question Number : 39 Question Id : 640653826852 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the correct option:

He gave me _ book on my birthday.

Options :

6406532779355. ✎ An

6406532779356. ✓ A

6406532779357. ✎ The

6406532779358. ✎ None of these

Question Number : 40 Question Id : 640653826853 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the correct option:

___ Sun rises in the east.

Options :

6406532779359. ✘ A

6406532779360. ✘ An

6406532779361. ✓ The

6406532779362. ✘ None of these

Question Number : 41 Question Id : 640653826854 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the correct option:

There were ___ many people in the auditorium.

Options :

6406532779363. ✘ To

6406532779364. ✘ Two

6406532779365. ✓ Too

6406532779366. ✘ Large

Question Number : 42 Question Id : 640653826855 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

A colleague in your office tells you, '*Please keep me in the loop while I'm on my vacation.*' What does the underlined part mean?

Options :

6406532779367. ✘ The colleague wants you not to disturb them.

6406532779368. ✘ The colleague wants you to call them.

6406532779369. ✓ The colleague wants you to keep them updated on events at work.

6406532779370. ✘ The colleague wants you to call them for your wedding.

Question Number : 43 Question Id : 640653826856 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the separable phrasal verb out of the following options.

Options :

6406532779371. ✘ Hit on

6406532779372. ✘ Keep at

6406532779373. ✘ Stand for

6406532779374. ✓ Call by

Question Number : 44 Question Id : 640653826857 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Fill in the blank with the appropriate option.

The meeting _____ just before dinner.

Options :

6406532779375. ✘ Brought out

6406532779376. ✓ Broke up

6406532779377. ✘ Broke into

6406532779378. ✘ Broke out

Question Number : 45 Question Id : 640653826858 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the correct option.

_____ I ask a question? (Context: permission and formal)

Yes, of course.

Options :

6406532779379. ✘ Must

6406532779380. ✓ May

6406532779381. ✘ Should

6406532779382. ✘ Will

Sub-Section Number :

4

Sub-Section Id :

640653123271

Question Shuffling Allowed :

No

Question Id : 640653826859 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (46 to 50)

Question Label : Comprehension

Match Column A with suitable options in Column B. (Hint: Word collocation)

A	B
1. Bank	a. Temper
2. Strong	b. Account
3. Lazy	c. Ruins
4. Short	d. Afternoon
5. Ancient	e. Coffee

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 46 Question Id : 640653826860 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Bank _____

Options :

6406532779383. ✘ Temper

6406532779384. ✓ Account

6406532779385. ✘ Ruins

6406532779386. ✘ Afternoon

6406532779387. ✘ Coffee

Question Number : 47 Question Id : 640653826861 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Strong _____

Options :

6406532779388. ✘ Temper

6406532779389. ✘ Account

6406532779390. ✘ Ruins

6406532779391. ✘ Afternoon

6406532779392. ✓ Coffee

Question Number : 48 Question Id : 640653826862 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Lazy_____

Options :

- 6406532779393. ✘ Temper
- 6406532779394. ✘ Account
- 6406532779395. ✘ Ruins
- 6406532779396. ✓ Afternoon
- 6406532779397. ✘ Coffee

Question Number : 49 Question Id : 640653826863 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Short_____

Options :

- 6406532779398. ✓ Temper
- 6406532779399. ✘ Account
- 6406532779400. ✘ Ruins
- 6406532779401. ✘ Afternoon
- 6406532779402. ✘ Coffee

Question Number : 50 Question Id : 640653826864 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Ancient_____

Options :

- 6406532779403. ✘ Temper
- 6406532779404. ✘ Account
- 6406532779405. ✓ Ruins
- 6406532779406. ✘ Afternoon
- 6406532779407. ✘ Coffee

Question Id : 640653826865 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (51 to 55)

Question Label : Comprehension

Read the following telephonic conversation and fill in the blanks with appropriate responses:

Jay – Hello? (i)_____

Prateek – Hello. Yes, I am Prateek Agarwal. (ii)_____

Jay – Prateek, it's me Jay Roy from college. Remember?

Prateek – Hey Jay, (iii)_____ It has been such a long time.

Jay – I am doing good. Yes, four long years after college. I got your contact number from Piyush.
(iv)_____

Prateek – Yes, yes, I do remember him. Wasn't he the one who topped our engineering batch last year?

Jay – Yes, that's him! He's in Boston working for a big MNC now.

Prateek- (v)_____

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 51 Question Id : 640653826866 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Complete blank (i) with an appropriate response.

Options :

6406532779408. ✘ Is this Prateek Agarwal's house?

6406532779409. ✘ Is this Prateek Agarwal's family?

6406532779410. ✓ Am I talking to Prateek Agarwal?

6406532779411. ✘ Is this Prateek Agarwal's son?

Question Number : 52 Question Id : 640653826867 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Complete blank (ii) with an appropriate response.

Options :

6406532779412. ✘ May I come in?

6406532779413. ✘ May I drop you home?

6406532779414. ✓ May I ask who is speaking?

6406532779415. ✘ May I know why you are here?

Question Number : 53 Question Id : 640653826868 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Complete blank (iii) with an appropriate response.

Options :

6406532779416. ✘ Could you bring me the office file?

6406532779417. ✘ Is it a new project?

6406532779418. ✘ Where are you going?

6406532779419. ✓ How are you?

Question Number : 54 Question Id : 640653826869 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Complete blank (iv) with an appropriate response.

Options :

6406532779420. ✘ When will you come home?

6406532779421. ✓ Do you remember him?

6406532779422. ✘ Did you have dinner?

6406532779423. ✘ Did you meet him?

Question Number : 55 Question Id : 640653826870 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Complete blank (v) with an appropriate response.

Options :

6406532779424. ✓ That is amazing news!

6406532779425. ✘ Thank you!

6406532779426. ✘ You are welcome!

6406532779427. ✘ I am sorry!

Sem1 Maths1

Section Id :	64065359297
Section Number :	3
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
Section Marks :	40
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123272

Question Shuffling Allowed :

No

Question Number : 56 Question Id : 640653826871 Question Type : MCQ

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 :

6406532779428. ✓ YES

6406532779429. ✗ NO

Question Number : 57 Question Id : 640653826872 Question Type : MCQ

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 NAT type question, enter only one right answer even if you get multiple answers for that particular question.
- Notations:
 - \mathbb{R} = Set of real numbers
 - \mathbb{Q} = Set of rational numbers
 - \mathbb{Z} = Set of integers
 - \mathbb{N} = Set of natural numbers
- The set of natural numbers includes 0.

Options :

6406532779430. ✓ Instructions has been mentioned above.

6406532779431. ✗ This Instructions is just for a reference & not for an evaluation.

Sub-Section Number :

2

Sub-Section Id :

640653123273

Question Shuffling Allowed :

No

Question Id : 640653826873 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Question Numbers : (58 to 60)

Question Label : Comprehension

Suppose A is the set of even positive integers less than or equal to 20 and B is the set of positive integers less than 20 which are divisible by 6.

Consider the following relations from A to B .

- $R_1 = \{(a, b) \mid a \in A, b \in B, a \text{ is a factor of } b\}$
- $R_2 = \{(a, b) \mid a \in A, b \in B, (a + b) \bmod 10 = 0\}$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 58 Question Id : 640653826874 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

What is the cardinality of $R_1 \cap R_2$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Question Number : 59 Question Id : 640653826875 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

What is the cardinality of R_1 ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

9

Question Number : 60 Question Id : 640653826876 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements are correct?

Options :

6406532779434. ✓ R_1 is transitive.

6406532779435. ✗ R_2 is transitive.

6406532779436. ✓ R_2 is not symmetric.

6406532779437. ✓ (2,18) is an element in R_2 .

Question Id : 640653826878 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (61 to 62)

Question Label : Comprehension

Suppose that P_1 and P_2 are two different points in a Cartesian coordinate system, with P_1 located at (3,-2) and P_2 at (-1, 5). Let L_1 and L_2 be lines passing through P_1 and P_2 respectively.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 61 Question Id : 640653826879 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

If the x -intercept of the line L_1 is 1

and the angle between L_1 and L_2 is $\frac{\pi}{2}$ then

Determine the coordinates of the point where
 L_1 and L_2 intersect.

Options :

6406532779439. ✗ $(\frac{5}{2}, \frac{7}{2})$

6406532779440. ✗ (5, 11)

6406532779441. ✗ (-5, 7)

6406532779442. ✓ $(\frac{-5}{2}, \frac{7}{2})$

Question Number : 62 Question Id : 640653826880 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

If the x -intercept of the line L_1 is 1 and y -intercept of the line L_2 is -1 and If θ is the angle between L_1 and L_2 , then $\tan \theta$ is equal to

Options :

6406532779443. ✘ $\frac{-5}{7}$

6406532779444. ✓ $\frac{5}{7}$

6406532779445. ✘ $\frac{5}{3}$

6406532779446. ✘ $\frac{4}{7}$

Sub-Section Number :

3

Sub-Section Id :

640653123274

Question Shuffling Allowed :

Yes

Question Number : 63 Question Id : 640653826877 Question Type : SA

Correct Marks : 4

Question Label : Short Answer Question

A company opened recruitment for the post of data analyst. 500 candidates have applied for the post. 285 candidates are proficient in Python programming, 195 candidates are proficient in C programming, 115 candidates are proficient in Java programming, 45 candidates are proficient in Python and Java, 70 candidates are proficient in C and Python, 50 candidates are proficient in C and Java and 50 candidates don't know any of the programming languages. Find the number of candidates who are proficient in exactly one of the three programming languages.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

325

Question Number : 64 Question Id : 640653826881 Question Type : SA

Correct Marks : 4

Question Label : Short Answer Question

Radhika has been tracking her monthly expenses and the corresponding number of outings she has with friends. Here's a table with two rows representing the amount spent on entertainment and the corresponding number of outings. Let's consider y to be the amount spent and x to be the corresponding number of outings. She fitted a best fit line to her data and obtained the equation $y = 4x + 15$. What is the value of SSE (Sum of Squared Errors) in relation to the best fit line?

Amount spent	37	44	53	50	57	64
Number of outings	5	7	9	8	10	12

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

23

Sub-Section Number : 4

Sub-Section Id : 640653123275

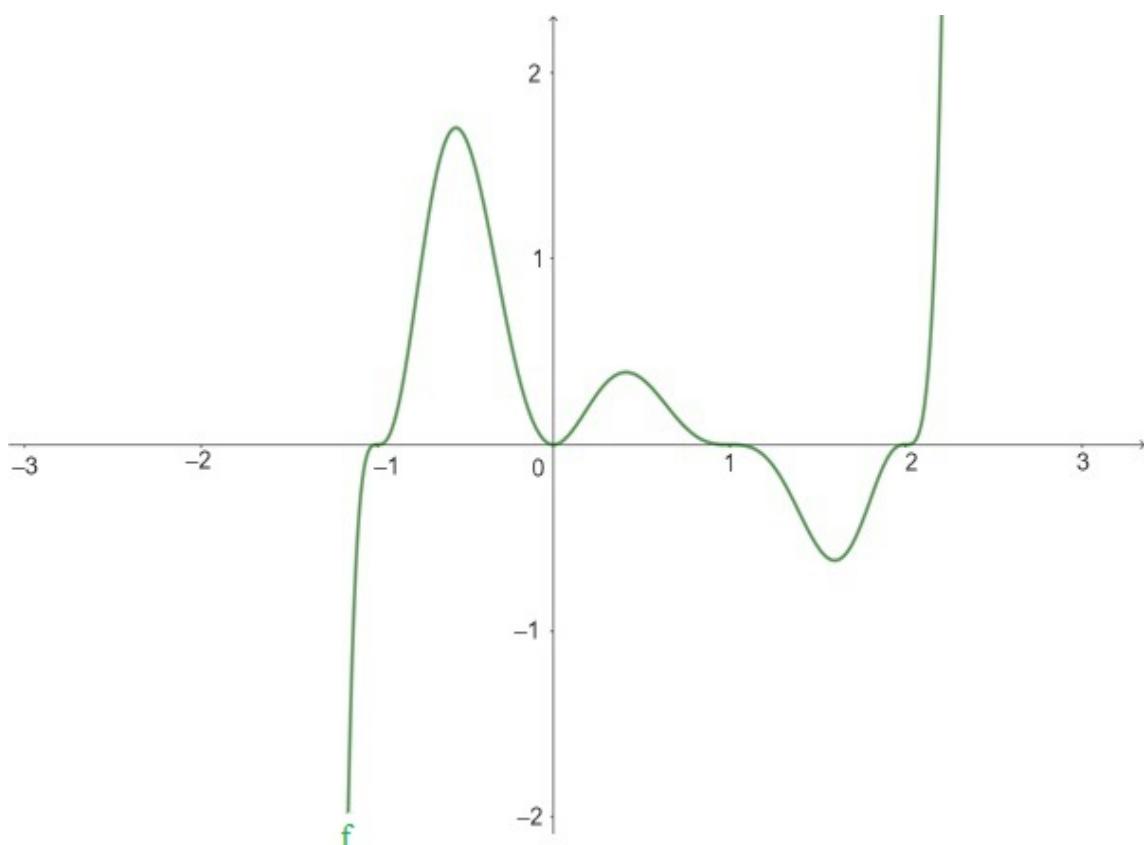
Question Shuffling Allowed : Yes

Question Number : 65 **Question Id :** 640653826882 **Question Type :** MSQ

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

Question Label : Multiple Select Question

Consider the following polynomial $p(x)$ whose graph is given below:-



Which of the following options is/are correct?

Options :

6406532779448. ✘ Multiplicity of -1 and 1 must be the same.

6406532779449. ✓ $p(x)$ is an increasing function in the interval $(2, \infty)$.

6406532779450. ✓ $p(x)$ tends to infinity as x tends to infinity.

6406532779451. ✘ The number of turning points is 5.

Question Number : 66 Question Id : 640653826883 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the parabola $y = x^2 + 4x + 12$. Which of the following option(s) are true?

Options :

6406532779452. ✘ The co-ordinates of vertex is $(-8, 2)$.

6406532779453. ✓ The given equation attains its minima at $x = -2$.

6406532779454. ✓ y -intercept of parabola is 12.

6406532779455. ✓ The minimum value for the given equation is 8

Question Number : 67 Question Id : 640653826885 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the polynomials $p(x) = (2x - 1)(x - 5)q(x)$ where the zeros of $p(x)$ with multiplicity 1 are $\frac{1}{2}, 5, 2, \frac{3}{5}$. Which of the following option(s) are true for $q(x)$?

Options :

6406532779460. ✘ $q(x)$ is a cubic polynomial.

6406532779461. ✓ $q(x)$ is a quadratic polynomial.

6406532779462. ✓ $q(x)$ has two distinct zeros.

6406532779463. ✘ $q(x)$ does not have any real zeros.

Sub-Section Number :

5

Sub-Section Id :

640653123276

Question Shuffling Allowed :

Yes

Question Number : 68 Question Id : 640653826884 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the quadratic equation $ax^2 + bx + c = 0$ where a, b, c are integers with $a \neq 0$.

Which of the following option(s) are true?

Options :

6406532779456. ✓ If $b^2 - 4ac > 0$ and a perfect square then there exists a rational root of the quadratic equation.

6406532779457. ✗ If $b^2 - 4ac > 0$ and not a perfect square then there exists a rational root of the quadratic equation.

6406532779458. ✗ If $b^2 - 4ac < 0$ and a perfect square then there exists a rational root of the quadratic equation.

6406532779459. ✗ If $b^2 - 4ac < 0$ and not a perfect square then there exists a rational root of the quadratic equation.

Sem1 Statistics1

Section Id :	64065359298
Section Number :	4
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	14
Number of Questions to be attempted :	14
Section Marks :	40
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123277
Question Shuffling Allowed :	No

Question Number : 69 Question Id : 640653826886 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

Options :

6406532779464. ✓ YES

6406532779465. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653123278

Question Shuffling Allowed : Yes

Question Number : 70 Question Id : 640653826887 Question Type : MSQ

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

Figure Q.1 shows the sales distribution of the number of bottles of different types of soft drinks in a shop on a particular day.

Sales distribution of number of bottles of different soft drinks

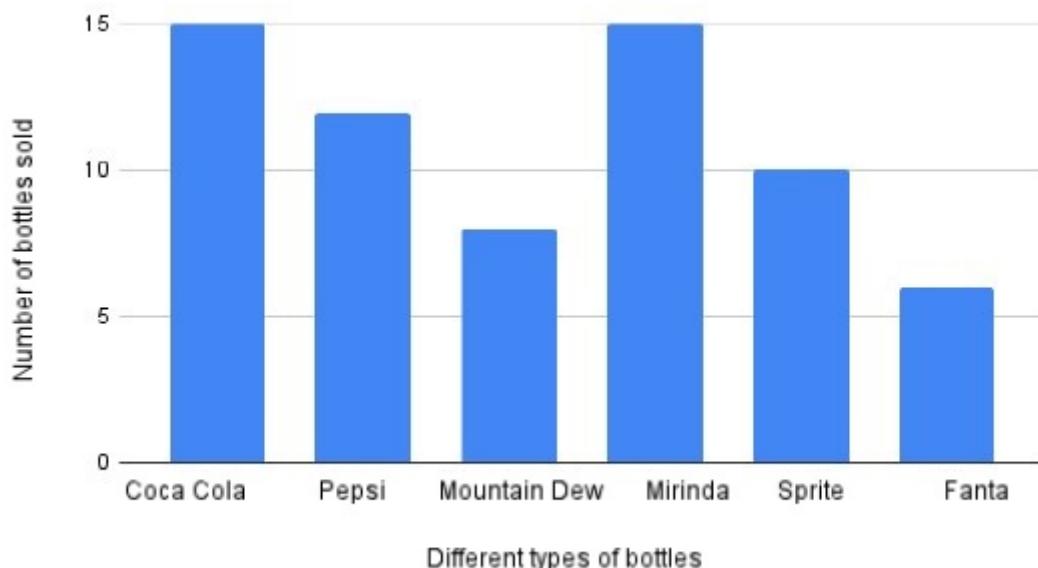


Figure Q.1: Sales Distribution of different types of bottles

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

Options :

6406532779466. ✗ Median of the data will be either "Mountain Dew" or "Mirinda".

6406532779467. ✓ The data is bimodal.

6406532779468. ✗ Mode is not defined for the given data.

6406532779469. ✓ Median is not defined for the given data.

Question Number : 71 Question Id : 640653826892 Question Type : MSQ

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

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

Options :

6406532779479. ❌ Structured data does not follow a predefined format, whereas unstructured data does.

6406532779480. ❌ Recording of the data over time comes under Cross Sectional data.

6406532779481. ✓ Time (in minutes) taken by a student to reach school from his home is a continuous variable.

6406532779482. ✓ Comments on a youtube video comes under the unstructured data.

Sub-Section Number : 3

Sub-Section Id : 640653123279

Question Shuffling Allowed : No

Question Id : 640653826888 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (72 to 73)

Question Label : Comprehension

Table Q.1 represents the number of books read by five students in a year.

Students	Number of books	Relative frequency
Sunil	15	x
Prateek		y
Kanika	6	0.1
Kunal	15	
Sonakshi		z

Table Q.1

Based on the above data, answer the given subquestions

Sub questions

Question Number : 72 Question Id : 640653826889 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

What is the 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 :

0.23 to 0.27

Question Number : 73 Question Id : 640653826890 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

If the number of books read by Prateek is same as the number of books read by Sonakshi, then find the value of $y + z$.

Options :

6406532779471. ✗ 0.2

6406532779472. ✗ 0.24

6406532779473. ✓ 0.4

6406532779474. ✗ Insufficient information.

Question Id : 640653826902 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (74 to 75)

Question Label : Comprehension

Amit took a survey of a group of 32 college going students (consisting only of male and female students) to know whether they own a smartphone or not and he got to know the following information.

- (i). There are 3 males who do not own a smartphone.
- (ii). There are total 27 females.
- (iii). There are total 26 students who do not own a smartphone.

Based on the above information, answer the given subquestions.

Sub questions

Question Number : 74 Question Id : 640653826903 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Create a two-way contingency table and find out the number of males in this group who own a smartphone?

Options :

6406532779496. ✗ 0

6406532779497. ✓ 2

6406532779498. ✗ 3

6406532779499. ✗ 4

Question Number : 75 Question Id : 640653826904 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Choose the correct option(s) after making a two-way contingency table.

Options :

6406532779500. ✘ There are 40% of the males who do not own a smartphone.

6406532779501. ✓ There are 14.81% of the females who own a smartphone.

6406532779502. ✓ 18.75% of the total students own a smartphone.

6406532779503. ✘ We can calculate covariance to find the association between "Gender" and "Ownership of the smartphone".

Sub-Section Number : 4

Sub-Section Id : 640653123280

Question Shuffling Allowed : Yes

Question Number : 76 Question Id : 640653826891 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following three statements:

Statement 1 : Election symbol is a categorical variable.

Statement 2 : Election symbol has a nominal scale of measurement.

Statement 3 : Number of votes received by a candidate is a continuous variable.

Choose the correct option from the following:

Options :

6406532779475. ✘ Statement-2 and statement-3 both are correct.

6406532779476. ✘ Statement-1 and statement-3 both are correct.

6406532779477. ✓ Statement-1 and statement-2 both are correct.

6406532779478. ✘ All statements are correct.

Sub-Section Number : 5

Sub-Section Id : 640653123281

Question Shuffling Allowed : Yes

Question Number : 77 Question Id : 640653826893 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Choose the correct statement from the following:

Options :

6406532779483. ✘ Descriptive statistics is concerned with drawing of conclusions from the sample data.

6406532779484. ✘ Inferential statistics is concerned with describing and summarizing the data.

6406532779485. ✘ Inferential statistics doesn't require sample data.

6406532779486. ✓ All statements are incorrect.

Question Number : 78 Question Id : 640653826905 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the following four images of the Scatter plot.

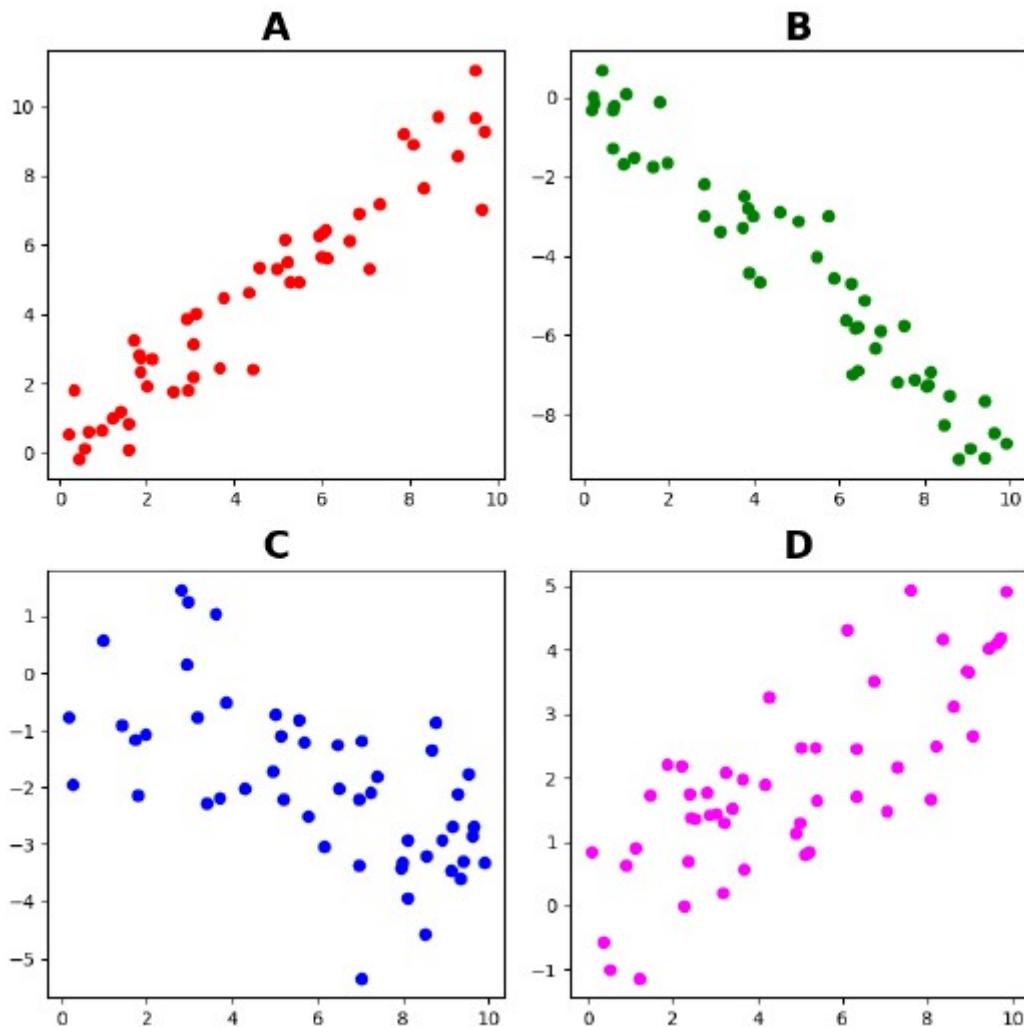


Figure Q.2 : Scatterplots

Please select the option that will represent the correlation values arranged in ascending order.

Options :

6406532779504. ❌ $A < B < C < D$

6406532779505. ✓ $B < C < D < A$

6406532779506. ❌ $B < A < C < D$

6406532779507. ❌ $A < D < C < B$

Sub-Section Number :

6

Sub-Section Id :

640653123282

Question Shuffling Allowed :

Yes

Question Number : 79 Question Id : 640653826894 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

If the mean of the observations x_1, x_2, \dots, x_8 is 6 and the mean of observations x_8, x_9, \dots, x_{15} is 13. Given that $x_8 = 3$, what will be the mean of the observations x_1, x_2, \dots, x_{15} ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

9.90 to 9.96

Question Number : 80 Question Id : 640653826906 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

Find the population covariance between X and Y for the dataset given in Table Q.2.

X	-3	-4	-5	5	4	3
Y	10	5	3	3	5	10

Table Q.2

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Sub-Section Number : 7

Sub-Section Id : 640653123283

Question Shuffling Allowed : No

Question Id : 640653826895 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (81 to 83)

Question Label : Comprehension

The marks (out of 100) scored by Manoj in a semester exam are given as 60, 70, 65, 75, 80. If Nitin has scored 5 marks more than Manoj in each subject.

Based on the given information, answer the subquestions.

Sub questions

Question Number : 81 Question Id : 640653826896 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

Find the mean of the marks scored by Nitin.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

75

Question Number : 82 Question Id : 640653826897 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

If the teacher wants to give the marks out of 50 and modify the marks for every student as

$$\text{Modified marks} = \frac{\text{Marks} \times 50}{100}$$

What is the population variance of the modified marks scored by Manoj?

Options :

6406532779489. ✘ 25

6406532779490. ✘ 50

6406532779491. ✓ 12.5

6406532779492. ✘ Cannot determine

Question Number : 83 Question Id : 640653826898 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

Calculate the correlation coefficient between the marks scored by Manoj and Nitin.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Sub-Section Number : 8

Sub-Section Id : 640653123284

Question Shuffling Allowed : No

Question Id : 640653826899 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (84 to 85)

Question Label : Comprehension

The stem and leaf diagram below shows the ages (in years) of a group of people attending the Paradox event.

Stem	Leaf
1	4 5 8
2	1 2 4
3	1 1 2 3 3 3 4

Here, 1 | 4 represents 14 years.

Based on the above data, answer the given subquestions

Sub questions

Question Number : 84 Question Id : 640653826900 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

What will be the median age for this group?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

31

Question Number : 85 Question Id : 640653826901 Question Type : SA

Correct Marks : 1

Question Label : Short Answer Question

How many people are above 23 years of Age in the given stem and leaf plot?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

8

Sub-Section Number :

9

Sub-Section Id :

640653123285

Question Shuffling Allowed :

Yes

Question Number : 86 Question Id : 640653826907 Question Type : SA

Correct Marks : 1

Question Label : Short Answer Question

The mode of the observations x_1, x_2, \dots, x_n is 40. What is the mode of the observations $2x_1 + 10, 2x_2 + 10, \dots, 2x_n + 10$?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

90

Sub-Section Number : 10

Sub-Section Id : 640653123286

Question Shuffling Allowed : Yes

Question Number : 87 Question Id : 640653826908 Question Type : MSQ

Correct Marks : 1 Max. Selectable Options : 0

Question Label : Multiple Select Question

Choose the correct option(s):

Options :

6406532779510. ✓ 25th percentile is known as the first quartile.

6406532779511. ✗ Median is the 60th percentile of any data.

6406532779512. ✗ Inter-quartile range is defined as the difference between third quartile and second quartile.

6406532779513. ✓ We need to arrange the data in ascending order to calculate the percentile.

Sem2 Intro to Python

Section Id : 64065359299

Section Number : 5

Section type : Online

Mandatory or Optional : Mandatory

Number of Questions : 15

Number of Questions to be attempted : 15

Section Marks : 51

Display Number Panel : Yes

Section Negative Marks : 0

Group All Questions : No

Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123287
Question Shuffling Allowed :	No

Question Number : 88 Question Id : 640653826909 Question Type : MCQ

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 :

6406532779514. ✓ YES

6406532779515. ✗ NO

Question Number : 89 Question Id : 640653826910 Question Type : MCQ

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

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

Input or Output

0
2
4
6
8

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

Line Numbers ← → Code/Input/Output

1	0
2	2
3	4
4	6
5	8

Useful information

range

Sample behaviour of the range function:

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

// operator

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

NAT → integer

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

Options :

6406532779516. ✓ Useful Data has been mentioned above.

6406532779517. ❌ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number :

2

Sub-Section Id :

640653123288

Question Shuffling Allowed :

Yes

Question Number : 90 Question Id : 640653826911 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider a program that accepts a word as input from the user and prints the number of punctuation marks in it. You can assume that the input will be given in lower case.

Here we are considering only the given punctuation marks(‘‘, ‘‘, ‘‘, ‘‘, ‘‘).

Snippet-1

```
word = input()
count = 0
punctuation_marks = [',', '-', '.', ':', ';']
for char in word:
    if char in punctuation_marks:
        count += 1
print(count)
```

Snippet-2

```
word = input()
count = 0
for char in word:
    if char in ',.-.:;':
        count += 1
print(count)
```

Which of these two snippets is correct?

Options :

6406532779518. ❌ Only snippet-1 is correct

6406532779519. ❌ Only snippet-2 is correct

6406532779520. ✓ Both snippets are correct

6406532779521. ❌ Both snippets are wrong

Question Number : 91 Question Id : 640653826912 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

We wish to print the following pattern:

```
00000  
01110  
01110  
01110  
00000
```

Which of these two snippets is correct?

Snippet-1

```
n = 5  
zero = '0' # len(zero) == 1  
one = '1' # len(one) == 1  
for i in range(n):  
    if i == 0 or i == n - 1:  
        print(zero * n)  
    else:  
        print(zero + one * (n - 2) + zero)
```

Snippet-2

```
n = 5  
zero = '0' # len(zero) == 1  
one = '1' # len(one) == 1  
for i in range(n):  
    for j in range(n):  
        if j == 0 or j == n - 1:  
            print(one, end = '') # end argument is an empty string  
        else:  
            print(zero, end = '') # end argument is an empty string  
    print()
```

Useful information for solving this problem:

Input

```
print('1', end = '') # end argument is an empty string
print('2', end = '') # end argument is an empty string
print()
print('3' * 5)
```

Output

```
12
33333
```

Options :

- 6406532779522. ✓ Only snippet-1 is correct
- 6406532779523. ✗ Only snippet-2 is correct
- 6406532779524. ✗ Both snippets are correct
- 6406532779525. ✗ Both snippets are wrong

Question Number : 92 Question Id : 640653826913 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

What is the output of following snippet of code?

Snippet-1

```
s = 3 >= 2 >= 1
print(type(s))
```

Options :

- 6406532779526. ✓ <class 'bool'>
- 6406532779527. ✗ <class 'int'>
- 6406532779528. ✗ <class 'str'>
- 6406532779529. ✗ <class 'list'>

Sub-Section Number :

3

Sub-Section Id :

640653123289

Question Shuffling Allowed :

Yes

Question Number : 93 Question Id : 640653826914 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following snippet:

```
price = float(input())
if price <= 100:
    print("Affordable range")
elif price <= 500:
    print("Mid-range")
elif price <= 1000:
    print("Higher range")
else:
    print("Luxury range")
```

Select all inputs for which the output is:

Luxury range

Options :

6406532779530. ✘ 777

6406532779531. ✓ 1111

6406532779532. ✓ 3333

6406532779533. ✘ 999

Question Number : 94 Question Id : 640653826915 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Select all inputs for which the code below prints the value True .

```
sentence = input()
space = ' ' # one space between the quotes
n = len(sentence)
# all letters in vowels are in lower case
vowels = 'aeiou'

surprise = True
for char in vowels:
    if char not in sentence:
        surprise = False
        break

print(surprise)
```

Each input is a sentence with a space between consecutive words, all of which are in lower case.

Options :

6406532779534. ✘ happy life

6406532779535. ✘ learn python

6406532779536. ✓ auto industries

6406532779537. ✓ quaint house

Sub-Section Number :

4

Sub-Section Id :

640653123290

Question Shuffling Allowed :

Yes

Question Number : 95 Question Id : 640653826916 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

What is the output of the following snippet of code? Enter an integer as your answer.

```
str1 = "Paradox"  
str2 = "Celebration"  
str3 = str1 + " " + str2[:6] #There is single space in between quote  
print(len(str3))
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

14

Question Number : 96 Question Id : 640653826917 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

What is the output of the following snippet of code? Enter an integer as your answer.

```
x = 15  
y = 20  
if x != y:  
    result = abs(x - y)  
else:  
    result = x + y  
print(result)
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Question Number : 97 Question Id : 640653826918 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

Consider the following snippet of code.What will the output be?

```
val = 0
L = [7, 1, 8, 3, 10]
temp = []
for num in L:
    if num % 2 == 0:
        temp.append(num)
    else:
        val += num
print(len(temp)*val)
```

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

22

Question Number : 98 Question Id : 640653826919 Question Type : SA**Correct Marks : 3**

Question Label : Short Answer Question

Consider the following snippet of code.

```
num = int(input("Enter a number"))
s_num = 1
while num != 0:
    digit = num % 10
    s_num = s_num + digit
    num //= 10
print(s_num)
```

Assume that 1234 is passed as input to the code.What will be the output?

Response Type : Numeric**Evaluation Required For SA :** Yes**Show Word Count :** Yes**Answers Type :** Equal

Text Areas : PlainText

Possible Answers :

11

Sub-Section Number : 5

Sub-Section Id : 640653123291

Question Shuffling Allowed : No

Question Id : 640653826920 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (99 to 100)

Question Label : Comprehension

Consider the following snippet of code and answer the given sub-questions that follow:

```
L = ["apple", "banana", "cherry", "date", "fig", "grape"]
max_L = []
maxlen = 0
for s in L:
    if len(s) > maxlen:
        maxlen = len(s)
        max_L = [s]
    elif len(s) == maxlen:
        max_L.append(s)
print(max_L)
print(len(max_L))
```

Sub questions

Question Number : 99 Question Id : 640653826921 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

What is the first line of output?

Options :

6406532779542. ✘ ['banana']

6406532779543. ✘ ['cherry']

6406532779544. ✓ ['banana', 'cherry']

6406532779545. ✘ ['cherry', 'banana']

Question Number : 100 Question Id : 640653826922 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

What is the second line of the output? Enter an integer as your answer.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Question Id : 640653826923 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (101 to 102)

Question Label : Comprehension

Consider the following snippet of code and answer the subquestions

that follow:

```
my_list = [1, 2, 3, 4, 5]
new_list = my_list
new_list[0] = 10
print(my_list)
```

Sub questions

Question Number : 101 Question Id : 640653826924 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

What will be the output?

Options :

6406532779547. ✓ [10, 2, 3, 4, 5]

6406532779548. ✘ [1, 10, 2, 3, 4, 5]

6406532779549. ✘ [1, 2, 3, 4, 5]

6406532779550. ✘ [10]

Question Number : 102 Question Id : 640653826925 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Choose the correct option regarding the given code.

Options :

6406532779551. ✓ List is a mutable object.

6406532779552. ✗ List is an immutable object.

6406532779553. ✓ Both `my_list` and `new_list` are referring to the same list.

6406532779554. ✗ `my_list` and `new_list` are referring to different lists.

Question Id : 640653826926 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (103 to 104)

Question Label : Comprehension

Consider the following snippet of code.

```
a = int(input())
b = int(input())
string = 'IAmInFoundationLevel'
print(string[a:b])
```

The output of this code is Foundation .

Sub questions

Question Number : 103 Question Id : 640653826927 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

What is the value of `a`, the first input entered by the user, if it is given that the user entered a positive integer?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 104 Question Id : 640653826928 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

What is the value of b , the second input entered by the user, if it is given that the user entered a negative integer?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-5

Question Id : 640653826929 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (105 to 106)

Question Label : Comprehension

Consider the following snippet of code and answer all
the subquestions that follow:

```
P = [[1, 2, 3], [2, 4, 6], [3, 6, 9]]
```

```
s = 0
p = 1
for i in range(len(P)):
    for j in range(len(P)):
        if i == j:
            s = s + P[i][j]
        if j == len(P)-1:
            p = p * P[i][j]

print(s)
print(p)
```

Sub questions

Question Number : 105 Question Id : 640653826930 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

What is the first line of the output?

Options :

6406532779557. ✘ 10

6406532779558. ✓ 14

6406532779559. ✘ 6

6406532779560. ✘ 18

Question Number : 106 Question Id : 640653826931 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

What is the second line of the output?

Options :

6406532779561. ✘ 6

6406532779562. ✓ 162

6406532779563. ✘ 36

6406532779564. ✘ 48

Sem2 English2

Section Id :	64065359300
Section Number :	6
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	33
Number of Questions to be attempted :	33
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 :	No

Section Maximum Duration : 0
Section Minimum Duration : 0
Section Time In : Minutes
Maximum Instruction Time : 0
Sub-Section Number : 1
Sub-Section Id : 640653123292
Question Shuffling Allowed : No

Question Number : 107 Question Id : 640653826932 Question Type : MCQ

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 :

6406532779565. ✓ Yes

6406532779566. ✗ No

Sub-Section Number : 2

Sub-Section Id : 640653123293

Question Shuffling Allowed : No

Question Id : 640653826933 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Question Numbers : (108 to 112)

Question Label : Comprehension

Read the speech segment given below and fill in the blanks with the appropriate discourse markers. Observe the tone and the punctuation of the passage and choose only the most fitting answer for every blank.

Speech by Steve Jobs

Good morning. [i] _____ We were up till 3 o' clock last night finishing up this advertisement [ii] _____ I want to show it to you in a minute; see what you think of it. I've been back for about eight to ten weeks, and we've been working really hard. What we're trying to do is not something really highfalutin; we're trying to get back to the basics— we're trying to get back to the basics of great products, great marketing, and great distribution. I think that Apple has pockets of greatness, but in some ways it has drifted away from doing the basics really well. [iii] _____ we started with the product line— we looked at the product roadmap going out for a few years, and we said a lot of this doesn't make sense, and it's way too much stuff, and there's not enough focus, and so we [iv] _____ got rid of 70% of the stuff on the product roadmap. [v] _____, I couldn't even figure out the damn product line after a few weeks. I kept saying "What is this model? How does this fit?", and I started talking to customers and they couldn't figure it out either.

Transcribed from: "Steve Jobs' Most Innovative Speech." *YouTube*.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 108 Question Id : 640653826934 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Fill in blank [i] with the most fitting discourse marker among the options given below.

Options :

6406532779567. ✘ Ouch!

6406532779568. ✘ Wow!

6406532779569. ✓ Phew!

Question Number : 109 Question Id : 640653826935 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Fill in blank [ii] with the most fitting discourse marker among the options given below.

Options :

6406532779570. ✘ Still so

6406532779571. ✓ And uh

6406532779572. ✘ Right

6406532779573. ✘ Oh

Question Number : 110 Question Id : 640653826936 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Fill in blank [iii] with the most fitting discourse marker among the options given below.

Options :

6406532779574. ✘ Yet

6406532779575. ✘ Ah!

6406532779576. ✓ So

6406532779577. ✘ Anyway

Question Number : 111 Question Id : 640653826937 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Fill in blank [iv] with the most fitting discourse marker among the options given below.

Options :

6406532779578. ✓ Actually

6406532779579. ✘ However

6406532779580. ✘ Nah

6406532779581. ✘ Ugh!

Question Number : 112 Question Id : 640653826938 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Fill in blank [v] with the most fitting discourse marker among the options given below.

Options :

6406532779582. ✘ Great!

6406532779583. ✘ Absolutely!

6406532779584. ✓ I mean

6406532779585. ✘ I see

Sub-Section Number :

3

Sub-Section Id :

640653123294

Question Shuffling Allowed :

Yes

Question Number : 113 Question Id : 640653826939 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

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

She wore a beautiful dress, which she had bought on her trip to Paris, and he complimented her on her impeccable style.

Options :

6406532779586. ❌ Adjectival clause: which she had bought on her trip to Paris, Noun: Paris

6406532779587. ❌ Adjectival clause: she wore a beautiful dress, Noun: beautiful

6406532779588. ✓ Adjectival clause: which she had bought on her trip to Paris, Noun: dress

6406532779589. ❌ None of these

Question Number : 114 Question Id : 640653826940 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

In the sentence "*He is staring at the world as if he has never seen it before,*" the suffix -ing added to the verb "stare" indicates:

Options :

6406532779590. ❌ The progression of the action of staring in past time

6406532779591. ❌ The habituality of the action of staring in present time

6406532779592. ✓ The progression of the action of staring in present time

6406532779593. ❌ The habituality of the action of staring in past time

Question Number : 115 Question Id : 640653826941 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

They gave him an award. The number of complements in this sentence is/are _____.

Options :

6406532779594. ❌ One

6406532779595. ✓ Two

6406532779596. ❌ Three

6406532779597. ❌ Zero

Question Number : 116 Question Id : 640653826942 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

In the following sentence, identify the nature of the adjective. The adjective is underlined.

'*The scariest villain I have seen comes in that novel.*'

Options :

6406532779598. ❌ Predicative

6406532779599. ✓ Attributive

6406532779600. ✘ Indicative

6406532779601. ✘ Adverbial

Question Number : 117 Question Id : 640653826943 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

'Technically speaking, the upcoming nuclear treatment plant will certainly invite only criticisms.' The adverbs used in this sentence are

Options :

6406532779602. ✘ Focus

6406532779603. ✘ Comment

6406532779604. ✘ Viewpoint

6406532779605. ✓ All of these

Sub-Section Number :

4

Sub-Section Id :

640653123295

Question Shuffling Allowed :

Yes

Question Number : 118 Question Id : 640653826944 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the implied meaning of the sentence below: (Note that the word with stress is italicized and marked in bold).

I have found my **book**

Options :

6406532779606. ✘ I have found my book, not yours

6406532779607. ✓ I have found my book, not my pen

6406532779608. ✘ It is I who have found my book, not anyone else

6406532779609. ✘ I have found my book, not lost my book

Question Number : 119 Question Id : 640653826945 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

'The sun rises *in the east*.' This sentence would ordinarily be spoken in a ____.

Options :

6406532779610. ✘ Rising intonation

6406532779611. ✓ Flat intonation

6406532779612. ✘ Falling intonation

6406532779613. ✘ Any of these

Question Number : 120 Question Id : 640653826946 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

'Perhaps we have been guilty of some terminological inexactitudes' is an example of ____.

Options :

6406532779614. ✘ Hyperbole

6406532779615. ✘ Synecdoche

6406532779616. ✘ Litotes

6406532779617. ✓ Euphemism

Question Number : 121 Question Id : 640653826947 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

"Free as a bird" is an example of?

Options :

6406532779618. ✓ Simile

6406532779619. ✘ Hyperbole

6406532779620. ✘ Paradox

6406532779621. ✘ Alliteration

Question Number : 122 Question Id : 640653826948 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

'He is a pilot who's afraid of heights' is an example of ____.

Options :

6406532779622. ✓ Irony

6406532779623. ✘ Paradox

6406532779624. ✘ Oxymoron

6406532779625. ✘ Pun

Question Number : 123 Question Id : 640653826949 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

'The city never sleeps' is an example of personification. This statement is ____.

Options :

6406532779626. ✓ TRUE

6406532779627. ✘ FALSE

Question Number : 124 Question Id : 640653826950 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following sentences uses a discourse marker for confirmation of clarity?

Options :

- 6406532779628. ✘ First of all, there are no white elephants
- 6406532779629. ✘ Red meat is very healthy. That said, too much of anything is bad
- 6406532779630. ✓ You need to solve this equation and find the value of x. Did you get that?
- 6406532779631. ✘ Overall, the event was a great success

Question Number : 125 Question Id : 640653826951 Question Type : MCQ**Correct Marks : 1**

Question Label : Multiple Choice Question

Which of the following discourse markers is used to express something not good.

Options :

- 6406532779632. ✓ Fine
- 6406532779633. ✘ Clearly
- 6406532779634. ✘ Contrary
- 6406532779635. ✘ None of these

Question Number : 126 Question Id : 640653826952 Question Type : MCQ**Correct Marks : 1**

Question Label : Multiple Choice Question

Which of the following sentences uses a discourse marker to add information?

Options :

- 6406532779636. ✘ First of all, that's not even your book
- 6406532779637. ✘ Um, I don't know
- 6406532779638. ✘ I mean, that's not a problem at all
- 6406532779639. ✓ Fruits are very nutritious. On top of that, they're very tasty too

Question Number : 127 Question Id : 640653826953 Question Type : MCQ**Correct Marks : 1**

Question Label : Multiple Choice Question

Intonations help in:

Options :

- 6406532779640. ✘ Resolving ambiguity
- 6406532779641. ✘ Imbuing the speaker's state of mind in the spoken words
- 6406532779642. ✓ Both Resolving ambiguity and Imbuing the speaker's state of mind in the spoken words
- 6406532779643. ✘ Neither Resolving ambiguity nor Imbuing the speaker's state of mind in the spoken words

Sub-Section Number :	5
Sub-Section Id :	640653123296
Question Shuffling Allowed :	No

Question Id : 640653826954 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Question Numbers : (128 to 132)

Question Label : Comprehension

Fill in the blanks with the appropriate options for the given subquestions.

(1)_____, the sun is a huge ball of gases. (2)_____, it has a diameter of 1.3927 million kms. It is incomprehensibly massive, and, (3)_____, it can hold millions of planets inside it. The Sun is mainly made up of hydrogen and helium gas. The surface of the Sun is known as the photosphere. (4)_____, the photosphere is surrounded by a thin layer of gas known as the chromosphere. Without the Sun, there would be no life on Earth. There would be no plants, no animals and no human beings. (5)_____, all the living things on Earth get their energy from the Sun for their survival.

Sub questions

Question Number : 128 Question Id : 640653826955 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the correct answer for blank (1).

Options :

6406532779644. ❌ Because

6406532779645. ✓ As a matter of fact

6406532779646. ❌ Additionally

6406532779647. ❌ But

Question Number : 129 Question Id : 640653826956 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the correct answer for blank (2).

Options :

6406532779648. ❌ Because

6406532779649. ❌ Thirdly

6406532779650. ✓ Yet

6406532779651. ❌ Finally

Question Number : 130 Question Id : 640653826957 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the correct answer for blank (3).

Options :

- 6406532779652. ✘ Ultimately
- 6406532779653. ✘ Intimately
- 6406532779654. ✘ Consequence
- 6406532779655. ✓ Consequently

Question Number : 131 Question Id : 640653826958 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the correct answer for blank (4).

Options :

- 6406532779656. ✓ Additionally
- 6406532779657. ✘ In effect
- 6406532779658. ✘ Someday
- 6406532779659. ✘ At last

Question Number : 132 Question Id : 640653826959 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the correct answer for blank (5).

Options :

- 6406532779660. ✘ Sooner or later
- 6406532779661. ✓ Basically
- 6406532779662. ✘ Sequentially
- 6406532779663. ✘ Hereafter

Sub-Section Number :

6

Sub-Section Id :

640653123297

Question Shuffling Allowed :

Yes

Question Number : 133 Question Id : 640653826960 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the adverb in the following sentence.

The slow dog played with the chirpy parrot.

Options :

- 6406532779664. ✘ Slow
- 6406532779665. ✘ Chirpy
- 6406532779666. ✘ The chirpy parrot

6406532779667. ✓ This sentence does not have an adverb

Question Number : 134 Question Id : 640653826961 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

"The tree stumps had been worn smooth and comfortable *by years of use.*"

The phrase in italics is an ____.

Options :

6406532779668. ✘ Adverb of frequency

6406532779669. ✘ Adverb of degree

6406532779670. ✓ Adverb of manner

6406532779671. ✘ Adverb of direction

Question Number : 135 Question Id : 640653826962 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Identify the degree adverb in the given sentence.

'The cellar is *nearly filled up, never having been either wide or deep, and the fruit of a few mossy apple-trees drop ungathered to the ground.*'

Options :

6406532779672. ✘ Few

6406532779673. ✘ Filled

6406532779674. ✘ Mossy

6406532779675. ✓ Nearly

Question Number : 136 Question Id : 640653826963 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

____adverbs are used to make our perspectives clearer.

Options :

6406532779676. ✘ Comment

6406532779677. ✓ Viewpoint

6406532779678. ✘ Focus

6406532779679. ✘ Both Viewpoint and Focus

Question Number : 137 Question Id : 640653826964 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

I __ admired his talent for painting.

Options :

- 6406532779680. ✘ Very
- 6406532779681. ✘ Very much
- 6406532779682. ✘ Much
- 6406532779683. ✓ Both Very much and Much

Question Number : 138 Question Id : 640653826965 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

In the following lists of words, identify the words most likely to be adjectives based on word endings.

Foliage, farcical, fraternity, finance

Options :

- 6406532779684. ✓ Farcical
- 6406532779685. ✘ Foliage
- 6406532779686. ✘ Finance
- 6406532779687. ✘ Fraternity

Question Number : 139 Question Id : 640653826966 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

'The contract will be issued by the government.' In this sentence, the verb 'will be issued' will change to _____ when converted to active voice.

Options :

- 6406532779688. ✘ Was issued
- 6406532779689. ✘ Is issued
- 6406532779690. ✓ Will issue
- 6406532779691. ✘ Was issuing

Question Number : 140 Question Id : 640653826967 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Choose the correct type of sentence for the following sentence: 'I went to the store, but I forgot to buy milk.'

Options :

- 6406532779692. ✘ Simple
- 6406532779693. ✓ Compound
- 6406532779694. ✘ Complex

Question Number : 141 Question Id : 640653826968 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Which of the following sentences contains an adverbial clause?

Options :

6406532779695. ✘ The dog barked loudly.

6406532779696. ✓ After the storm passed, we went outside to play.

6406532779697. ✘ She is a talented musician.

6406532779698. ✘ The cake tastes delicious.

Question Number : 142 Question Id : 640653826969 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

The kid who lives next door is very interesting. The relative pronoun here is ____.

Options :

6406532779699. ✘ Very

6406532779700. ✘ Is

6406532779701. ✓ Who

6406532779702. ✘ No relative pronoun

Question Number : 143 Question Id : 640653826970 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

In the following sentence, identify the role of the embedded clause.

'The judge whose car we bought called our office.'

Options :

6406532779703. ✘ Subject

6406532779704. ✘ Adverb

6406532779705. ✓ Adjective

6406532779706. ✘ Object

Question Number : 144 Question Id : 640653826971 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

How many dependent clauses are there in the sentence given below:

The cat climbed the tree, but he could not get down

Options :

6406532779707. ✓ 0

6406532779708. ✗ 1

6406532779709. ✗ 2

6406532779710. ✗ 3

Question Number : 145 Question Id : 640653826972 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

State whether the underlined is an adjunct or a complement:

Mary helped her mother with the dishes.

Options :

6406532779711. ✓ Adjunct

6406532779712. ✗ Complement

Question Number : 146 Question Id : 640653826973 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

'Joe plays the guitar beautifully'. Here the adjunct is ____.

Options :

6406532779713. ✗ The guitar

6406532779714. ✓ Beautifully

6406532779715. ✗ Plays

6406532779716. ✗ No adjunct

Question Number : 147 Question Id : 640653826974 Question Type : MCQ

Correct Marks : 1

Question Label : Multiple Choice Question

Read the following sentence and identify the adverb phrase in it.

'The other clerk, whose name I have now forgotten, nodded and apologized while chewing on a pink lobe of kola nut.'

Options :

6406532779717. ✗ Whose name I have now forgotten

6406532779718. ✓ While chewing on a pink lobe of kola nut

6406532779719. ✗ Nodded and apologized

6406532779720. ✗ The other clerk

Section Id :	64065359301
Section Number :	7
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	10
Number of Questions to be attempted :	10
Section Marks :	25
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123298
Question Shuffling Allowed :	No

Question Number : 148 Question Id : 640653826975 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

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

**ARE YOU SURE YOU HAVE TO WRITE EXAM FOR THIS SUBJECT?
CROSS CHECK YOUR HALL TICKET TO CONFIRM THE SUBJECTS TO BE WRITTEN.**

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

Options :

6406532779721. ✓ YES

6406532779722. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653123299
Question Shuffling Allowed :	Yes

Question Number : 149 Question Id : 640653826976 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following subsets of \mathbb{R}^4 .

$$W = \text{span}\{(2, -1, 0, 4), (-1, 1, 0, 3), (1, 2, 0, 3), (2, 2, 0, 10)\}$$

$$B_1 = \{(1, 0, 0, 0), (0, 1, 0, 0), (0, 0, 0, 1)\}$$

$$B_2 = \{(2, -1, 0, 4), (-1, 1, 0, 3), (1, 2, 0, 3)\}$$

Select the correct option.

Options :

6406532779723. ✓ Both B_1 and B_2 are bases for W .

6406532779724. ✗ B_1 is a basis for W , but B_2 is not.

6406532779725. ✗ B_2 is a basis for W , but B_1 is not.

6406532779726. ✗ Neither B_1 nor B_2 is a basis for W .

Sub-Section Number :

3

Sub-Section Id :

640653123300

Question Shuffling Allowed :

Yes

Question Number : 150 Question Id : 640653826977 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the system of linear equations $Ax = b$ where $A \in M_{n \times n}(\mathbb{R})$. Which of the following conditions guarantees that the system is consistent for any $b \in \mathbb{R}^n$?
Select all true statements.

Options :

6406532779727. ✓ A is a diagonal matrix with non-zero diagonal entries.

6406532779728. ✗ At least one column of A is a linear combination of two other columns of A .

6406532779729. ✓ b is one of the columns of A .

6406532779730. ✓ The reduced row echelon form of A has no zero rows.

6406532779731. ✗ A has at least $n - 1$ linearly independent rows.

Question Number : 151 Question Id : 640653826978 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let $Ax = b$ be a system of linear equations, where $A = \begin{bmatrix} 1 & 0 & 0 & -1 \\ 0 & 0 & 1 & 5 \\ 0 & 0 & 0 & 1 \end{bmatrix}$,

$x = [x_1 \ x_2 \ x_3 \ x_4]^T$ and $b \in \mathbb{R}^3$. Which of the following statements are true?

Options :

6406532779732. ✓ A is in row echelon form.

6406532779733. ✓ x_2 is an independent variable.

After reducing the system to reduced row echelon form, the value of x_3 is
6406532779734. ✗ dependent on the value of x_4 in the solution vector.

When $b = \begin{bmatrix} 1 \\ -2 \\ 3 \end{bmatrix}$, the system has infinitely many solutions.

6406532779735. ✓

6406532779736. ✗ The system has 2 dependent and 2 independent variables.

Question Number : 152 Question Id : 640653826979 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

$B = \{v_1, v_2, v_3\}$ is a linearly independent subset of \mathbb{R}^3 . Select all linearly independent subsets of \mathbb{R}^3 from the following.

Options :

6406532779737. ✓ $\{v_1 + v_2, v_1 - v_2\}$

6406532779738. ✗ $\{v_1, v_2, v_3, v_4\}$, where v_4 is some vector in \mathbb{R}^3

6406532779739. ✓ $\{v_1 + v_2, v_1 - v_2, v_1 + v_2 + v_3\}$

6406532779740. ✗ $\{v_1, v_1 + v_2, v_1 - v_2\}$

Question Number : 153 Question Id : 640653826980 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

A is a square matrix of order 3. Select all subspaces of \mathbb{R}^3 from the options given below.

Options :

$$6406532779741. \checkmark \quad S = \left\{ v : Av = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix} \text{ and } v \in \mathbb{R}^3 \right\}$$

$$6406532779742. \times \quad S = \left\{ v : Av = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} \text{ and } v \in \mathbb{R}^3 \right\}$$

$$6406532779743. \times \quad S = \{(x, y) : x, y \in \mathbb{R}\}$$

$$6406532779744. \checkmark \quad S = \{(x, y, 0) : x, y \in \mathbb{R}\}$$

Sub-Section Number :

4

Sub-Section Id :

640653123301

Question Shuffling Allowed :

Yes

Question Number : 154 Question Id : 640653826981 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

$A = (a_{ij}) \in M_{5 \times 5}(\mathbb{R})$ is a matrix such that $a_{ij} + a_{ji} = 0$ for all $1 \leq i, j \leq 5$.
Find the determinant of A . _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0

Question Number : 155 Question Id : 640653826982 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

If determinant of A is -2 , find the determinant of $A^T A$. _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number :

5

Sub-Section Id :

640653123302

Question Shuffling Allowed :

No

Question Id : 640653826983 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Question Numbers : (156 to 157)

Question Label : Comprehension

Let $A = \begin{bmatrix} 2 & -1 \\ 4 & 3 \end{bmatrix}$ and $\alpha, \beta \in \mathbb{R}$ such that $A^2 - \alpha A + \beta I = 0$. Note that I is the identity matrix and 0 is the zero matrix in this equation.

Based on the above data answer the given subquestions.

Sub questions

Question Number : 156 Question Id : 640653826984 Question Type : SA

Correct Marks : 1.5

Question Label : Short Answer Question

Find the value of α . _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

5

Question Number : 157 Question Id : 640653826985 Question Type : SA

Correct Marks : 1.5

Question Label : Short Answer Question

Find the value of β . _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Id : 640653826986 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Question Numbers : (158 to 160)

Question Label : Comprehension

Find the dimensions of the following vector spaces. The usual rules of vector addition and scalar multiplication apply for the vector spaces in each of the options.

Based on the above data answer the given subquestions.

Sub questions

Question Number : 158 Question Id : 640653826987 Question Type : SA

Correct Marks : 1

Question Label : Short Answer Question

$$U = \{(a, b, c, d, e) : a+b+c+d+e = 0 \text{ and } a, b, c, d, e \in \mathbb{R}\} \quad \underline{\hspace{10cm}}$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Question Number : 159 Question Id : 640653826988 Question Type : SA

Correct Marks : 1

Question Label : Short Answer Question

$$V = \left\{ \begin{bmatrix} a & b & 0 \\ c & 0 & a+b \end{bmatrix} : a, b, c \in \mathbb{R} \right\} \quad \underline{\hspace{10cm}}$$

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 160 Question Id : 640653826989 Question Type : SA

Correct Marks : 1

Question Label : Short Answer Question

$W = \text{span}\{(1, 1, 1), (1, 0, -1), (2, 1, 0)\}$ _____

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2

Sem2 Statistics2

Section Id :	64065359302
Section Number :	8
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	12
Number of Questions to be attempted :	12
Section Marks :	40
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123303
Question Shuffling Allowed :	No

Question Number : 161 Question Id : 640653826990 Question Type : MCQ

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 :

6406532779752. ✓ YES

6406532779753. ✗ NO

Question Number : 162 Question Id : 640653826991 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

Discrete random variables:

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

Continuous random variables:

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

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

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

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

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

Options :

6406532779754. ✓ Useful Data has been mentioned above.

6406532779755. ✗ This data attachment is just for a reference & not for an evaluation.

Sub-Section Number :

2

Sub-Section Id :

640653123304

Question Shuffling Allowed :

Yes

Question Number : 163 Question Id : 640653826992 Question Type : MCQ**Correct Marks : 3**

Question Label : Multiple Choice Question

Suppose that the number of miles that a car can run before its battery wears out is exponentially distributed, with an average value of 10,000 miles. If you desire to take a 5,000-mile trip, what is the probability that you will be able to complete the trip without replacing the car battery?

Options :

$$6406532779756. ✗ \frac{1}{10000} \exp\left(\frac{-5000}{10000}\right)$$

$$6406532779757. ✗ 10000 \exp(-5000 * 10000)$$

$$6406532779758. ✗ 1 - \exp\left(\frac{-5000}{10000}\right)$$

$$6406532779759. ✓ \exp\left(\frac{-5000}{10000}\right)$$

Question Number : 164 Question Id : 640653826994 Question Type : MCQ**Correct Marks : 3**

Question Label : Multiple Choice Question

Consider a random variable X that takes integer values from 1 to 10 with equal probability $1/10$. Define another random variable $Y = X$ modulo 4. Find the PMF of Y .

Options :

y	0	1	2	3
$P(Y = y)$	1/5	3/10	3/10	1/5

6406532779761. ✓

y	0	1	2	3	4
$P(Y = y)$	1/5	1/5	1/5	1/10	3/10

6406532779762. ✗

y	0	1	2	3
$P(Y = y)$	1/2	1/5	1/5	1/10

6406532779763. ✘

y	1	2	3	4
$P(Y = y)$	3/10	3/10	1/5	1/5

6406532779764. ✘

Question Number : 165 Question Id : 640653826995 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider n bits X_1, \dots, X_n , where each bit is equally likely to be 0 or 1, and is independent of all other bits. Define $n - 1$ bits $Y_i = X_i X_{i+1}$, $i = 1, \dots, n - 1$. Let N_X and N_Y be, respectively, the number of 1s in $\{X_1, \dots, X_n\}$ and $\{Y_1, \dots, Y_{n-1}\}$. Assuming $n = 100$, what is the expected value of N_X and N_Y ?

Options :

6406532779765. ✘ $E(N_X) = 50, E(N_Y) = 49.5$

6406532779766. ✓ $E(N_X) = 50, E(N_Y) = 24.75$

6406532779767. ✘ $E(N_X) = 100, E(N_Y) = 50$

6406532779768. ✘ $E(N_X) = 100, E(N_Y) = 99$

Sub-Section Number :

3

Sub-Section Id :

640653123305

Question Shuffling Allowed :

Yes

Question Number : 166 Question Id : 640653826993 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

A teacher observes that the cumulative distribution function (CDF) for the scores on a mathematics test is

$$F(x) = \begin{cases} 0, & x < 0 \\ x^2, & 0 \leq x \leq 1 \\ 1, & x > 1 \end{cases}$$

for $0 \leq x \leq 1$, where x is the score normalized to 1. If a student scores above 0.7, what is the conditional probability that they actually score above 0.9? 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 0.39

Sub-Section Number : 4

Sub-Section Id : 640653123306

Question Shuffling Allowed : Yes

Question Number : 167 **Question Id :** 640653826996 **Question Type :** MSQ

Correct Marks : 3 **Max. Selectable Options :** 0

Question Label : Multiple Select Question

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

\backslash	X	0	1	2	$P(Y = y)$
Y	0	1/4	1/6	1/6	7/12
	1	1/6	1/8	1/8	5/12
$P(X = x)$	5/12	7/24	7/24		1

Select the correct options from the following.

Options :

6406532779769. ✓ $P(X = Y) = \frac{3}{8}$

6406532779770. ✗ $P(X = 2, Y = 1) = \frac{1}{6}$

6406532779771. ✓ $P(X \leq 2, Y = 0) = \frac{7}{12}$

6406532779772. ✗ $P(X \leq 2, Y = 0) = \frac{1}{3}$

Sub-Section Number : 5

Sub-Section Id : 640653123307

Question Shuffling Allowed :

No

Question Id : 640653826997 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Question Numbers : (168 to 169)

Question Label : Comprehension

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

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

Based on the above data, answer the given subquestions

Sub questions

Question Number : 168 Question Id : 640653826998 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

Find the value of c so that $f_X(x)$ is a valid PDF.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

12

Question Number : 169 Question Id : 640653826999 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Calculate the CDF of X .

Options :

$$F_X(x) = \begin{cases} 0, & \text{for } x < 0 \\ 4x^3 - 3x^4, & \text{for } 0 \leq x < 1 \\ 1, & \text{for } x \geq 1 \end{cases}$$

6406532779774. ✓

$$F_X(x) = \begin{cases} 0, & \text{for } x < 0 \\ \frac{1}{12} \left(\frac{x^3}{3} - \frac{x^4}{4} \right), & \text{for } 0 \leq x < 1 \\ 1, & \text{for } x \geq 1 \end{cases}$$

6406532779775. ✗

$$F_X(x) = \begin{cases} 0, & \text{for } x < 0 \\ 24x - 36x^2, & \text{for } 0 \leq x < 1 \\ 1, & \text{for } x \geq 1 \end{cases}$$

6406532779776. ✶

$$F_X(x) = \begin{cases} 0, & \text{for } x < 0 \\ \frac{x}{6} - \frac{x^2}{4}, & \text{for } 0 \leq x < 1 \\ 1, & \text{for } x \geq 1 \end{cases}$$

6406532779777. ✶

Question Id : 640653827000 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Question Numbers : (170 to 171)

Question Label : Comprehension

In a new game designed by a developer, players can choose between two character types: warrior and mage, with probabilities of selection being 0.4 and 0.6, respectively. Players then choose between two types of equipment: a sword or a staff. If a player chooses the warrior character, there is a 0.3 chance that they will select a sword, whereas if they choose the mage character, there is a 0.5 chance they will select a staff.

Based on this information, answer the given sub questions.

Sub questions

Question Number : 170 Question Id : 640653827001 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

What is the probability that a player will choose a character equipped with a sword? 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

Question Number : 171 Question Id : 640653827002 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

What is the probability that a player chooses a warrior character with the staff?

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 :

0.25 to 0.31

Question Id : 640653827003 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (172 to 173)

Question Label : Comprehension

A company has scheduled interviews for job applicants, and 40 people have confirmed their interview slots. Each applicant independently attends the interview with a probability $p = 3/4$. Let X denote the number of people who actually attend the interview.

Based on the above data, answer the given subquestions

Sub questions

Question Number : 172 Question Id : 640653827004 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Using Markov inequality, find an upper bound to the probability $P(X \geq 35)$.

Which values below are greater than or equal to that upper bound?

Options :

6406532779780. ✓ 0.86

6406532779781. ✗ 0.086

6406532779782. ✗ 0.75

6406532779783. ✓ 0.90

Question Number : 173 Question Id : 640653827005 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

Using Chebyshev's inequality, find an upper bound to the probability that at least 35 people attended the interview. Enter the answer correct to one decimal place.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.3

Question Id : 640653827006 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (174 to 175)

Question Label : Comprehension

An urn contains 20 white balls and 12 red balls. 2 balls are selected at random. Let X denote the number of red balls drawn and let Y denote the number of white balls drawn.

Based on the above data, answer the given subquestions

Sub questions

Question Number : 174 Question Id : 640653827007 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

Find the probability $P(X = 1, Y = 1)$.

Enter the answer correct to two decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.46 to 0.50

Question Number : 175 Question Id : 640653827008 Question Type : SA

Correct Marks : 3

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 :

0.73 to 0.77

Question Id : 640653827009 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (176 to 177)

Question Label : Comprehension

Let $X_1, X_2, X_3 \sim \text{i.i.d. Binomial}(5, 0.5)$. Based on this information, answer the given subquestions.

Sub questions

Question Number : 176 Question Id : 640653827010 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

What is the probability that exactly one out of the three random variables takes value greater than 4?

Options :

6406532779787. ❌ $3 \times {}^5 C_4(0.5)^5 [1 - {}^5 C_4(0.5)^5]^2$

6406532779788. ✓ $3 \times (0.5)^5 [1 - (0.5)^5]^2$

6406532779789. ❌ $3 \times (0.5)^5$

6406532779790. ❌ $3 \times [{}^5 C_4(0.5)^5]^3$

Question Number : 177 Question Id : 640653827011 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

Find the probability $P(\max(X_1, X_2, X_3) > 4)$.

Enter the answer correct to three decimal places.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Range

Text Areas : PlainText

Possible Answers :

0.089 to 0.093

AppDev1

Section Id :	64065359303
Section Number :	9
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 :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123308
Question Shuffling Allowed :	No

Question Number : 178 Question Id : 640653827012 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

Options :

6406532779792. ✓ YES

6406532779793. ✗ NO

Sub-Section Number : 2

Sub-Section Id : 640653123309

Question Shuffling Allowed : Yes

Question Number : 179 Question Id : 640653827013 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following is not a correct perceivable accessibility principle?

Options :

6406532779794. ✗ Provide text alternatives for non-text content.

6406532779795. ✗ Provide captions and other alternatives for multimedia.

6406532779796. ✗ Make it easier for users to see and hear content.

6406532779797. ✓ Give users enough time to read and use content.

Question Number : 180 Question Id : 640653827014 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the below HTTP status codes represents the client error?

Options :

6406532779798. ✗ 500-599

6406532779799. ✓ 400-499

6406532779800. ✗ 300-399

6406532779801. ✗ 200-299

6406532779802. ✗ 100-199

Question Number : 181 Question Id : 640653827021 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

What will be the output of the following Python code?

```

from jinja2 import Template
data = {"id": 101, "prod_name": "Groceries", "sales_amt": 5600,
"sales_bonus": 5}

def foo(amount, p):
    return amount * p / 100

a = foo(data["sales_amt"], data["sales_bonus"])
t = Template(
    "Congratulations, you got bonus {{ bonus }} by selling product
{{data['prod_name']}}"
)
output = t.render(data=data, bonus=a)
print(output)

```

Options :

6406532779827. ✘ Congratulations, you got bonus 70.0 by selling product Groceries

6406532779828. ✘ Congratulations, you got bonus 140.0 by selling product Groceries

6406532779829. ✓ Congratulations, you got bonus 280.0 by selling product Groceries

6406532779830. ✘ Congratulations, you got bonus 560.0 by selling product Groceries

Question Number : 182 Question Id : 640653827027 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Consider the below table.

Column 1	Column 2
i) Primary Key	a) Method of the request
ii) Foreign key	b) Provides additional functionality at top of original function
iii) Nullable	c) Refers to another parent table column
iv) POST	d) Unique identification of row
v) @<decorator>	e) Undefined value

Use the above table. Which of the below match is correct?

Options :

6406532779851. ✘ i - d, ii - b, iii - a, iv - e, v - c

6406532779852. ✓ i - d, ii - c, iii - e, iv - a, v - b

6406532779853. ✘ i - c, ii - d, iv - e, iii - a, v - b

6406532779854. ✘ i - c, ii - d, iv - e, iii - b, v - a

Sub-Section Number :

3

Sub-Section Id :

640653123310

Question Shuffling Allowed :

Yes

Question Number : 183 Question Id : 640653827015 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

A certain movie with advertisements is being streamed by the client on the internet with a bandwidth of 5 Mbps. If the total data consumed only in the advertisements is 340 MB and the advertisements comprises 17% of the total duration of the streamed movie, what can be the size of the entire movie (in Megabytes) including the advertisements?

Options :

6406532779803. ✘ 20

6406532779804. ✘ 640

6406532779805. ✓ 2000

6406532779806. ✘ 1660

Question Number : 184 Question Id : 640653827017 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider a document of 1000 characters written using only the characters of the character set $L_1 = \{a, b, c, d, e, f, g, h, i, j\}$. If the character set L_1 is to be upgraded by adding all the characters of character set $L_2 = \{0, 1, 2, 3, 4, 5, 6\}$ in it, By how many bits will the size of the original document increase?

Options :

6406532779811. ✘ 0 bits

6406532779812. ✓ 1000 bits

6406532779813. ✘ 4000 bits

6406532779814. ✘ 5000 bits

Question Number : 185 Question Id : 640653827018 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

The following Python code snippet generates the output on the terminal.

```
from string import Template
s = Template('$name studies at $university')
b = {'name': 'Bob'}

out1 = Template('$name studies $subject').safe_substitute(b)
print(out1)

out2 = s.substitute(name='Alice', university='Oxford')
print(out2)

out3 = Template('$name studies $subject').substitute(b)
print(out3)
```

Which of the following is the correct output?

Options :

6406532779815. ❌
Bob studies at \$subject
Alice studies at Oxford
KeyError: 'subject'

6406532779816. ✓
Bob studies \$subject
Alice studies at Oxford
KeyError: 'subject'

6406532779817. ❌
Bob studies \$subject
Alice studies at Oxford
Bob studies \$subject

6406532779818. ❌
Bob studies
Alice studies at Oxford
KeyError: 'subject'

Question Number : 186 Question Id : 640653827019 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following HTML document.

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

What will be the rendered output if an additional style is added via the ID selector given below?

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

Options :

6406532779819. ✘ MAD-I is a Diploma level course. SE is a Degree level course.
6406532779820. ✓ MAD-I is a Diploma level course. SE is a Degree level course.
6406532779821. ✘ MAD-I is a Diploma level course. SE is a Degree level course.
- MAD-I is a Diploma level course.
6406532779822. ✘ SE is a Degree level course.

Question Number : 187 Question Id : 640653827024 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following Python code snippet.

Filename: app.py

```
from flask import Flask, request
import sys
app = Flask(__name__)

@app.route('/home', methods = sys.argv)
def my_func():
    if request.method == 'GET':
        return f"Hello from {sys.argv[1]} method"

    elif request.method == 'POST':
        return f"Hello from {sys.argv[2]} method"

    else:
        return "Please enter a valid HTTP method"

app.run(debug = True)
```

If the above flask app is run using the command `python app.py` POST GET in one terminal, what will be the output on another terminal for command;
`curl -X POST http://127.0.0.1:5000/home` ?

Options :

6406532779839. ✘ Hello from POST method

6406532779840. ✓ Hello from GET method

6406532779841. ✘ Please enter a valid HTTP method

6406532779842. ✘ Method not Allowed

Question Number : 188 Question Id : 640653827025 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following Python code snippet.

Filename: module.py

```
from pyhtml import *
import sys
var = sys.argv[1:]

def list_func(stack):
    for tech in stack:
        yield span(tech)

doc = html(
    head(title('My Document')),
    body(
        h3('Frontend technologies'),
        list_func(var[::-1])
    )
)
print(doc.render())
```

How will the browser render the output of the above code if it is run on the terminal using the command `python module.py HTML CSS JS VUE`?

Options :

Frontend Technologies

6406532779843. ✘ HTML CSS JS VUE

Frontend Technologies

6406532779844. ✓ VUE JS CSS HTML

Frontend Technologies

HTML

CSS

JS

VUE

6406532779845. ✘

Frontend Technologies

VUE

JS

CSS

HTML

6406532779846. ✘

Sub-Section Number : 4
Sub-Section Id : 640653123311
Question Shuffling Allowed : Yes

Question Number : 189 Question Id : 640653827016 Question Type : MCQ

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following HTML document.

```

<!DOCTYPE html>
<html>
<head>
    <style>
        span {
            background-color: lightgray;
            color: red;
            font-weight: bold;
        }
        div{
            border: 3px solid purple;
            text-align: center;
            width:20%;
        }
        #id1 {
            color:blue ;
        }
        #id2 {
            display: block;
        }
        .class1 {
            background-color: lightgreen;
            color: blue;
            display: inline-block;
        }
        .class2 {
            background-color: skyblue;
            color: red;
        }
    </style>
</head>
<body>
    <div>
        <span class="class1" id="id1">Content 1</span>
        <span class="class2 class1" >Content 2</span>
        <span id="id2">Content 3</span>
    </div>
</body>
</html>

```

How will the browser render above HTML file?

Options :

Content 1	Content 2	Content 3
-----------	-----------	-----------

6406532779807. ✘

6406532779808. ✘

Content 1 Content 2

Content 3

Content 1 Content 2

Content 3

6406532779809. ✓

Content 1

Content 2

Content 3

6406532779810. ✗

Question Number : 190 Question Id : 640653827020 Question Type : MCQ

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider a client A that makes a request to server B that fetches the information from Datacenter C which in turn fetches other required information from the Datacenter D. The distance between the client A, server B and datacenters C and D within the network and the speed of information in the medium connecting these nodes is mentioned in the table below.

Nodes	A to B	B to C	C to D
Distance (km)	12000	8500	7500
Speed of Information(m/s)	3×10^8	2×10^8	1.5×10^8

Calculate the round trip latency (in milliseconds) of the network?

Options :

6406532779823. ✗ 187

6406532779824. ✗ 132.5

6406532779825. ✓ 265

6406532779826. ✗ 150

Question Number : 191 Question Id : 640653827028 Question Type : MCQ

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following flask app and the bodies of two index.html files shown in the figure below.

app.py

```
from flask import Flask, render_template
import sys

app = ===== app object initialization here =====

@app.route('/home')
def home():
    return render_template('index.html')

app.run()
```

app_templates/index.html

```
<h3>Home page</h3>
<p>MAD I focuses on backend development</p>
<h5>IITM ONLINE DEGREE</h5>
```

root_templates/index.html

```
<h3>Home page</h3>
<p>Vue JS is a frontend technology</p>
<h5>IITM BS DEGREE</h5>
```

If the app is run locally using the command

python app.py root_templates app_templates ,
and the output on browser for URL http://127.0.0.1/home is:

Home page

Vue JS is a frontend technology

IITM BS DEGREE

How should the app be initialized to get the desired output on the browser?

Options :

- 6406532779855. ✘ app = Flask(__name__)
- 6406532779856. ✘ app = Flask(__name__, templates = sys.argv[1])
- 6406532779857. ✘ app = Flask(__name__, templates = sys.argv[2])
- 6406532779858. ✓ app = Flask(__name__, template_folder = sys.argv[1])

6406532779859. ✘ app = Flask(__name__, template_folder = sys.argv[2])

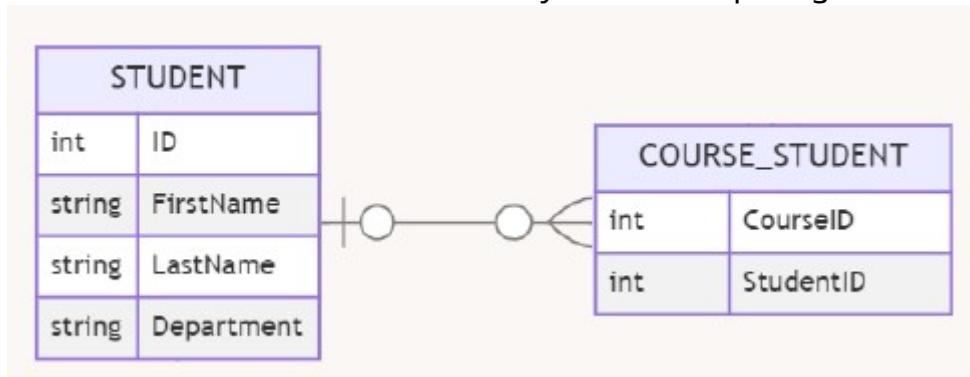
Sub-Section Number : 5
Sub-Section Id : 640653123312
Question Shuffling Allowed : Yes

Question Number : 192 Question Id : 640653827022 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

What can be inferred from the Entity-Relationship Diagram below:



Options :

- 6406532779831. ✓ A student can exist without enrolling to any course
- 6406532779832. ✓ A student can have more than one courses
- 6406532779833. ✘ A student needs to have at least one course
- 6406532779834. ✘ A course must belong to one and only one student

Question Number : 193 Question Id : 640653827026 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following Flask code.

File name: sum_args.py

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

def do_something():
    if len(sys.argv) >= 2:
        l = []
        for i in range(1, len(sys.argv)):
            l.append(int(sys.argv[i]))
        return l
    else:
        return None

@app.route("/")
def do_sum():
    result = do_something()
    if result:
        s = 0
        for e in result:
            s += int(e)
        return f"<h2>Sum is : {s}"
    else:
        return f"<h2>Sum is : {result}"

app.run(debug=True)
```

Select the command(s) to execute the above code without any error.

Options :

6406532779847. ✓ python sum_args.py 2 8 9

6406532779848. ✓ python sum_args.py 2

6406532779849. ✓ python sum_args.py

6406532779850. ✗ python sum_args.py IITM

Sub-Section Number :

6

Sub-Section Id :

640653123313

Question Shuffling Allowed :

Yes

Question Number : 194 Question Id : 640653827023 Question Type : MSQ

Correct Marks : 4.5 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following Python code and HTML document.

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

@app.route("/font/size/<int:size>")
def font_size(size):
    internal_css = {}
    if size < 12:
        internal_css = {"font-weight": "bold", "font-size": "12px"}
    else:
        internal_css = {"font-weight": "normal", "font-size": str(size) + "px"}

    return render_template("index.html", internal_css=internal_css)

app.run(debug=True)
```

HTML document: templates/index.html

```
<!DOCTYPE html>
<html>
    <div style="font-size:{{internal_css['font-size']}};
    font-weight:{{internal_css['font-weight']}};
    >
        IITM BS Degree Program
    </div>
</html>
```

Assume that the flask server is running on "<http://localhost:5000/>". Which of the following is/are true?

Options :

6406532779835. ✓ <http://127.0.0.1:5000/font/size/20> will render "IITM BS Degree Program" with font-size=20 and font-weight=normal

6406532779836. ✗ <http://127.0.0.1:5000/font/size/24> will render "IITM BS Degree Program" with font-size=24 and font-weight:bold

6406532779837. ✓ <http://127.0.0.1:5000/font/size/8> will render "IITM BS Degree Program" with font-size=12 and font-weight:bold

6406532779838. ✓ <http://127.0.0.1:5000/font/size/16> will render "IITM BS Degree Program" with font-size=16 and font-weight=normal

MLF

Section Id :	64065359304
Section Number :	10
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	11
Number of Questions to be attempted :	11
Section Marks :	40
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123314
Question Shuffling Allowed :	No

Question Number : 195 Question Id : 640653827029 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406532779860. ✓ YES

6406532779861. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653123315
Question Shuffling Allowed :	No

Question Id : 640653827030 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Question Numbers : (196 to 197)**Question Label : Comprehension**

Let $A = \begin{pmatrix} 2 & 1 & 1 \\ a & 3 & 2 \\ 3 & b & c \end{pmatrix}$ be a 3×3 matrix. Let α be the eigenvalue corresponding

to the eigenvector $v_1 = \begin{pmatrix} 1 \\ 0 \\ -1 \end{pmatrix}$ and β is the eigenvalue corresponding

to the eigenvector $v_2 = \begin{pmatrix} 0 \\ 1 \\ -1 \end{pmatrix}$ of matrix A . Based on this information,

answer the given sub-questions.

Sub questions**Question Number : 196 Question Id : 640653827031 Question Type : SA****Correct Marks : 3**

Question Label : Short Answer Question

Find the value of $\alpha + 2\beta$.**Response Type : Numeric****Evaluation Required For SA : Yes****Show Word Count : Yes****Answers Type : Equal****Text Areas : PlainText****Possible Answers :**

3

Question Number : 197 Question Id : 640653827032 Question Type : MSQ**Correct Marks : 4 Max. Selectable Options : 0**

Question Label : Multiple Select Question

Which of the following options is/are true ?

Options :

Eigenvectors, v_1 and v_2 are linearly independent.

6406532779863. ✓

6406532779864. ✗ Eigenvectors, v_1 and v_2 are orthogonal.

A third eigenvector of A is $\begin{pmatrix} 1 \\ 2 \\ 3 \end{pmatrix}$

6406532779865. ✓

6406532779866. ✓ $a + b + c = 9$.

Question Id : 640653827033 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Question Numbers : (198 to 199)

Question Label : Comprehension

Let $A = \begin{pmatrix} 0 & 1 & 1 \\ 1 & 0 & 1 \\ 1 & 1 & 0 \end{pmatrix}$ be a 3×3 matrix. Use this information to answer the given subquestions

Sub questions

Question Number : 198 Question Id : 640653827034 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following options is/are true?

Options :

6406532779867. ✓ A is a symmetric matrix.

6406532779868. ✗ A is a diagonal matrix.

6406532779869. ✓ A is orthogonally diagonalizable.

6406532779870. ✓ Eigenvalues of A are -1, -1 and 2.

Question Number : 199 Question Id : 640653827035 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let v_1 and v_2 are the eigenvectors of A corresponding to distinct eigen-values.

We construct a new matrix B using these eigenvectors as its columns, such that

$B = [v_1, v_2]$. Based on this information, which of the following options are correct?

Options :

6406532779871. ✓ Null space of the matrix B is zero space.

6406532779872. ✗ Column space of the matrix B is \mathbb{R}^3 .

6406532779873. ✓

Column space of the matrix B represents
a plane in \mathbb{R}^3 .

Null space of the matrix B represents
6406532779874. ✖ a line in \mathbb{R}^3 .

Sub-Section Number : 3
Sub-Section Id : 640653123316
Question Shuffling Allowed : Yes

Question Number : 200 Question Id : 640653827036 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Let P be the projection matrix for a vector $a = \begin{pmatrix} 1 \\ 2 \end{pmatrix}$. Which of the following options is/are true?

Options :

6406532779875. ✓ P is orthogonally diagonalizable.

6406532779876. ✓ $P^4 = P$.

6406532779877. ✓ Projection of $b = \begin{pmatrix} 1 \\ -1 \end{pmatrix}$ on the vector a is $-\frac{1}{5}a$.

6406532779878. ✖ $\text{Rank}(P) = 2$

Sub-Section Number : 4
Sub-Section Id : 640653123317
Question Shuffling Allowed : Yes

Question Number : 201 Question Id : 640653827037 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

Find the best-fit line for the dataset given below using the least squares method.

x	0	2	3	5
y	1	2	4	3

Options :6406532779879. ✓ $\hat{y} = 1.34 + 0.46x$ 6406532779880. ✗ $\hat{y} = 0.46 + 1.34x$ 6406532779881. ✗ $\hat{y} = 1.34 - 0.46x$ 6406532779882. ✗ $\hat{y} = 2.16 + 0.74x$ **Question Number : 202 Question Id : 640653827038 Question Type : MCQ****Correct Marks : 4**

Question Label : Multiple Choice Question

The function

$$f(x) = \begin{cases} ax^2 + bx + 1, & \text{if } x < 0 \\ cx + d, & \text{if } x \geq 0 \end{cases}$$

is differentiable at ($x = 0$). If a , b , c , and d are constants, which of the following must be true?

Options :6406532779883. ✗ $a = c$ and $b = 1$ 6406532779884. ✓ $b = c$ and $d = 1$ 6406532779885. ✗ $a = c$ and $d = 1$ 6406532779886. ✗ $b = d = 1$ **Sub-Section Number :**

5

Sub-Section Id :

640653123318

Question Shuffling Allowed :

Yes

Question Number : 203 Question Id : 640653827039 Question Type : MCQ**Correct Marks : 3**

Question Label : Multiple Choice Question

Which of the following statements is true for a function $f(x, y)$ that is differentiable at a point (a, b) ?**Options :**

6406532779887. ✓ The directional derivative exists in every direction.

6406532779888. ✳ The directional derivative is the same in every direction.

6406532779889. ✳ The directional derivative can only be calculated along the axes.

6406532779890. ✳ The directional derivative does not exist.

Question Number : 204 Question Id : 640653827040 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Which of the following functions cannot be approximated linearly around $x = 0$?

Options :

6406532779891. ✳ $f(x) = \sin(x)$

6406532779892. ✳ $f(x) = \cos(x)$

6406532779893. ✓ $f(x) = \ln(x)$

6406532779894. ✳ $f(x) = x^2$

Sub-Section Number :

6

Sub-Section Id :

640653123319

Question Shuffling Allowed :

Yes

Question Number : 205 Question Id : 640653827041 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

If $f(x, y) = x^2y + 3xy^2$, what is the length of the gradient at the point (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 :

20.58 to 20.64

Question Number : 206 Question Id : 640653827042 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

In a sports analytics company, the team is interested in predicting whether a basketball player will score above 20 points in a game using classification models. They collected data on various factors $x = [x_1, x_2, x_3]$ from past games of different players. The factors include minutes played, shots attempted, and free throw percentage. The data and corresponding labels are shown in the table below: Compute the misclassification

x	y
[1, 5, 0.8]	1
[0, 3, 0.9]	0
[1, 2, 0.7]	0
[1, 8, 0.6]	1
[0, 7, 0.5]	0

rate if they use the following step function:

$$u(z) = \begin{cases} 1, & \text{if } z \geq 3 \\ 0, & \text{otherwise} \end{cases}$$

and the linear combination z is given by: $0.6x_1 + 0.3x_2 + 0.1x_3$. Enter the answer correct to one decimal place.

Note: Here, x_1 represents whether the player is a starter (1) or not (0), x_2 is the number of shots attempted, and x_3 is the free throw percentage. The label y indicates whether the player scored more than 20 points (1) or not (0). The misclassification rate is the number of labels misclassified.e.g. if 3 out of 5 players are mislabeled then the misclassification rate is 3/5.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.2

Sub-Section Number :

7

Sub-Section Id :

640653123320

Question Shuffling Allowed :

Yes

Question Number : 207 **Question Id :** 640653827043 **Question Type :** MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Consider a dataset from an e-commerce company such as Flipkart that has details of customer behavior, which of the following problems can be best approached using clustering?

Options :

6406532779897. * Predicting the exact number of sales for each customer segment.

6406532779898. ✨ Classifying customers into segments based on labeled customer data.

6406532779899. ✓ Identifying inherent groupings in customer data without predefined labels.

6406532779900. ✨ Reducing the number of features in the customer dataset.

Java

Section Id :	64065359305
Section Number :	11
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	100
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123321
Question Shuffling Allowed :	No

Question Number : 208 Question Id : 640653827044 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406532779901. ✓ YES

6406532779902. ✨ NO

Sub-Section Number :	2
Sub-Section Id :	640653123322

Question Shuffling Allowed :

Yes

Question Number : 209 Question Id : 640653827045 Question Type : MSQ

Correct Marks : 6 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements is/are correct about activation records?

Options :

6406532779903. ❌ Return value link points to the start of the previous activation record.

6406532779904. ✓ An activation record is pushed into the stack when a function is called, and is popped out when the function returns.

6406532779905. ❌ The variables present in every activation record in the stack are in scope and are accessible.

6406532779906. ✓ The variables present in the topmost activation record of the stack are in scope and are accessible.

Sub-Section Number :

3

Sub-Section Id :

640653123323

Question Shuffling Allowed :

Yes

Question Number : 210 Question Id : 640653827046 Question Type : MCQ

Correct Marks : 6

Question Label : Multiple Choice Question

Match the following terms with their descriptions/properties.

Terms	Properties
1. State	A. Determine the choice of method implementation at run time
2. Behaviour	B. Compatibility of interfaces
3. Subtyping	C Determined by the information in the instance variables
4. Inheritance	D. Methods that operate on an object
5. Dynamic lookup	E. Reuse of implementations

Options :

6406532779907. ❌ 1-B, 2-A, 3-C, 4-D, 5-E

6406532779908. ❌ 1-A, 2-B, 3-D, 4-E, 5-C

6406532779909. ✓ 1-C, 2-D, 3-B, 4-E, 5-A

6406532779910. ❌ 1-D, 2-C, 3-E, 4-A, 5-B

Question Number : 211 Question Id : 640653827047 Question Type : MCQ

Correct Marks : 6

Question Label : Multiple Choice Question

Consider the Java code given below.

```
public class Test{
    public static void main(String[] args){
        int a[] = {10, 20};
        int x = a[0];
        for(int i : a){
            switch(i){
                case 10:
                    x = x + 10;
                    System.out.println(x);
                    break;
                case 20:
                    x = x + 20;
                    System.out.println(x);
                    break;
                default:
                    System.out.println(x);
            }
        }
    }
}
```

What will the output be?

Options :

6406532779911. ✘ 20

30

30

6406532779912. ✓ 20

40

6406532779913. ✘ 20

40

60

6406532779914. ✘ 10

20

40

Question Number : 212 Question Id : 640653827048 Question Type : MCQ

Correct Marks : 6

Question Label : Multiple Choice Question

Consider the Java code given below.

```
interface Printer{
    public default void print(){
        System.out.println("Prints");
    }
}
interface Scanner{
    public default void scan(){
        System.out.println("Scans");
    }
}
class Device implements Printer, Scanner{
    public void print(){
        System.out.println("Color printing");
    }
}
public class Test {
    public static void main(String[] args) {
        Printer p1 = new Device();
        p1.print();
        p1.scan(); //LINE 1
    }
}
```

Choose the correct option.

Options :

This program generates the output:

Color printing

6406532779915. ✘ Scans

This program generates the output:

Prints

6406532779916. ✘ Scans

LINE 1 generates compiler error because p1 of type Printer cannot invoke

6406532779917. ✓ method scan().

This program generates compiler error because neither is class Device declared as abstract nor does it override method scan().

6406532779918. ✘

Question Number : 213 Question Id : 640653827052 Question Type : MCQ

Correct Marks : 6

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class Employee {  
    public void performTasks() {  
        System.out.println("Perform tasks");  
    }  
}  
class Manager extends Employee {  
    public void plan() {  
        System.out.println("Plan tasks");  
    }  
  
    public void monitor() {  
        System.out.println("Monitor employees");  
    }  
}  
class DeliveryHead extends Manager {  
    public void plan() {  
        System.out.println("Plan delivery operations");  
    }  
}  
public class Test {  
    public static void main(String[] args) {  
        Manager obj = new DeliveryHead();  
        obj.performTasks(); // LINE 1  
        obj.monitor();  
        obj.plan(); // LINE 2  
    }  
}
```

Choose the correct option.

Options :

LINE 1 generates compilation error because method `performTasks()` cannot be invoked on `obj`.
6406532779931. ❌

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

Perform tasks
6406532779932. ❌ Monitor employees

This code generates the output:
Perform tasks
Monitor employees
6406532779933. ✓ Plan delivery operations

This code generates the output:

Perform tasks
Monitor employees
Plan tasks

6406532779934. ✘

Question Number : 214 Question Id : 640653827058 Question Type : MCQ

Correct Marks : 6

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class Bird {  
    private String species;  
    private String color;  
    public Bird(String species, String color) {  
        this.species = species;  
        this.color = color;  
    }  
    // ----- CODE SEGMENT -----  
}  
public class Test {  
    public static void main(String[] args) {  
        Bird b1 = new Bird("Parrot", "Green");  
        Bird b2 = new Bird("Sparrow", "Brown");  
        System.out.println(b1 + "\n" + b2);  
    }  
}
```

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

Parrot : Green

Sparrow : Brown

Options :

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

6406532779955. ✘

```
    public String toString() {  
        return species + " : " + color;  
    }
```

6406532779956. ✓

6406532779957. ✘ No additional code is required in place of CODE SEGMENT.

This output will not be printed because Java throws an error when an object is tried to be printed using System.out.println.
6406532779958. *

Sub-Section Number :	4
Sub-Section Id :	640653123324
Question Shuffling Allowed :	Yes

Question Number : 215 Question Id : 640653827049 Question Type : MCQ

Correct Marks : 7

Question Label : Multiple Choice Question

Consider the Java code given below. Identify the correct statement to fill in the blank at LINE 1, such that the output is: Eligible for Diploma

```
interface Eligibility {  
    void printEligibility();  
}  
class Student {  
    private double cgpa;  
    //Constructor to initialize instance variable  
    public Eligibility checkEligibility() {  
        if (cgpa > 6.0)  
            return new Eligible();  
        return new NotEligible();  
    }  
    private class Eligible implements Eligibility {  
        public void printEligibility() {  
            System.out.println("Eligible for Diploma");  
        }  
    }  
    private class NotEligible implements Eligibility {  
        public void printEligibility() {  
            System.out.println("Not eligible for Diploma");  
        }  
    }  
}  
public class Test {  
    public static void main(String[] args) {  
        Student s1 = new Student(5.5);  
        Student s2 = new Student(7.5);  
        ----- //LINE 1  
    }  
}
```

Options :

6406532779919. ✓

```
s2.checkEligibility().printEligibility();
```

6406532779920. ✘ s2.printEligibility();

6406532779921. ✘ s1.printEligibility();

6406532779922. ✘ s1.checkEligibility().printEligibility();

Question Number : 216 Question Id : 640653827050 Question Type : MCQ

Correct Marks : 7

Question Label : Multiple Choice Question

Consider the code given below that checks whether two phones are the same. Method `equals` is overridden to compare two `Phone` objects as follows.

If two phones have the same `brand` and `imeiNumber`, then they are the same.

```
class Phone {  
    private String brand;  
    private int imeiNumber;  
  
    // Constructor to initialize instance variables  
  
    public boolean equals(Object obj) {  
        //CODE BLOCK  
    }  
}  
  
public class Test {  
    public static void main(String[] args) {  
        Phone p1 = new Phone("Samsung", 123456);  
        Phone p2 = new Phone("Samsung", 123456);  
        if (p1.equals(p2))  
            System.out.println("p1 and p2 are same");  
        else  
            System.out.println("p1 and p2 are different");  
    }  
}
```

Choose the correct option(s) to fill in place of CODE BLOCK so that the output is:
p1 and p2 are same

Options :

6406532779923. ✘

```
if(obj instanceof Phone) {  
    if(this.brand == obj.brand && this.imeiNumber == obj.imeiNumber)  
        return true;  
}  
return false;  
  
if(this.brand == obj.brand && this.imeiNumber == obj.imeiNumber)  
    return true;  
6406532779924. ✘ return false;  
  
if(obj instanceof Phone) {  
    Phone p = obj;  
    if(this.brand == p.brand && this.imeiNumber == p.imeiNumber)  
        return true;  
}  
6406532779925. ✘ return false;  
  
if(obj instanceof Phone) {  
    Phone p = (Phone) obj;  
    if(this.brand == p.brand && this.imeiNumber == p.imeiNumber)  
        return true;  
}  
6406532779926. ✓ return false;
```

Question Number : 217 Question Id : 640653827051 Question Type : MCQ

Correct Marks : 7

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class TravelAgency{  
    String name;  
    String[] destinations;  
  
    public TravelAgency(String n, String[] d){  
        name = n;  
        destinations = d;  
    }  
    public TravelAgency(TravelAgency t){  
        this.name = t.name;  
        this.destinations = t.destinations;  
    }  
}  
public class Test{  
    public static void main(String[] args){  
        String[] d = {"Ooty", "Bali", "Thailand"};  
        TravelAgency t1 = new TravelAgency("RoamWorld", d);  
        TravelAgency t2 = new TravelAgency(t1);  
        t2.name= "ValleyTravel";  
        t2.destinations[0] = "Goa";  
        System.out.println(t1.name + "," +t1.destinations[0]);  
        System.out.println(t2.name + "," +t2.destinations[0]);  
    }  
}
```

What will the output be?

Options :

6406532779927. ❌ ValleyTravel,Goa
6406532779927. ❌ ValleyTravel,Goa

6406532779928. ✓ RoamWorld,Goa
6406532779928. ✓ ValleyTravel,Goa

6406532779929. ❌ RoamWorld,Ooty
6406532779929. ❌ ValleyTravel,Goa

6406532779930. ❌ RoamWorld,Ooty
6406532779930. ❌ RoamWorld,Goa

Question Number : 218 Question Id : 640653827053 Question Type : MCQ

Correct Marks : 7

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class Screen {  
    void showContent() {  
        System.out.println("Display on screen");  
    }  
}  
class TV extends Screen {  
    void showContent() {  
        super.showContent();  
        System.out.println("Display on TV");  
    }  
    void showContent(String s) {  
        System.out.println("Display on TV: " + s);  
    }  
}  
class Monitor extends TV {  
    void showContent() {  
        super.showContent();  
        System.out.println("Display on monitor");  
    }  
    void showContent(String s) {  
        System.out.println("Display on monitor: " + s);  
    }  
}  
class Test {  
    public static void main(String[] args) {  
        TV obj = new Monitor(); // LINE 1  
        obj.showContent();  
        obj.showContent("News"); // LINE 2  
    }  
}
```

Options :

The program generates output:

Display on screen

Display on TV

Display on monitor

Display on monitor: News

6406532779935. ✓

LINE 1 generates compilation error because a variable of type TV cannot refer

6406532779936. ✗ to an object of type Monitor.

6406532779937. ✗

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

Display on TV
Display on monitor
Display on monitor: News

The program generates output:

Display on screen
Display on TV
Display on TV: News

6406532779938. *

Question Number : 219 Question Id : 640653827054 Question Type : MCQ

Correct Marks : 7

Question Label : Multiple Choice Question

Consider the Java code given below.

```
1 interface Coolable {  
2     public void startCooling();  
3     public void stopCooling();  
4 }  
5 interface TemperatureAdjustable {  
6     public void adjustTemperature();  
7     default void displayTemperature() {  
8         System.out.println("Temperature is adjustable.");  
9     }  
10 }  
11 class AirConditioner implements Coolable, TemperatureAdjustable {  
12     public void startCooling() {  
13         System.out.println("Cooling started.");  
14     }  
15     public void stopCooling() {  
16         System.out.println("Cooling stopped.");  
17     }  
18 }
```

Choose the correct option regarding the above code.

Options :

LINE 7 generates compilation error because the method `displayTemperature` is not abstract.
6406532779939. *

LINE 11 generates compilation error because class `AirConditioner` cannot implement two interfaces.
6406532779940. *

LINE 11 generates compilation error because class `AirConditioner` is not declared as abstract.

6406532779941. ✓

LINE 2, LINE 3 & LINE 6 generate compilation errors because the methods `startCooling()`, `stopCooling()` and `adjustTemperature()` are not abstract.

6406532779942. ✘

Question Number : 220 Question Id : 640653827055 Question Type : MCQ

Correct Marks : 7

Question Label : Multiple Choice Question

Consider the Java code given below.

```
interface Singable {  
    default void sing() {  
        System.out.println("Sings");  
    }  
    public void perform();  
}  
abstract class Musician implements Singable {  
    public void sing() {  
        System.out.println("Sings song");  
    }  
}  
class LeadSinger extends Musician {  
    public void perform() {  
        System.out.println("Leads group");  
    }  
}  
public class Test {  
    public static void main(String[] args) {  
        Singable obj1 = new LeadSinger(); // LINE 1  
        Musician obj2 = new LeadSinger();  
        obj2.sing();  
        obj2.perform(); // LINE 2  
    }  
}
```

Choose the correct option.

Options :

This code generates the output:

Sings song

6406532779943. ✓ Leads group

This code generates the output:

Sings

Leads group

6406532779944. ✘

LINE 1 generates compilation error because a variable of type Singable cannot refer to an object of type LeadSinger.

6406532779945. ✘

LINE 2 generates compilation error because the method perform() cannot be invoked on obj2

6406532779946. ✘

Question Number : 221 Question Id : 640653827057 Question Type : MCQ

Correct Marks : 7

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class Player {  
    private String name;  
    private int jerseyNumber;  
    public Player(String nm){  
        name = nm;  
    }  
    public Player(int number){  
        jerseyNumber = number;  
    }  
    public Player(String nm, int number) {  
        name = nm;  
        jerseyNumber = number;  
    }  
    public String toString() {  
        return "Name: " + name + ", Jersey Number: " + jerseyNumber;  
    }  
}  
  
class Captain extends Player {  
    private String team;  
    // ----- CODE BLOCK -----  
    public String toString() {  
        return super.toString() + ", Team: " + team;  
    }  
}
```

Choose the correct option to fill in place of CODE BLOCK to instantiate instance variables of class Captain

Options :

```
public Captain(String t) {  
    team = t;
```

6406532779951. ✘ }

```
public Captain(String nm, int number, String t) {  
    super(nm, number);  
    team = t;
```

6406532779952. ✓ }

```
public Captain(String nm, int number, String t) {  
    name = nm;  
    jerseyNumber = number;  
    team = t;
```

6406532779953. ✘ }

```
public Captain(String nm, int number, String t) {  
    team = t;  
    super(nm, number);
```

6406532779954. ✘ }

Question Number : 222 Question Id : 640653827059 Question Type : MCQ

Correct Marks : 7

Question Label : Multiple Choice Question

Consider the Java code given below.

```
interface Iterator {
    public boolean has_next();
    public Object get_next();
}
abstract class Printable {
    public abstract void print();
}
class BankAccount extends Printable {
    private String accountName;
    private double balance;
    public BankAccount(String aN, double b) {
        //initialize accountname and balance
    }
    public void print() {
        System.out.println(accountName + ", " + balance);
    }
}
class BankAccountList {
    private final int limit = 3;
    private BankAccount[] list;
    public BankAccountList(BankAccount[] accounts) {
        this.list = accounts;
    }
    private class BankAccountIter implements Iterator {
        private int indx;
        public BankAccountIter() {
            //constructor
        }
        public boolean has_next() {
            //if next element available in list return true;else false
        }
        public Object get_next() {
            //return next element from list
        }
    }
    public Iterator getIterator() {
        return new BankAccountIter();
    }
}
public class Test{
    public static void main(String[] args) {
        BankAccountList.BankAccount[] accounts = {
            new BankAccountList.BankAccount("Priya", 500),
            new BankAccountList.BankAccount("Ravi", 1000),
            new BankAccountList.BankAccount("Suresh", 1500)
        };
        BankAccountList bList = new BankAccountList(accounts);
        Iterator iter = bList.getIterator();
        while(iter.has_next()) {
            -----;           //LINE 1
        }
    }
}
```

Identify the appropriate statement to fill in the blank at LINE 1, such that the output is:

Priya, 500
Ravi, 1000
Suresh, 1500

Options :

6406532779959. ✓ ((Printable)iter.get_next()).print()

6406532779960. ✗ ((BankAccount)iter.get_next()).print()

6406532779961. ✗ ((BankAccountList)iter.get_next()).print()

6406532779962. ✘ `iter.get_next().print();`

Sub-Section Number :

5

Sub-Section Id :

640653123325

Question Shuffling Allowed :

Yes

Question Number : 223 Question Id : 640653827056 Question Type : MCQ

Correct Marks : 8

Question Label : Multiple Choice Question

Consider the Java code given below.

```
class Appliance {  
    private int code;  
    private static double basePower = 100;  
    public Appliance(int c) {  
        code = c;  
    }  
    public final double electricityFare() {  
        return basePower*2;  
    }  
}  
class Cooler extends Appliance {  
    public Cooler(int x) {  
        super(x);  
    }  
    public final double electricityFare() { //LINE 1  
        return basePower*3; //LINE 2  
    }  
}  
public class Test {  
    public static void main(String[] args) {  
        Appliance d1 = new Cooler(101); // LINE 3  
        Cooler c1 = new Appliance(105); // LINE 4  
        d1.electricityFare();  
        c1.electricityFare();  
    }  
}
```

Which of the following statements is FALSE?

Options :

6406532779947. ✘ LINE 1 generates compilation error because the method `electricityFare()` cannot be overridden.

6406532779948. ✘

LINE 2 generates compilation error because instance variable `basePower` cannot be accessed in class `Cooler`.

LINE 3 generates compilation error because a variable of type `Appliance` cannot refer to an object of type `Cooler`.
6406532779949. ✓

LINE 4 generates compilation error because a variable of type `Cooler` cannot refer to an object of type `Appliance`.
6406532779950. ✗

AppDev2

Section Id :	64065359306
Section Number :	12
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 :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123326
Question Shuffling Allowed :	No

Question Number : 224 Question Id : 640653827060 Question Type : MCQ

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 :

6406532779963. ✓ YES

6406532779964. ✗ NO

Sub-Section Number :

2

Sub-Section Id :

640653123327

Question Shuffling Allowed :

Yes

Question Number : 225 Question Id : 640653827061 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following methods is not a valid DOM method in JavaScript?

Options :

6406532779965. ✗ getElementById()

6406532779966. ✓ getElementByPropertyName()

6406532779967. ✗ getElementsByTagName()

6406532779968. ✗ getElementByClassName()

Question Number : 226 Question Id : 640653827064 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

What will be the output of the following code snippet?

```
let result = "";
for (let i = 0; i < 3; i++) {
  for (let j = 0; j < 2; j++) {
    result += " " + i + j + " ";
  }
}
console.log(result);
```

Options :

6406532779978. ✗ 0 1 1 2 2 3

6406532779979. ✗ 0 1 1 2 2 3 3 4

6406532779980. ✘ 0 1 2 3 4 5

6406532779981. ✓ 00 01 10 11 20 21

Question Number : 227 Question Id : 640653827067 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Which of the following statements best describes the ephemeral state?

Options :

6406532779992. ✘ Data that persists across browser sessions.

6406532779993. ✘ Data that is stored in a server-side database.

6406532779994. ✓ Temporary data that is not preserved across re-renders.

6406532779995. ✘ Data that is cached in the client's browser.

Question Number : 228 Question Id : 640653827069 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

What is the difference between v-bind and v-model directives in Vue.js?

Options :

6406532780000. ✓ “v-bind” is used for one-way data binding, while “v-model” is used for two-way data binding.

6406532780001. ✘ “v-bind” is used for two-way data binding, while “v-model” is used for one-way data binding.

6406532780002. ✘ Both “v-bind” and “v-model” are used for one-way data binding.

6406532780003. ✘ Both “v-bind” and “v-model” are used for two-way data binding.

Sub-Section Number :

3

Sub-Section Id :

640653123328

Question Shuffling Allowed :

Yes

Question Number : 229 Question Id : 640653827062 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

What will be the output of the following JavaScript code?

```
let x = undefined;
let y = null;
let z = NaN;
console.log(x == y, x === y, y == z, y === z, isNaN(z));
```

Options :

6406532779969. ✘ true false false true false

6406532779970. ✘ false false false false true

6406532779971. ✓ true false false false true

6406532779972. ✘ false true true false false

Question Number : 230 Question Id : 640653827063 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the below JavaScript program.

```
const a = 15;

const obj1 = {
    a: 20,
    b: function () {
        console.log(this.a);
        this.b();
    }
}

const obj2 = {
    a: 10,
    b: () => {
        console.log(this.a);
    }
}

obj1.b.apply(obj2);
```

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

Options :

20

6406532779973. ✘ 20

20

6406532779974. ✘ undefined

6406532779975. ✘

undefined
undefined

10
6406532779976. ✓ undefined

6406532779977. ❌ The program will crash due to maximum call stack size exceeded error.

Question Number : 231 Question Id : 640653827065 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the below JavaScript program.

```
let users = [
  { name: "Alice", age: 25 },
  { name: "Bob", age: 22 },
  { name: "Charlie", age: 30 },
];
users.sort((a, b) => a.age - b.age);
console.log(users.map((user) => user.name).join(", "));
```

What will be the output when the code is executed?

Options :

6406532779982. ❌ Alice, Bob, Charlie

6406532779983. ✓ Bob, Alice, Charlie

6406532779984. ❌ Charlie, Alice, Bob

6406532779985. ❌ Charlie, Bob, Alice

Question Number : 232 Question Id : 640653827066 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the below javascript program.

```
const words = ['apple', 'banana', 'orange', 'grape', 'kiwi'];
const result = words.map(word => word.length).filter(len => len > 5);
console.log(result);
```

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

Options :

6406532779986. ✘ ['apple', 'banana', 'orange', 'grape', 'kiwi']

6406532779987. ✘ [5, 6, 6, 5, 4]

6406532779988. ✘ ['banana', 'orange']

6406532779989. ✓ [6, 6]

6406532779990. ✘ [5, 5]

6406532779991. ✘ [true, true]

Question Number : 233 Question Id : 640653827068 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

What is state management in the context of a web application?

Options :

6406532779996. ✘ Organizing and storing data on the server-side database.

6406532779997. ✓ Handling and updating the state of client-side components and data.

6406532779998. ✘ Managing user session data using browser cookies.

6406532779999. ✘ Coordinating the state of HTTP requests and responses between client and server.

Question Number : 234 Question Id : 640653827070 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following JavaScript program.

```
const obj1={  
    age: 29,  
    toy: 'kite'  
}  
  
const obj2={  
    __proto__: obj1,  
    animal: 'dogs',  
    members: 45  
}  
  
console.log(obj1.toy)  
console.log(obj1.animal)  
console.log(obj2.age)  
console.log(obj2.members)  
console.log(Object.keys(obj2))
```

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

Options :

kite
undefined
29
45
['animal', 'members', 'age', 'toy']
6406532780004. ✘

kite
dogs
undefined
45
['age', 'toy', 'animal', 'members']
6406532780005. ✘

kite
dogs
undefined
45
['age', 'toy']
6406532780006. ✘

6406532780007. ✓

```
kite
undefined
29
45
['animal', 'members']
```

Question Number : 235 Question Id : 640653827075 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following html.

```
<div id="app">
  <p>{{ message }}</p>
  <button @click="updateMessage">Click me</button>
</div>

<script>
new Vue({
  el: '#app',
  data: {
    message: 'Hello!'
  },
  methods: {
    updateMessage() {
      this.message += '!';
    }
  }
});
</script>
```

Assuming vue cdn has been added to the html and the html format is correct. What would be the output on the screen after clicking the button twice?

Options :

6406532780024. ✘ Hello

6406532780025. ✘ Hello!

6406532780026. ✘ Hello!!

6406532780027. ✓ Hello!!!

Sub-Section Number :	4
Sub-Section Id :	640653123329
Question Shuffling Allowed :	Yes

Question Number : 236 Question Id : 640653827071 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is/are correct definition(s) of an arrow function that accepts a number and returns its square?

Options :

6406532780008. ❌ let func = (num) => return num1*num1;

6406532780009. ❌ let func = (num) => { num1*num1; }

6406532780010. ✓ let func = (num) => num1*num1;

6406532780011. ✓ let func = (num) => { return num1*num1; }

Sub-Section Number :	5
Sub-Section Id :	640653123330
Question Shuffling Allowed :	Yes

Question Number : 237 Question Id : 640653827072 Question Type : MCQ

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following JavaScript code embedded in the body of the HTML document given below.

```
<html>
<body>
    <div id="mybox">Test JS</div>
    <script>
        let count = 0;
        let change = setInterval(()=>{
            let box = document.getElementById('mybox');
            if(count % 2 == 1){
                box.style.backgroundColor = 'red';
                count++;
            }
            else if(count % 3 == 1){
                box.style.backgroundColor = 'green';
                count++;
            }
            else{
                box.style.backgroundColor = 'yellow';
                count++;
            }
        }, 1000)
    </script>
</body>
</html>
```

If the document is rendered on the browser, what will be the sequence of background colors taken by the element with id="mybox" in the first 6 seconds of execution?

Options :

6406532780012. ❌ Red → Green → Yellow → Red → Green → Yellow

6406532780013. ❌ Red → Green → Red → Yellow → Red → Yellow

6406532780014. ❌ Yellow → Green → Yellow → Green → Yellow → Green

6406532780015. ✓ Yellow → Red → Yellow → Red → Green → Red

Question Number : 238 Question Id : 640653827073 Question Type : MCQ

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the below JavaScript program.

```
class Region{
    constructor(region){
        this.region = region;
    }
    get describe(){
        return `${this.region} is one of the major geographical regions.`
    }
}

class Country extends Region {
    constructor(region, country, nation){
        super(region)
        this.country = country;
        this.nation = nation;
    }

    get describe(){
        return `${this.country} is a ${this.nation} nation in the region of
${this.region}.`
    }
}

let Australia = new Region('Australia and NZ', 'Australia', 'developed')
let Germany = new Country('Europe', 'Germany', 'developed')
console.log(Australia.describe)
console.log(Germany.describe)
```

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

Options :

Australia is a developed nation in the region of Australia and NZ.
Germany is a developed nation in the region of Europe.

6406532780016. ✘

Australia and NZ is one of the major geographical regions.
Germany is one of the major geographical regions.

6406532780017. ✘

Australia is a developed nation in the region of Australia and NZ.
Germany is one of the major geographical regions.

6406532780018. ✘

6406532780019. ✓

Australia and NZ is one of the major geographical regions.
Germany is a developed nation in the region of Europe.

Question Number : 239 Question Id : 640653827074 Question Type : MCQ

Correct Marks : 4.5

Question Label : Multiple Choice Question

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

File: index.html

```
<div id = "app">
    <div>Welcome to Frontend Development</div>
        <new>Vue is a Frontend Framework</new>
    </div>
    <script src="script.js"></script>
```

File: script.js

```
Vue.component('new', {
  template : `<div>
    <slot>Vue is JS Framework</slot>
    <div>Learn Vue 2 and Vue 3</div>
  </div>
`};

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

What will be rendered on the browser screen?

Options :

- Welcome to Frontend Development
- Vue is a JS Framework
- Vue is a Frontend Framework
- 6406532780020. ❌ Learn Vue 2 and Vue 3

6406532780021. ❌

Welcome to Frontend Development

Vue is a Frontend Framework

Vue is a JS Framework

Learn Vue 2 and Vue 3

Welcome to Frontend Development

Vue is a Frontend Framework

6406532780022. ✓ Learn Vue 2 and Vue 3

Welcome to Frontend Development

Vue is a JS Framework

6406532780023. ✗ Learn Vue 2 and Vue 3

Question Number : 240 Question Id : 640653827076 Question Type : MCQ

Correct Marks : 4.5

Question Label : Multiple Choice Question

Consider the following html.

```
<div id="app">
  <parent-component :title="parentTitle">
    <template slot="header">
      <h2>{{ headerTitle }}</h2>
    </template>
  </parent-component>
</div>

<script>
Vue.component('parent-component', {
  props: ['title'],
  template: `
    <div>
      <h1>{{ title }}</h1>
      <slot name="header"></slot>
      <p>Main Content</p>
    </div>
  `
});
new Vue({
  el: '#app',
  data: {
    parentTitle: 'Parent Component Title',
    headerTitle: 'Header Content'
  }
});
</script>
```

Assuming Vue CDN has been added to the HTML and the HTML format is correct.

What would be the output on the screen?

Options :

Parent Component Title

Main Content

6406532780028. ❌

Parent Component Title

Header Content

6406532780029. ✓ Main Content

6406532780030. ❌

Parent Component Title

<h2>{{ headerTitle }}</h2>

Main Content

Header Content

6406532780031. ✖ Main Content

DBMS

Section Id :	64065359307
Section Number :	13
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	12
Number of Questions to be attempted :	12
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 :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123331
Question Shuffling Allowed :	No

Question Number : 241 Question Id : 640653827077 Question Type : MCQ

Correct Marks : 0

Question Label : Multiple Choice Question

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

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

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

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

Options :

6406532780032. ✓ YES

6406532780033. ✗ NO

Sub-Section Number :

2

Sub-Section Id :

640653123332

Question Shuffling Allowed :

No

Question Id : 640653827078 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Question Numbers : (242 to 243)

Question Label : Comprehension

Consider the table **Champions_League** for given subquestions

Name	Age	Team	Country	Goals
De jong	26	Barcelona	Netherlands	20
Bellingham	20	Real Madrid	England	18
Haaland	23	Manchester City	Norway	18
Araujo	25	Barcelona	Uruguay	20
Martinelli	22	Arsenal	Brazil	16
Mbappe	25	PSG	France	16
Kroos	34	Real Madrid	Germany	18
Dembele	26	PSG	France	14
Saka	22	Arsenal	England	16
Cubarsi	17	Barcelona	Spain	12

Table 1: Figure 1: Champions_League

Sub questions

Question Number : 242 Question Id : 640653827079 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Choose the correct SQL statement that will return the resultant table given in Figure 2.

Goals	Team	Count
20	Barcelona	2
18	Real Madrid	2
18	Manchester City	1
16	Arsenal	2
16	PSG	1
14	PSG	1
12	Barcelona	1

Table 2: Figure 2: Result

Options :

6406532780034. ✓ SELECT Goals, Team, COUNT(*)
FROM Champions_League GROUP
BY Goals, Team;

6406532780035. ✗ SELECT Goals, Team, COUNT(*)
FROM Champions_League WHERE
Age > 25 ORDER BY Goals;

6406532780036. ✗ SELECT Goals, Team, COUNT(*)
FROM Champions_League GROUP
BY Team;

6406532780037. ✗ SELECT Goals, Team, COUNT(*)
FROM Champions_League ORDER
BY Team;

Question Number : 243 Question Id : 640653827080 Question Type : SA

Correct Marks : 4

Question Label : Short Answer Question

How many rows will the following query return?

```
select team
from Champions_League
where country like '%y' and goals>17 or name like '%e'
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

4

Sub-Section Number : 3

Sub-Section Id : 640653123333

Question Shuffling Allowed : Yes

Question Number : 244 **Question Id :** 640653827081 **Question Type :** MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following SQL statement:

```
Create table Cars(  
CarID varchar(8),  
CarName varchar(20),  
CarColour varchar(8),  
YearOfPurchase integer,  
Weight integer,  
primary key (CarID),  
check(YearOfPurchase in (1990, 2000, 2005, 2010)));
```

Which among the following will cause an integrity constraint violation in the Cars table?

Note: Insertions are done in the order of the options given.

Options :

6406532780039. ✓ INSERT INTO Cars('C1', 'Ferrari', 'Red', 2003, 500);

6406532780040. ✗ INSERT INTO Cars('C2', 'McLaren', 'Orange', 2005, 700);

6406532780041. ✗ INSERT INTO Cars('C1', 'Mercedes', 'Black', 1990, 600);

6406532780042. ✗ INSERT INTO Cars('C4', 'Alpine', 'White', 1990, 800);

Question Number : 245 **Question Id :** 640653827094 **Question Type :** MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following relational schema:

Passenger(P_id, P_name, B_id)

Pilot(Pilot_id, Pilot_name, Flight_No)

Bookings(Booking_id, Boarding, Destination, Flight_no, P_id, Pilot_id)

Choose the suitable query that will find the names of all passengers who flew from Mumbai with pilot named Raj in flight number 3005.

Options :

6406532780080. ✓ $\Pi_{P_name}(Passenger \bowtie \Pi_{P_id}(\sigma_{Boarding='Mumbai' \wedge Flight_No='3005'} \wedge Pilot_name='Raj'))$

6406532780081. ✗ $\Pi_{P_name}(Passenger \bowtie \Pi_{Pilot_name}(\sigma_{Boarding='Mumbai' \wedge Flight_No='3005'} \wedge Pilot_name='Raj'))$

6406532780082. ✗ $\Pi_{P_name}(Passenger \bowtie \Pi_{P_id}(\sigma_{Boarding='Mumbai' \wedge Flight_No='3005'} \wedge Pilot_name='Raj'))$

6406532780083. ✗ $\Pi_{P_name}(Passenger \bowtie \Pi_{P_id}(\sigma_{Destination='Mumbai' \wedge Flight_No='3005'} \wedge Pilot_name='Raj'))$

Sub-Section Number :

4

Sub-Section Id :

640653123334

Question Shuffling Allowed :

Yes

Question Number : 246 Question Id : 640653827082 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a table Employees with the following attributes:

Employees(ID, Name, Department, Salary)

Which of the following represent(s) the valid output(s) of the following query?

```
select salary  
from Employees  
where salary like '10%_2_%'
```

Options :

6406532780043. ✗ 1002

6406532780044. ✓ 101020

6406532780045. ✗ 10200

6406532780046. ✓ 10022

Question Number : 247 Question Id : 640653827095 Question Type : MSQ

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.name, t.points  
FROM players p natural join teams t  
WHERE p.jersey_no = 7
```

Options :

$\{x \mid \exists p \in \text{players} \exists t \in \text{teams}(p.pid = t.pid \wedge p.jersey_no = 7 \wedge x.name = 6406532780084. \checkmark p.name \wedge x.points = t.points)\}$

$\{x \mid \exists p \in \text{players} \exists t \in \text{teams}(p.pid = t.pid \wedge p.jersey_no = 7 \wedge x.name = 6406532780085. \ast p.name)\}$

$\{< b, o > \mid \exists a, b, c, d (< a, b, c, d > \in \text{players} \wedge d = 7) \wedge \exists m, n, o, p (< m, n, o, p > \in 6406532780086. \checkmark \text{teams} \wedge a = p)\}$

$\{< b, o > \mid \exists a, b, c, d (< a, b, c, d > \in \text{players} \wedge d = 7) \wedge \exists m, n, o, p (< m, n, o, p > \in 6406532780087. \ast \text{teams})\}$

Sub-Section Number :

5

Sub-Section Id :

640653123335

Question Shuffling Allowed :

No

Question Id : 640653827083 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Question Numbers : (248 to 249)

Question Label : Comprehension

Consider the following data for given subquestions:

Driver_ID	Name	Team	Salary
55	Carlos Sainz	Scuderia Ferrari	2500000
16	Charles Leclerc	Scuderia Ferrari	2300000
4	Lando Norris	McLaren	2100000
81	Oscar Piastri	McLaren	1800000
44	Lewis Hamilton	Mercedes AMG	2600000
63	George Russell	Mercedes AMG	2000000
1	Max Verstappen	RedBull Racing	2800000
11	Sergio Perez	RedBull Racing	2500000
14	Fernando Alonso	Aston Martin	2300000
18	Lance Stroll	Aston Martin	1700000

Table 4: Figure 3: F1_Drivers

Team_ID	Team	Country	Ranking
1	Scuderia Ferrari	Italy	1
2	Mercedes AMG	Germany	4
3	McLaren	UK	2
4	RedBull Racing	Austria	5
5	Aston Martin	UK	3

Table 5: Figure 3: F1_Teams

Sub questions

Question Number : 248 Question Id : 640653827084 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

What will be the output of the

following SQL query:

```
select distinct Team
from F1_Teams
where exists (select name
              from F1_Drivers
              where F1_Drivers.Team = F1_Teams.Team and salary>2000000);
```

Options :

6406532780047. ❌ Distinct names of all such teams that have no driver with salary higher than 2000000

6406532780048. ❌ Distinct names of all such teams that have all drivers with salary higher than 2000000

6406532780049. ✓ Distinct names of all such teams that have at least one driver with salary higher than 2000000

6406532780050. ❌ Distinct names of all such teams that have exactly one driver with salary

higher than 2000000

Question Number : 249 Question Id : 640653827085 Question Type : SA

Correct Marks : 4

Question Label : Short Answer Question

How many tuples will the following query return?

```
select name  
from F1_Drivers  
where salary > all (select salary  
                      from F1_Drivers  
                      where Team = 'Mercedes AMG');
```

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

1

Sub-Section Number : 6

Sub-Section Id : 640653123336

Question Shuffling Allowed : Yes

Question Number : 250 Question Id : 640653827086 Question Type : MSQ

Correct Marks : 2 Max. Selectable Options : 0

Question Label : Multiple Select Question

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

Options :

6406532780052. ✘ All candidate keys are primary keys

6406532780053. ✓ A primary key is also a candidate key

6406532780054. ✘ A primary key consists of exactly one attribute

6406532780055. ✓ A candidate key is a minimal super key

Sub-Section Number : 7

Sub-Section Id : 640653123337

Question Shuffling Allowed : No

Question Id : 640653827088 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (251 to 253)

Question Label : Comprehension

Consider the E-R diagram given in Figure 1 and answer the subquestions.

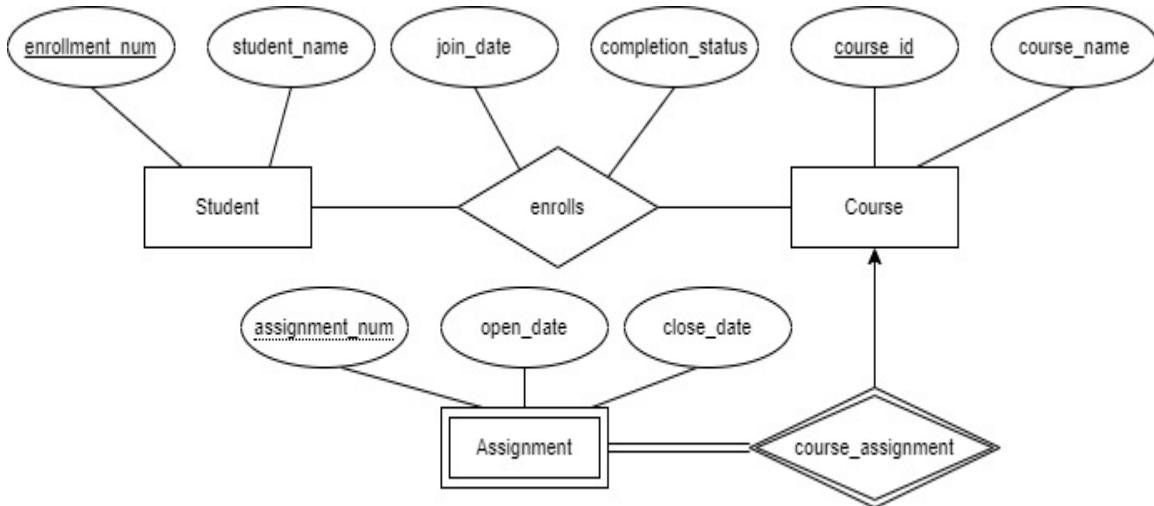


Figure 1: E-R diagram

Sub questions

Question Number : 251 Question Id : 640653827089 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Identify the correct relational schema for the relationship set **enrolls**.

Note: The primary key is underlined.

Options :

6406532780060. ❌ **enrolls(join_date, completion_status)**

6406532780061. ❌ **enrolls(enrollment_num, join_date, completion_status)**

6406532780062. ❌ **enrolls(course_id, enrollment_num, join_date, completion_status)**

6406532780063. ✓ **enrolls(course_id, enrollment_num, join_date, completion_status)**

Question Number : 252 Question Id : 640653827090 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Identify the correct relational schema for the entity set **Assignment**.

Note: The primary key is underlined.

Options :

6406532780064. ❌ **Assignment(assignment_num, open_date, close_date)**

6406532780065. ✓ Assignment(course_id, assignment_num, open_date, close_date)

6406532780066. ✗ Assignment(assignment_num, course_id, open_date, close_date)

6406532780067. ✗ Assignment(assignment_num, course_id, open_date, close_date)

Question Number : 253 Question Id : 640653827091 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

With reference to the relationship
between Student and Course,
which of the statement(s) is/are
TRUE?

Options :

6406532780068. ✗ Each course must have at least one student.

6406532780069. ✗ Each student must have enrolled for at least one course.

6406532780070. ✓ Some courses may have no students.

6406532780071. ✓ A student may enroll for many courses.

Sub-Section Number : 8

Sub-Section Id : 640653123338

Question Shuffling Allowed : Yes

Question Number : 254 Question Id : 640653827087 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the tables r and s.

A	B	C	D
p	1	p	a
q	2	r	a
r	4	q	b
p	1	r	a
s	2	q	b

Table r

B	D	E
1	a	p
3	a	q
1	a	r
2	b	s
3	b	t

Table s

A	B	D
p	1	a
s	2	b

result

Which of the following relational algebra operation(s) on tables r and s will produce table result?

Options :

6406532780056. ❌ $\Pi_{A,r.B,r.D}(\sigma_{((r.B=s.B) \vee (r.D=s.D))}(r \times s))$

6406532780057. ❌ $\Pi_{A,r.B,r.D}(\sigma_{(r.D=s.D)}(r \times s))$

6406532780058. ✓ $\Pi_{A,r.B,r.D}(\sigma_{((r.B=s.B) \wedge (r.D=s.D))}(r \times s))$

6406532780059. ✓ $\Pi_{A,B,D}(r \bowtie s)$

Question Number : 255 Question Id : 640653827092 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a relational schema:

Parts(Pid, Pname, Price, Quantity)

Vendors (Vid, Vname, Location, Pid)

Consider the SQL query:

```
SELECT Distinct Vname FROM Parts NATURAL JOIN Vendors
WHERE Price < 5000 and location = 'Mumbai'
```

Choose the correct relational algebra expression(s) which will give the same output as of the above SQL query.

Options :

6406532780072. ❌ $\Pi_{Vname}(\sigma_{Price < 5000}(Parts)) \cup \Pi_{Vname}(\sigma_{Location='Mumbai'}(Vendors))$

6406532780073. ✓ $\Pi_{Vname}(\sigma_{Location='Mumbai' \wedge Price < 5000}(Parts \bowtie Vendors))$

6406532780074. ✘ $\Pi_{Vname}(\sigma_{Price < 5000}(Parts)) \wedge \Pi_{Vname}(\sigma_{Location='Mumbai'}(Vendors))$

6406532780075. ✓ $\Pi_{Vname}(\sigma_{Location='Mumbai' \wedge Price < 5000 \wedge Parts.Pid = Vendors.Pid}(Parts \times Vendors))$

Sub-Section Number : 9

Sub-Section Id : 640653123339

Question Shuffling Allowed : Yes

Question Number : 256 Question Id : 640653827093 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

Consider the following table which has three attributes: X, Y and Z, where X is the primary key and Z is the foreign key referencing X.

X	Y	Z
1	1	5
2	2	5
3	1	5
4	2	4
5	2	4
6	1	1
7	4	1
8	4	7

Which of the following sets of tuples are additionally deleted when the tuple (4,2,4) is deleted and ON DELETE CASCADE construct is applied over the table?

Options :

6406532780076. ✘ (2,2,5) and (3,1,5)

6406532780077. ✘ (5,2,4), (1,1,5), (2,2,5) and (3,1,5)

6406532780078. ✘ (6,1,1),(7,4,1) and (8,4,7)

6406532780079. ✓ All the remaining rows will be deleted

PDSA

Section Id : 64065359308

Section Number : 14

Section type : Online

Mandatory or Optional :	Mandatory
Number of Questions :	16
Number of Questions to be attempted :	16
Section Marks :	50
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No
Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123340
Question Shuffling Allowed :	No

Question Number : 257 Question Id : 640653827096 Question Type : MCQ

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 :

6406532780088. ✓ YES

6406532780089. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653123341
Question Shuffling Allowed :	Yes

Question Number : 258 Question Id : 640653827097 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Suppose f , g , and h are three functions. Which of the following statement(s) is/are true?

1. If $f = O(g)$ and $g = O(h)$ then $f = O(h)$
2. If $f = O(h)$ and $g = O(h)$ then $f + g = O(h)$.

Options :

6406532780090. ✘ Only statement 1 is true.
6406532780091. ✘ Only statement 2 is true
6406532780092. ✓ Both Statements 1 and 2 are true
6406532780093. ✘ Both Statements 1 and 2 are false

Question Number : 259 Question Id : 640653827098 Question Type : MCQ**Correct Marks : 3**

Question Label : Multiple Choice Question

Consider the following two implementations to finding the n^{th} Fibonacci number.**Code-A**

```
1 def fib(n):  
2     if n <= 1:  
3         return n  
4     else:  
5         return fib(n-1) + fib(n-2)
```

Code-B

```
1 def fib(n):  
2     L = [0,1]  
3     for i in range(2, n):  
4         L.append(L[-2] + L[-1])  
5     return L[-1]
```

Let $f(n)$ and $g(n)$ denote the asymptotic complexity of **Code-A** and **Code-B** respectively. Which of the following statements is **true**?**Options :**

6406532780094. ✘ $f(n) = O(g(n))$
6406532780095. ✓ $g(n) = O(f(n))$
6406532780096. ✘ Both $f(n) = O(g(n))$ and $g(n) = O(f(n))$ are true.
6406532780097. ✘ None of these

Question Number : 260 Question Id : 640653827100 Question Type : MCQ**Correct Marks : 3**

Question Label : Multiple Choice Question

You are given a non-empty list with n elements and the values are supposed to be 1 to n , in ascending order in the list. However, it is possible that one element is missing from the list between the first and last element (excluding the first and last element). For instance, a five elements list may contain [1, 3, 4, 5] instead of [1, 2, 3, 4, 5], here element 2 is missing from the list.

What is the time complexity of the best possible algorithm to find the missing element?

Options :

6406532780099. ✘ $O(1)$

6406532780100. ✘ $O(\sqrt{n})$

6406532780101. ✘ $O(n)$

6406532780102. ✓ $O(\log n)$

Question Number : 261 Question Id : 640653827101 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider the following Selection sort algorithm:

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

What will be the time complexity of selection sort if the input list of n elements is already sorted in ascending order?

Options :

6406532780103. ✘ $O(n)$

6406532780104. ✘ $O(\log n)$

6406532780105. ✘ $O(n \log n)$

6406532780106. ✓ $O(n^2)$

Question Number : 262 Question Id : 640653827106 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Select the most appropriate data structure for the following operations:

Application	data structure
1. Checking if a word is palindrome	i. Queue
2. Finding order in which courses should be taken	ii. Undirected Graph
3. Social media network	iii. Stack
4. Traffic Management	iv. Directed Graphs

Options :

6406532780120. ✘ 1 - ii, 2 - iii, 3 - iv, 4 - i

6406532780121. ✓ 1 - iii, 2 - iv, 3 - ii, 4 - i

6406532780122. ✘ 1 - i, 2 - ii, 3 - iv, 4 - iii

6406532780123. ✘ 1 - iii, 2 - ii, 3 - iv, 4 - i

Question Number : 263 Question Id : 640653827110 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Consider a connected, directed graph G on which **DFS** is executed. Let for an edge (u, v) in G, the following are the *pre* and *post* numbers used in the DFS algorithm on the graph.

$\text{pre}[u] = 3, \text{post}[u] = 6$

$\text{pre}[v] = 1, \text{post}[v] = 10$

Which of the following options is correct for edge (u, v) ?

Options :

6406532780135. ✘ Edge (u, v) is a tree edge.

6406532780136. ✓ Edge (u, v) is a back edge.

6406532780137. ✘ Edge (u, v) is a cross edge.

6406532780138. ✖ Edge (u, v) is a forward edge.

Sub-Section Number :	3
Sub-Section Id :	640653123342
Question Shuffling Allowed :	Yes

Question Number : 264 Question Id : 640653827099 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

The Tower of Hanoi problem discussed in the lecture is a classic puzzle with three rods and n disks of different sizes that can slide onto any rod. The puzzle starts with the disks neatly stacked in ascending order of size on one rod, with the smallest disk at the top. The objective is to move the entire stack to another rod, obeying the following rules:

1. Only one disk can be moved at a time.
2. Each move consists of taking the top disk from one stack and placing it on another stack.
3. No disk may be placed on top of a smaller disk.

Following is the recurrence of the recursive solution to find the minimum number of moves $M(n)$ for the given problem with n disk.

- $M(1) = 1$
- $M(n) = 2M(n - 1) + 1$

The number of moves if $n = 6$ is ____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

63

Question Number : 265 Question Id : 640653827107 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

An undirected connected graph G has 46 edges. The minimum number of vertices in G is ____.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

11

Sub-Section Number : 4

Sub-Section Id : 640653123343

Question Shuffling Allowed : Yes

Question Number : 266 Question Id : 640653827102 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following statements is/are **true** about the **Quicksort algorithm** to sort elements in ascending order? Assume that the last element in the list is selected as a pivot for partitioning each time.

Options :

6406532780107. ✓ The best case is when the pivot element always divides the list into two equal halves.

6406532780108. ✗ The best case is when the input list is already arranged in ascending order.

6406532780109. ✗ The best case is when the input list is arranged in descending order.

6406532780110. ✓ The worst case is when the input list is arranged in either ascending or descending order.

Question Number : 267 Question Id : 640653827108 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Which of the following is/are **true** about **Breadth First Search(BFS)** in an unweighted directed graph G ?

Options :

6406532780125. ✓ BFS can be used to compute the number of connected components in G .

6406532780126. ✗ BFS can not check if there are any cycles in G .

6406532780127. ✓ Paths computed by BFS are the shortest paths in G in terms of the number of edges.

If the graph is represented as an adjacency matrix, then BFS can be performed in $O(m + n)$

6406532780128. ✗ time, where m is the number of edges in G and n is the number of nodes in G .

Let T be a BFS Tree, let x and y be nodes in T belonging to layers L_i and L_j , and let (x, y) be an edge of G . Then i and j differ by at most 1.

Sub-Section Number : 5

Sub-Section Id : 640653123344

Question Shuffling Allowed :

Yes

Question Number : 268 Question Id : 640653827103 Question Type : SA

Correct Marks : 4

Question Label : Short Answer Question

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

Suppose each node of the linked list is an object of class Node, `head` is the first node of the linked list and the list has the following elements initially:

```
23, 21, 4, 67, 12, 6, 17, 24, 20, 33
```

Consider the following function

```
1 def operation(head):  
2     ptr1 = head  
3     ptr2 = head  
4     while (ptr2.next!= None):  
5         ptr1 = ptr1.next  
6         if ptr2.next.next != None:  
7             ptr2 = ptr2.next.next  
8         else:  
9             ptr2 = ptr2.next  
10    print(ptr1.data)
```

What will be the output of the given function if it is called on the `head` node of the given linked list?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

6

Sub-Section Number : 6

Sub-Section Id : 640653123345

Question Shuffling Allowed : Yes

Question Number : 269 Question Id : 640653827104 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

A hash table of size 10 uses open addressing with hash function $h(k) = k \bmod 10$, and linear probing. After inserting six values into an empty hash table, the table is as shown below.

index	k
0	70
1	20
2	32
3	41
4	
5	
6	
7	
8	48
9	58

Which of the following option(s) give a possible order in which the key values could have been inserted in the table?

Options :

6406532780112. ✓ 70, 32, 20, 48, 41, 58

6406532780113. ✓ 32, 48, 70, 20, 58, 41

6406532780114. ✗ 48, 32, 70, 41, 20, 58

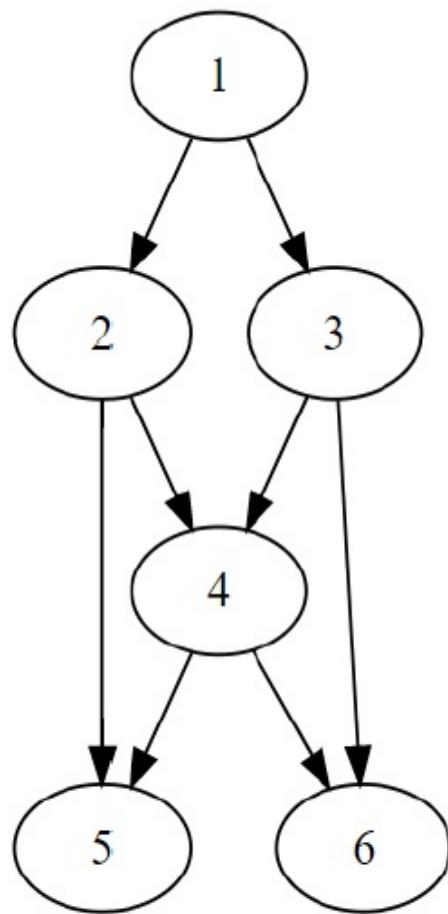
6406532780115. ✗ 70, 32, 58, 20, 41, 48

Question Number : 270 Question Id : 640653827109 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following graph:



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

Note: Assume that when a node has multiple neighbours, DFS can visit any vertex first.

Options :

6406532780130. ✓ 1, 2, 4, 6, 5, 3

6406532780131. ✗ 1, 2, 5, 3, 4, 6

6406532780132. ✗ 1, 3, 4, 6, 2, 5

6406532780133. ✗ 1, 2, 3, 4, 5, 6

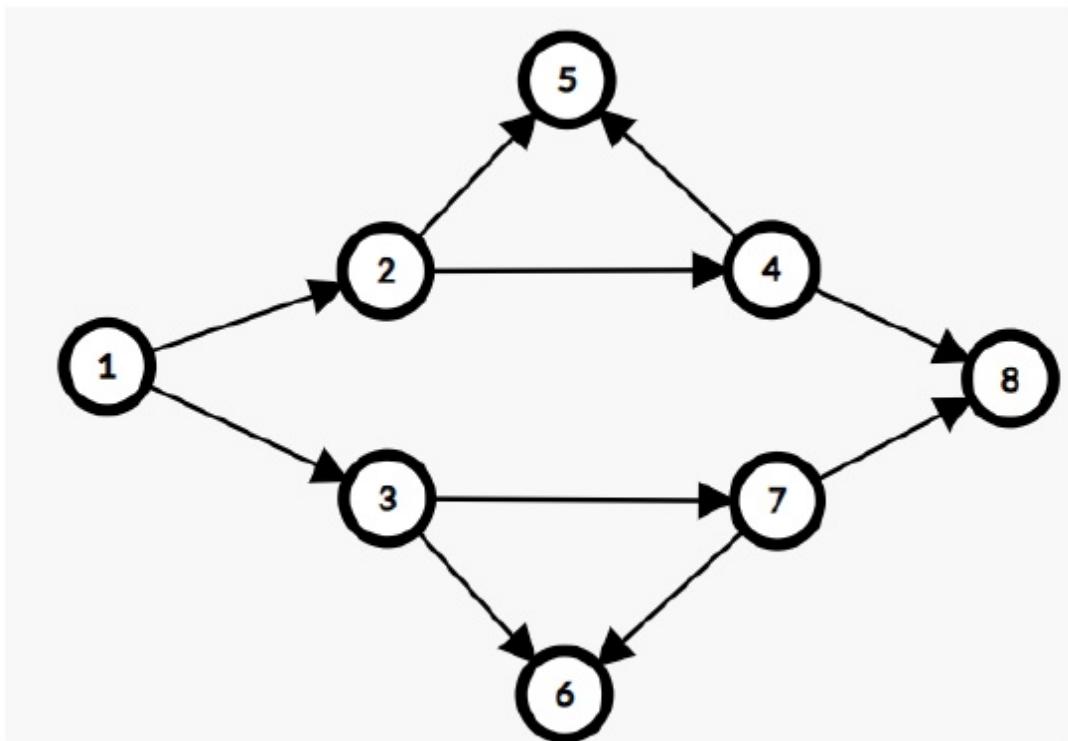
6406532780134. ✓ 1, 3, 6, 4, 5 ,2

Question Number : 271 Question Id : 640653827111 Question Type : MSQ

Correct Marks : 4 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider the following Directed Acyclic Graph(DAG).



Which of the following is/are **not** a topological ordering of the given graph G ?

Options :

6406532780139. ❌ [1, 2, 3, 4, 5, 7, 6, 8]

6406532780140. ❌ [1, 3, 2, 4, 7, 8, 6, 5]

6406532780141. ✓ [1, 3, 2, 7, 6, 5, 4, 8]

6406532780142. ✓ [1, 2, 3, 4, 5, 6, 7, 8]

Sub-Section Number :

7

Sub-Section Id :

640653123346

Question Shuffling Allowed :

Yes

Question Number : 272 Question Id : 640653827105 Question Type : MCQ

Correct Marks : 4

Question Label : Multiple Choice Question

Let `s` be a stack and `q` be a queue supporting the following operations:

Stack operation:

- `Push(d)` : Insert element `d` in stack
- `Pop()` : Remove the element from the stack and return the removed element

Queue Operation:

- `Enqueue(d)` : Insert element `d` in queue from rear
- `Dequeue()` : Remove the front element from the queue and return the removed element

Suppose the initial state of the queue `q` is `[26, 78, 45, 10, 19, 56]` where 26 is at the front and 56 is at the rear and the stack `s` is empty initially.

```
1 S.Push(Q.Dequeue())
2 S.Push(Q.Dequeue())
3 S.Push(Q.Dequeue())
4 Q.Enqueue(S.Pop())
5 S.Push(Q.Dequeue())
6 Q.Enqueue(S.Pop())
```

After performing the given sequence of operations, what will be the front and rear elements in queue `q`?

Options :

6406532780116. ❌ front: 10, rear: 78

6406532780117. ❌ front: 45, rear: 78

6406532780118. ✓ front: 19, rear: 10

6406532780119. ❌ front: 19, rear: 78

MLT

Section Id :	64065359309
Section Number :	15
Section type :	Online
Mandatory or Optional :	Mandatory
Number of Questions :	12
Number of Questions to be attempted :	12
Section Marks :	40
Display Number Panel :	Yes
Section Negative Marks :	0
Group All Questions :	No
Enable Mark as Answered Mark for Review and Clear Response :	No

Section Maximum Duration :	0
Section Minimum Duration :	0
Section Time In :	Minutes
Maximum Instruction Time :	0
Sub-Section Number :	1
Sub-Section Id :	640653123347
Question Shuffling Allowed :	No

Question Number : 273 Question Id : 640653827112 Question Type : MCQ

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 :

6406532780143. ✓ YES

6406532780144. ✗ NO

Sub-Section Number :	2
Sub-Section Id :	640653123348
Question Shuffling Allowed :	Yes

Question Number : 274 Question Id : 640653827113 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Let w_1 and w_2 be the top two principal components of the covariance matrix of a centered dataset. Let $x \in \mathbb{R}^d$ be a data-point. Which of the following is the reconstruction error of the data-point after projecting it onto the top two principal components?

Options :

6406532780145. ✓ $\|x - (x^T w_1)w_1 - (x^T w_2)w_2\|^2$

6406532780146. ✗ $\|x - (x^T w_1)w_1\|^2 + \|x - (x^T w_2)w_2\|^2$

6406532780147. ✗ $(x^T w_1)^2 + (x^T w_2)^2$

6406532780148. ✘ $\|x - w_1\|^2 + \|x - w_2\|^2$

Sub-Section Number :	3
Sub-Section Id :	640653123349
Question Shuffling Allowed :	Yes

Question Number : 275 Question Id : 640653827114 Question Type : MCQ

Correct Marks : 3

Question Label : Multiple Choice Question

Let $x = \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$ and $y = \begin{bmatrix} y_1 \\ y_2 \end{bmatrix}$ be two vectors in \mathbb{R}^2 . Let k_1 and k_2 be two functions defined from $\mathbb{R}^2 \times \mathbb{R}^2 \rightarrow \mathbb{R}$:

$$k_1(x, y) = x_1y_1 + x_2y_2 + x_1x_2y_1y_2$$
$$k_2(x, y) = x_1y_1 + x_2y_2 + x_1x_2y_1y_2 + 1$$

Which of the following statements is true?

Options :

6406532780149. ✓ Both k_1 and k_2 are valid kernels.
6406532780150. ✘ k_1 is a valid kernel, but k_2 is not a valid kernel.
6406532780151. ✘ k_2 is a valid kernel, but k_1 is not a valid kernel.
6406532780152. ✘ Neither k_1 nor k_2 is a valid kernel.

Sub-Section Number :	4
Sub-Section Id :	640653123350
Question Shuffling Allowed :	Yes

Question Number : 276 Question Id : 640653827115 Question Type : MSQ

Correct Marks : 3 Max. Selectable Options : 0

Question Label : Multiple Select Question

Consider a covariance matrix C for a mean-centered dataset in \mathbb{R}^3 . After performing

standard PCA, the three principal components turn out to be $\begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 1 \\ 0 \end{bmatrix}, \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$.

Which of the following statements are true? You can assume that C is not the zero matrix.

Options :

6406532780153. ✓ C is a diagonal matrix.
6406532780154. ✓ The diagonal entries of C are non-negative.

6406532780155. ✖ The diagonal entries of C are strictly greater than zero.

6406532780156. ✖ C has to be the identity matrix.

6406532780157. ✖ C is a matrix of the form $k\mathbf{I}$, where $k > 0$ and \mathbf{I} is the identity matrix.

Sub-Section Number :

5

Sub-Section Id :

640653123351

Question Shuffling Allowed :

Yes

Question Number : 277 Question Id : 640653827116 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

Kernel PCA with a polynomial kernel of degree 3 is run on a dataset of 100 data-points. Let ϕ be the transformation corresponding to this kernel. If the largest eigenvalue of the centered kernel matrix is 10, find the largest eigenvalue of the covariance matrix of the transformed dataset, where ϕ is used to effect the transformation.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.1

Question Number : 278 Question Id : 640653827119 Question Type : SA

Correct Marks : 3

Question Label : Short Answer Question

The EM algorithm is run on a dataset of 100 points modeled using a GMM with three components. Let λ_k^i be the values obtained in the E-step in the final iteration. Here, i is the index of the data-point and k is the index of a component. Also, let $\pi_1 = 0.3, \pi_2 = 0.5, \pi_3 = 0.2$ be the estimates of the mixture probabilities. x_p represent one of the data-points, for some constant p . If $\lambda_1^p + \lambda_3^p = 0.2$, what is the probability that the second component generated x_p given that we have seen the data-point?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.8

Sub-Section Number :

6

Sub-Section Id :

640653123352

Question Shuffling Allowed :

Yes

Question Number : 279 Question Id : 640653827117 Question Type : SA

Correct Marks : 4

Question Label : Short Answer Question

$k : \mathbb{R}^2 \times \mathbb{R}^2 \rightarrow \mathbb{R}$ is a polynomial kernel of degree 4. Find the value of $k \left(\begin{bmatrix} 1 \\ -1 \end{bmatrix}, \begin{bmatrix} 2 \\ 1 \end{bmatrix} \right)$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

16

Question Number : 280 Question Id : 640653827118 Question Type : SA

Correct Marks : 4

Question Label : Short Answer Question

Consider the k-means++ algorithm with $k = 2$ for a dataset that has 7 points:

$D = \{x_1, \dots, x_7\}$. The data-point x_7 has been chosen as the first mean, that is, $\mu_1 = x_7$. The Euclidean distance of the remaining points from this mean is given below:

Point	$d(x_i, \mu_1)$
x_1	1
x_2	2
x_3	$\sqrt{2}$
x_4	$\sqrt{3}$
x_5	$\sqrt{5}$
x_6	1

What is the probability of choosing x_2 as the second mean given that x_7 has been chosen as the first mean?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.25

Sub-Section Number :

7

Sub-Section Id :

640653123353

Question Shuffling Allowed :

No

Question Id : 640653827120 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Question Numbers : (281 to 283)

Question Label : Comprehension

Let \mathbf{C} be the covariance matrix of a mean-centered dataset:

$$\mathbf{C} = \begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$$

Standard PCA is performed on this dataset. The first two PCs are given below:

$$\mathbf{w}_1 = \frac{1}{\sqrt{2}} \begin{bmatrix} 1 \\ 1 \end{bmatrix} \quad \mathbf{w}_2 = \frac{1}{\sqrt{2}} \begin{bmatrix} -1 \\ 1 \end{bmatrix}$$

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 281 Question Id : 640653827121 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

Find the variance of the dataset along the first principal component.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

3

Question Number : 282 Question Id : 640653827122 Question Type : SA

Correct Marks : 1

Question Label : Short Answer Question

Find the variance of the dataset along the x-axis.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

Question Number : 283 Question Id : 640653827123 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

Find the coordinates of the point $\begin{bmatrix} 2 \\ 2 \end{bmatrix}$

in the new coordinate system

formed by the principal components.

Options :

6406532780164. ✓ $\begin{bmatrix} 2\sqrt{2} \\ 0 \end{bmatrix}$

6406532780165. ✗ $\begin{bmatrix} 1 \\ 0 \end{bmatrix}$

6406532780166. ✗ $\begin{bmatrix} 0 \\ 1 \end{bmatrix}$

6406532780167. ✗ $\begin{bmatrix} 2 \\ 0 \end{bmatrix}$

Sub-Section Number :

8

Sub-Section Id :

640653123354

Question Shuffling Allowed :

No

Question Id : 640653827124 Question Type : COMPREHENSION Sub Question Shuffling

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

Question Numbers : (284 to 285)

Question Label : Comprehension

Consider the following dataset of six points in \mathbb{R}^2 :

x	y
-1	-4
5	6
-2	-2
4	5
-3	-3
3	4

K-means clustering is run on this dataset with $k = 2$. In this version, the means are initialized first. The mean of the first cluster is initialized to $(-4, -4)$ and the mean of the second cluster is initialized to $(6, 6)$.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 284 Question Id : 640653827125 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

If (x_1, y_1) is the mean of the first cluster after convergence, find the value of $x_1 + y_1$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

-5

Question Number : 285 Question Id : 640653827126 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

If (x_2, y_2) is the mean of the second cluster after convergence, find the value of $x_2 + y_2$.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

9

Sub-Section Number :

9

Sub-Section Id :

640653123355

Question Shuffling Allowed :

No

Question Id : 640653827130 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix

Question Numbers : (286 to 287)

Question Label : Comprehension

In the context of Bayesian estimation, consider a Beta prior for the parameter p of a Bernoulli distribution:

$$p \sim \text{Beta}(4, 3)$$

The dataset has 8 ones and 5 zeros.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 286 Question Id : 640653827131 Question Type : MCQ

Correct Marks : 2

Question Label : Multiple Choice Question

What is the posterior?

Options :

6406532780175. ✓ Beta(12, 8)

6406532780176. ✗ Beta(11, 7)

6406532780177. ✗ Br(0.5)

6406532780178. ✗ Beta(8, 5)

Question Number : 287 Question Id : 640653827132 Question Type : SA

Correct Marks : 2

Question Label : Short Answer Question

If we use the expected value of the posterior as a point-estimate for the parameter of the Bernoulli distribution,
what is \hat{p} ?

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

0.6

Sub-Section Number :

10

Sub-Section Id :

640653123356

Question Shuffling Allowed :

No

Question Id : 640653827127 Question Type : COMPREHENSION Sub Question Shuffling Allowed : No Group Comprehension Questions : No Question Pattern Type : NonMatrix Question Numbers : (288 to 289)

Question Label : Comprehension

Consider a dataset of n data-points all of which are non-negative integers.

These data-points are sampled from a Poisson distribution, whose probability mass function is given below:

$$f(x; \lambda) = \frac{e^{-\lambda} \lambda^x}{x!}, \lambda > 0$$

Here λ is a parameter.

Based on the above data, answer the given subquestions.

Sub questions

Question Number : 288 Question Id : 640653827128 Question Type : MCQ

Correct Marks : 2.5

Question Label : Multiple Choice Question

Find the log-likelihood of the dataset under this distribution.

Options :

6406532780170. ✓ $\sum_{i=1}^n [-\lambda + x_i \log \lambda - \log (x_i!)]$

6406532780171. ✗ $\prod_{i=1}^n \frac{e^{-\lambda} \lambda^{x_i}}{x_i!}$

6406532780172. ✗ $\sum_{i=1}^n [-\lambda + \lambda \log x_i - \log (x_i!)]$

6406532780173. ✗ $\prod_{i=1}^n [-\lambda + x_i \log \lambda - \log (x_i!)]$

Question Number : 289 Question Id : 640653827129 Question Type : SA

Correct Marks : 2.5

Question Label : Short Answer Question

Consider a dataset that has 25 data-points. The data-point x_i and its frequency is given in the following table:

x_i	Frequency
0	1
1	4
2	6
3	9
4	5

In case the table is not clear: the value 0 appears once in the dataset, the value 1 appears four times in the dataset, and so on. Find the maximum likelihood estimate for the parameter λ of the Poisson distribution given this dataset.

Response Type : Numeric

Evaluation Required For SA : Yes

Show Word Count : Yes

Answers Type : Equal

Text Areas : PlainText

Possible Answers :

2.52