DILR CAT 2018 – Slot 1

Set 1 : Satellites

1600 satellites were sent up by a country for several purposes. The purposes are classified as broadcasting (B), communication (C), surveillance (S), and others (O). A satellite can serve multiple purposes; however a satellite serving either B, or C, or S does not serve O.

The following facts are known about the satellites:

1.The numbers of satellites serving B, C, and S (though may be not exclusively) are in the ratio

2.The number of satellites serving all three of B, C, and S is 100.

3. The number of satellites exclusively serving C is the same as the number of satellites exclusivelyserving S. This number is 30% of the number of satellites exclusively serving B.

4. The number of satellites serving O is the same as the number of satellites serving both C and S but not B.

Q1) What best can be said about the number of satellites serving C?

A) Must be between 400 and 800
B) Cannot be more than 800
C) Must be at least 100
D) Must be between 450 and 725

Q2) What is the minimum possible number of satellites serving B

exclusively?A) 100
B) 200
C) 250
D) 500

Q3) If at least 100 of the 1600 satellites were serving O, what can be said about the number of satellites serving S?

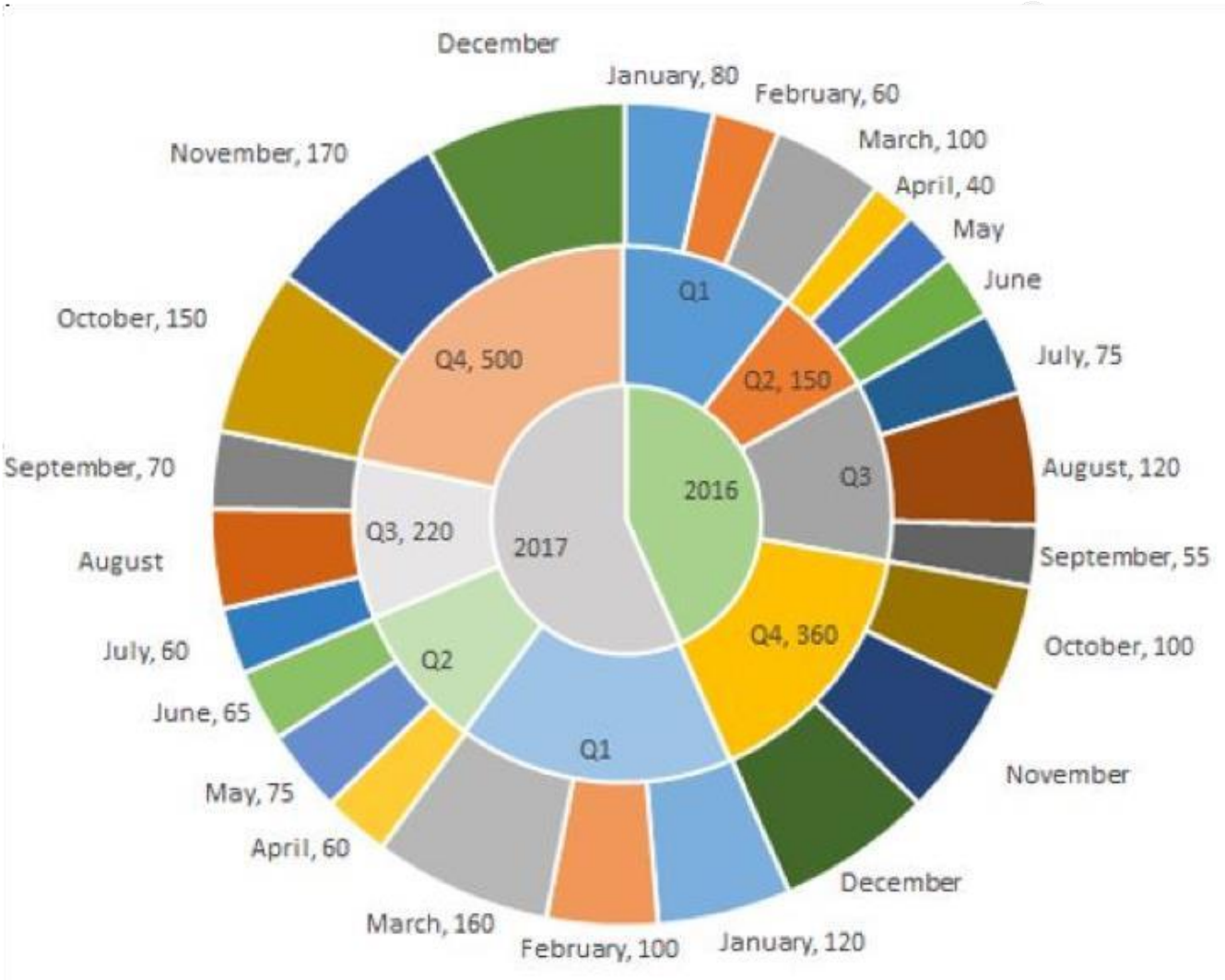
A) At least 475
B) No conclusion is possible based on the given information
C) Exactly 475
D) At most 475

Q4) If the number of satellites serving at least two among B, C, and S is 1200, which of the following MUST be FALSE?

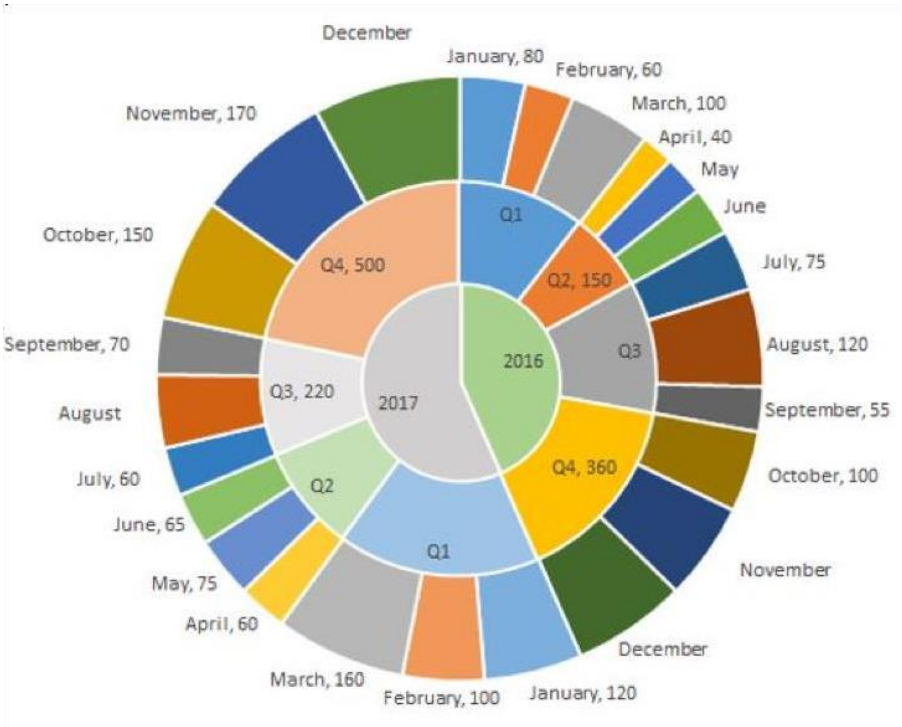
A) All 1600 satellites serve B or C or S
B) The number of satellites serving C cannot be uniquely determined
C) The number of satellites serving B exclusively is exactly 250
D) The number of satellites serving B is more than 1000

SET 2 : LED TV Sales

The multi-layered pie-chart below shows the sales of LED television sets for a big retail electronics outlet during 2016 and 2017. The outer layer shows the monthly sales during this period, with each label showing the month followed by sales figure of that month. For some months, the sales figures are not given in the chart. The middle-layer shows quarter-wise aggregate sales figures (in some cases, aggregate quarter-wise sales numbers are not given next to the quarter). The innermost layer shows annual sales. It is known that the sales figures during the three months of the second quarter (April, May, June) of 2016 form an arithmetic progression, as do the three monthly sales figures in the fourth quarter (October, November, December)of that year.



SET 2 : LED TV Sales



Q1) What is the percentage increase in sales in December 2017 as compared to the sales in December 2016 ?

A) 22.22%
B) 28.57%
C) 50.00%
D) 38.46%

Q2) In which quarter of 2017 was the percentage increase in sales from the same quarter of 2016the highest ?

A) Q2
B) Q4
C) Q1
D) Q3

Q3) During which quarter was the percentage decrease in sales from the previous quarter's sales the highest ?

A) Q4 of 2017
B) Q1 of 2017
C) Q2 of 2017
D) Q2 of 2016

Q4) During which month was the percentage increase in sales from the previous month's sales the Highest ?

A) March of 2016
B) October of 2016
C) October of 2017
D) March of 2017

Set 3 : ATM

An ATM dispenses exactly Rs. 5000 per withdrawal using 100, 200 and 500 rupee notes. The ATM requires every customer to give her preference for one of the three denominations of notes. It then dispenses notes such that the number of notes of the customer's preferred denomination exceeds the total number of notes of other denominations dispensed to her.

Q1) In how many different ways can the ATM serve a customer who gives 500 rupee notes as her preference? (TITA)

Q2) If the ATM could serve only 10 customers with a stock of fifty 500 rupee notes and a sufficient number of notes of other denominations, what is the maximum number of customersamong these 10 who could have given 500 rupee notes as their preferences ? (TITA)

Q3) What is the maximum number of customers that the ATM can serve with a stock of fifty 500rupee notes and a sufficient number of notes of other denominations, if all the customers are to be served with at most 20 notes per withdrawal?

A) 13
B) 10
C) 12
D) 16

Q4) What is the number of 500 rupee notes required to serve 50 customers with 500 rupee notes as their preferences and another 50 customers with 100 rupee notes as their preferences,if the total number of notes to be dispensed is the smallest possible?

A) 750
B) 800
C) 1400
D) 900

Set 4 : Management Electives

Adriana, Bandita, Chitra, and Daisy are four female students, and Amit, Barun, Chetan, and Deb are four male students. Each of them studies in one of three institutes - X, Y, and Z. Each studentmajors in one subject among Marketing, Operations, and Finance, and minors in a different one among these three subjects. The following facts are known about the eight students:

1. Three students are from X, three are from Y, and the remaining two students, both female, arefrom Z.
2. Both the male students from Y minor in Finance, while the female student from Y majors inOperations.
3. Only one male student majors in Operations, while three female students minor in Marketing.

4. One female and two male students major in Finance.
5. Adriana and Deb are from the same institute. Daisy and Amit are from the same institute.
6. Barun is from Y and majors in Operations. Chetan is from X and majors in Finance.
7. Daisy minors in Operations.

Q1) Who are the students from the institute Z?

A) Chitra and Daisy
B) Adriana and Daisy
C) Bandita and Chitra
D) Adriana and Bandita

Q2) Which subject does Deb minor

in?A) Operations
B) Marketing
C) Finance
D) Cannot be determined uniquely from the given information

Q3) Which subject does Amit major in?

A) Operations
B) Marketing
C) Finance
D) Cannot be determined uniquely from the given information

Q4) If Chitra majors in Finance, which subject does Bandita major in?

A) Finance
B) Operations
C) Cannot be determined uniquely from the given information
D) Marketing

SET 5: N x N Square Matrix

You are given an N×N square matrix to be filled with numerals so that no two adjacent cells have the same numeral. Two cells are called adjacent if they touch each other horizontally, vertically or diagonally. So a cell in one of the four corners has three cells adjacent to it, and a cell in the first or last row or column which is not in the corner has five cells adjacent to it. Any other cell has eight cells adjacent to it.

Q1) What is the minimum number of different numerals needed to fill a 3×3 square matrix? (TITA)

Q2) What is the minimum number of different numerals needed to fill a 5×5 square matrix?

(TITA) Q3) Suppose you are allowed to make one mistake, that is, one pair of adjacent cells can

have the
same numeral. What is the minimum number of different numerals required to fill a 5×5 matrix?
A) 4
B) 16
C) 9
D) 25

Q4) Suppose that all the cells adjacent to any particular cell must have different numerals. What isthe minimum number of different numerals needed to fill a 5×5 square matrix?

A) 9
B) 25
C) 16
D) 4

SET 6: Petrol Pumps

Fuel contamination levels at each of 20 petrol pumps P1, P2, …, P20 were recorded as either high, medium, or low.

1. Contamination levels at three pumps among P1 – P5 were recorded as high.
2. P6 was the only pump among P1 – P10 where the contamination level was recorded as low.
3. P7 and P8 were the only two consecutively numbered pumps where the same levels of contamination were recorded.
4. High contamination levels were not recorded at any of the pumps P16 – P20.
5. The number of pumps where high contamination levels were recorded was twice the number ofpumps where low contamination levels were recorded.

Q1) Which of the following MUST be true?

A) The contamination level at P12 was recorded as high.
B) The contamination level at P20 was recorded as medium.
C) The contamination level at P10 was recorded as high.
D) The contamination level at P13 was recorded as low.

Q2) What best can be said about the number of pumps at which the contamination levels were recorded as medium?
A) Exactly 8
B) At most 9
C) At least 8
D) More than 4

Q3) If the contamination level at P11 was recorded as low, then which of the following MUST betrue?

A) The contamination level at P18 was recorded as low.
B) The contamination level at P15 was recorded as medium.
C) The contamination level at P14 was recorded as medium.
D) The contamination level at P12 was recorded as high.

Q4) If contamination level at P15 was recorded as medium, then which of the following MUSTbe FALSE?

A) Contamination levels at P11 and P16 were recorded as the same.
B) Contamination levels at P10 and P14 were recorded as the same.
C) Contamination level at P14 was recorded to be higher than that at P15.
D) Contamination levels at P13 and P17 were recorded as the same.

SET 7: Written Test

A company administers a written test comprising of three sections of 20 marks each – Data Interpretation (DI), Written English (WE) and General Awareness (GA), for recruitment. A composite score for a candidate (out of 80) is calculated by doubling her marks in DI and adding it to the sum of her marks in the other two sections. Candidates who score less than 70% marks in two or more sections are disqualified. From among the rest, the four with the highest composite scores are recruited. If four or less candidates qualify, all who qualify are recruited.

Ten candidates appeared for the written test. Their marks in the test are given in the table below:

Candidate	Marks out of 20		
	DI	WE	GA
Ajay	8		16
Bala		9	11
Chetna	19	4	12
Danish	8	15	
Ester	12	18	16
Falak	15	7	10
Geeta	14		6
Harini	5		
Indu		8	
Jatin		16	14

Some marks in the table are missing, but the following facts are known:
1. No two candidates had the same composite score.
2. Ajay was the unique highest scorer in WE.
3. Among the four recruited, Geeta had the lowest composite score.
4. Indu was recruited.
5. Danish, Harini, and Indu had scored the same marks the in GA.
6. Indu and Jatin both scored 100% in exactly one section and Jatin's composite score was 10 more than Indu's.

(Questions in the next

page)

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Falak	15	7	10
Geeta	14		6
Harini	5		
Indu		8	
Jatin		16	14

Q1) Which of the following statements MUST be true?

1.Jatin's composite score was more than that of Danish.
2.Indu scored less than Chetna in DI.
3.Jatin scored more than Indu in GA.

A) Only 2
B) Both 2 and 3
C) Only 1
D) Both 1 and 2

Q2) Which of the following statements MUST be FALSE?

A) Bala scored same as Jatin in DI
B) Bala's composite score was less than that of Ester
C) Chetna scored more than Bala in DI
D) Harini's composite score was less than that of Falak

Q3) If all the candidates except Ajay and Danish had different marks in DI, and Bala's compositescore was less than Chetna's composite score, then what is the maximum marks that Bala couldhave scored in DI? (TITA)

Q4) If all the candidates scored different marks in WE then what is the maximum marks that Harini could have scored in WE? (TITA)

Set 8 : Committees

Twenty four people are part of three committees which are to look at research, teaching, and administration respectively. No two committees have any member in common. No two committees are of the same size. Each committee has three types of people: bureaucrats, educationalists, and politicians, with at least one from each of the three types in each committee. The following facts are also known about the committees:

1. The numbers of bureaucrats in the research and teaching committees are equal, while the number of bureaucrats in the research committee is 75% of the number of bureaucrats in the administration committee.
2. The number of educationalists in the teaching committee is less than the number of educationalists in the research committee. The number of educationalists in the research committee is the average ofthe numbers of educationalists in the other two committees.
3. 60% of the politicians are in the administration committee, and 20% are in the teaching committee.

Q1) Based on the given information, which of the following statements MUST be FALSE?

A) In the administration committee the number of bureaucrats is equal to the number ofeducationalists
B) The size of the research committee is less than the size of the teaching committee
C) The size of the research committee is less than the size of the administration committee
D) In the teaching committee the number of educationalists is equal to the number of politiciansQ2) What is the number of bureaucrats in the administration committee? (TITA)

Q3) What is the number of educationalists in the research committee? (TITA)

Q4) Which of the following CANNOT be determined uniquely based on the given information?

A) The total number of educationalists in the three committees
B) The total number of bureaucrats in the three committees
C) The size of the teaching committee
D) The size of the research committee

Solution

It is given that the satellites serving either B, C or S do not serve O.

From (1), let the number of satellites serving B, C and S be 2K, K, K respectively.

Let the number of satellites exclusively serving B be x.

From (3), the number of satellites exclusively serving C and exclusively serving S will each be 0.3x

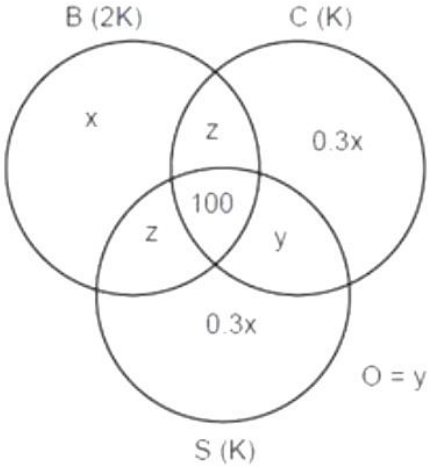
From (4), the number of satellites serving O is same as the number of satellites serving only C and S. Let that number be y.

Since the number of satellites serving C is same as the number of satellites serving S, we can say that (number of satellites serving only B and C) + 0.3x + 100 + y = (number of satellites serving only B and S) +

0.3x + 100 + y

Let the number of satellites serving only B and C = the number of satellites serving only B and S = Z

Therefore, the venn diagram will be as follows



Given that there are a total of 1600 satellites

=> x + z + 0.3x + z + 100 + y + 0.3x + y = 1600

1.6x + 2y + 2z = 1500 ---------- (1)

Also K = 0.3x + z + y +100

Satellites serving B = 2K = x + 2z + 100

=> 2(0.3x + z + y + 100) = x + 2z + 100

0.4x = 2y + 100

x = 5y + 250 ----------(2)

Substituting (2) in (1), we will get

1.6 (5y + 250) + 2y + 2z = 1500

10y + 2z = 1100

Z = 550 – 5y ---------- (3)

Question 1:

The number of satellites serving C = z + 0.3x + 100 + y

= (550 – 5y) + 0.3(5y + 250) + 100 + y = 725 – 2.5y

This number will be maximum when y is minimum.

Minimum value of y is 0.

Therefore, the maximum number of satellites serving C will be 725.

From ③, z = 550 – 5y

Since the number of satellites cannot be negative,

$z \geq 0 \Rightarrow 550 - 5y \geq 0$

$y \leq 110$

Maximum value of y is 110.

When $y = 110$, the number of satellites serving C will be $725 - 2.5 \times 110 = 450$. This will be the minimum
number of satellites serving C.
The number of satellites serving C must be between 450 and 725.

Question 2:

From 2, the number of satellites serving B exclusively is $x = 5y + 250$
This is minimum when y is minimum.
Minimum value of $y = 0$.
The minimum number of satellites serving B exclusively $= 5 \times 0 + 250 = 250$.

Question 3:

Given that at least 100 satellites serve 0; we can say in this case that $y \geq 100$.
Number of satellites serving $s = 0.3x + z + 100 + y = 725 - 2.5y$
This is minimum when y is maximum, i.e. 110, (from ③)
Minimum number of satellites serving $= 725 - 2.5 \times 100 = 450$.
This is maximum when y is minimum, i.e., 100 in this case.
Maximum number of satellites serving $= 725 - 2.5 \times 100 = 475$
Therefore, the number of satellites serving S is at most 475

Question 4:

The number of satellites serving at least two of B, C or S = number of satellites serving exactly two of B, C or S + Number of satellites serving all the three
$= z + z + y + 100$
$= 2(550 - 5y) + y + 100$
$= 1200 - 9y.$
Given that this is equal to 1200
$1200 - 9y = 1200$
$\Rightarrow y = 0$
If $y = 0$, $x = 5y + 250 = 250$
$z = 550 - 5y = 550$
No. of satellites serving C $= k = z + 0.3x + 100 + y$
$= 550 + 0.3 \times 250 + 100 + y$
$= 725$
No. of satellites serving B $= 2k = 2 \times 725 = 1450.$
From the given options, we can say that the option "the number of satellites serving C cannot be uniquely determined" must be FALSE

Solution

It is given that the sales figures during the three months of the second quarter (April, May, June) of 2016 form an arithmetic progression.
So $40 + (40 + x) + (40 + 2x) = 150$ Or $x = 10$
April 2016 = 40
May 2016 = 50
June 2016 = 60
Also, the same case holds for October, November, December of 2016.
$100 + (100 + x) ++ (100 + 2x) = 360$
Or $x = 20$
October 2016 = 100
November 2016 = 120
December 2016 = 140

2016			2017		
Quarter	Month	Sales Figures	Quarter	Month	Sales Figures
Q_1 (240)	January	80	Q_1 (380)	January	120
	February	60		February	100
	March	100		March	160
Q_2 (150)	April	40	Q_2 (200)	April	60
	May	50		May	75
	June	60		June	65
Q_3 (250)	July	75	Q_3 (220)	July	60
	August	120		August	90
	September	55		September	70
Q_4 (360)	October	100	Q_4 (500)	October	150
	November	120		November	170
	December	140		December	180

Sales in December 2017 = 180
Sales in December 2016 = 140

Percentage increase $\frac{40}{140} \times 100 = 28.57\%$

	2017	2016	Percentage increase
Q_1	380	240	$\frac{140}{240} \times 100 = 58.33$
Q_2	200	150	$\frac{50}{150} \times 100 = 33.33$
Q_3	220	250	$\frac{-30}{250} \times 100 = -12$
Q_4	500	360	$\frac{140}{560} \times 100 = 38.88$

So the percentage increase in the sales is highest for Q1
$\rightarrow Q_1$ of 2017 compared with Q_4 of 2016.

$$= \frac{380-360}{360} \times 100 = 5.55\% \text{ increase.}$$

$$\rightarrow Q_2 \text{ of } 2016 \text{ compared with } Q_1 \text{ of } 2016$$

$$= \frac{150-240}{240} \times 100 = -37.5\% \text{ increase or } 37.5\% \text{ decrease}$$

$$\rightarrow Q_4 \text{ of } 2017 \text{ with compared with } Q_3 \text{ of } 2017$$

There is an increase from 220 to 500 .

$$\rightarrow Q_2 \text{ of } 2017 \text{ with compared with } Q_1 \text{ of } 2017$$

$$= \frac{200-380}{380} \times 100 = -47.36 \text{ or } 47.36\% \text{ decrease}$$

So, sales of of $2017 ,$ had the highest percentage decrease compared with of $2017 .$ 2 Q 1 Q

Solution

Question 1:

The ATM dispenses only 500, 200 and 100 notes and since 500 rupee notes is the preference, it has to dispense more 500 rupee notes than the other two notes combined. The following ways are possible:

500 rupee notes	200 rupee notes	100 rupee notes
10	0	0
9	2	1
9	1	3
9	0	5
8	5	0
8	4	2
8	3	4

Hence, a total of seven ways are possible. **Ans : 7**

Question 2:

To serve the maximum number of customers with 500 rupee notes as preference, we need to minimize the number of 500 rupee notes that can be served to any person.

From the above solution, the minimum number of 500 rupee notes that the ATM can dispense to any person with 500 rupee notes as his/her preference is 8. Hence, with fifty 500 rupee notes, a total of 6 persons can be served. **Ans : 6**

Question 3:

Since there are a limited number of 500 rupee notes, we can minimize the number of 500 rupee notes dispensed to each customer, while ensuring that each customer is served at most 20 notes.

If no 500 rupee notes is dispensed, the minimum number of notes that must be dispensed is 25 (all 200 rupee notes). This is not possible.

If one 500 rupee note is dispensed, the minimum number of notes is 14 (one 500 rupee note, twelve 200 rupee notes and one 100 rupee note). This is also not possible.

If two 500 rupee notes are dispensed, the minimum number of notes is 22 (two 500 rupee notes and twenty 200 rupee notes).

If three 500 rupee notes are dispensed, the minimum number of notes is 21 (three 500 rupee notes, seventeen 200 rupee notes and one 100 rupee note). If four 500 rupee notes are dispensed, the minimum number of notes is 19 (four 500 rupee notes and fifteen 200 rupee notes). Hence, the minimum number of 500 rupee notes that can be dispensed to any person is 4. With fifty 500 rupee notes, a maximum of 12 persons can be served. **Ans : 12**

Question 4:
To dispense the smallest possible number of notes to a person with 500 rupee notes as his/her preference, the ATM should dispense all 500 rupee notes. Hence, minimum number of notes required to serve any person with 500 rupee notes as his/her preference = 10 (all of 500 rupees).
Total number of 500 rupee notes required to serve 50 customers with 500 rupee notes as his/her preference $= 10 \times 50 = 500$
To minimize the number of notes to be served to a person with 100 rupee notes as his/her preference, we can maximize the number of 500 rupee notes served to him, keeping the 100 rupee notes more than the sum of the other two denominations.
This is possible if the machine serves eight 500 rupee notes and ten 100 rupee notes. Hence, the total number of 500 rupee notes required to serve 50 customers with 100 rupee notes as his/her preference $= 8 \times 50 = 400$
Total number of 500 rupee notes required in the given scenario $= 500 + 400 = 900$ **Ans : 900**
Note: Given that the ATM dispenses 500, 200 and 100 rupee notes. A possible interpretation of this is that at least one note of each denomination is dispensed. However, as there is no additional information supporting this, you should also consider the cases in which not all the three denominations are dispensed.

Solution

Name	Gender	Institute	Major	Minor
Adriana	F	P		F
Bandita	F	Z		F
Chitra	F	Z		F
Daisy	F	q		O
Amit	M	q		
Barun	M	Y	O	F
Chetan	M	X	F	
Deb	M			

Daisy minors in operations (O) so other three must have minored in Finance (F). Let Adriana and Ded be from the some institute P. Daisy and Amit are from some institute q. So Bandita and Chitra must be from z as only two females are from z. Female student from y majors in operations so daisy cannot be from Y so daisy is from X so is Amit. So Adriana and Deb are form Y

	Gender	Institute	Major	Minor
Adriana	F	Y	O	M
Bandita	F	Z	F/O	M
Chitra	F	Z	F/O	M
Daisy	F	X	F/M	O
Amit	M	X	F	O/M
Barun	M	Y	O	F
Chetan	M	X	F	O/M
Deb	M	Y	M	F

Question 1:
Chitra and Bandita. **Ans : Chitra and Bandita**

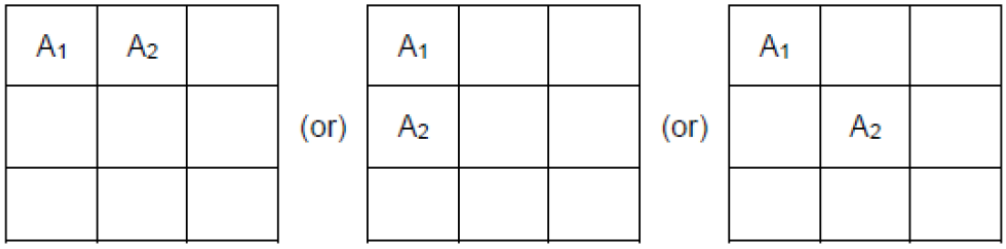
Question 2:
Deb minors in Finance. **Ans : Finance**

Question 3:

Amit majors in finance. **Ans : Finance**

Question 4:
Given one female student majors in finance. If chitra majors in finance, Bandita majors in operations.
Ans : Operations

Solution
Given that n × n square matrix to be filled with numerals so that no two adjacent cells have the same numeral.
Also, two cells are called adjacent if they touch each other horizontally, vertically or diagonally.
As per the given definition, in the following matrix, the following are the cases of adjacent cells.



Question1:
As per the information, we've the following diagram for a 3 x 3 matrix to have minimum number of numerals.

1	2	1
3	4	3
1	2	1

So, we require 4 elements to have all different numerals**. Ans : 4**

Question 2:
As per the information, we've the following diagram for a 5 x 5 matrix to have minimum number of numerals.

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

So, we require 4 elements to have all different numerals. **Ans : 4**

Question 3:
Even if one mistake is allowed, then also there won't be any change in the solution given above. **Ans : 4**

Question 4:
Given that all the cells adjacent to any particular cell must have different numerals, which is satisfied only when there are at least 9 numerals. **Ans : 9**

Solution
According to 1 and 2, we get

P1	P2	P3	P4	P5	P6
H	M	H	M	H	L

Also, from 4, we get 2 cases:

P16	P17	P18	P19	P20
L	M	L	M	L
M	L	M	L	M

From (5)
If total number of low (L) pipes = 3
number of high (H) pipes = 6
number of medium (M) pipes = 11
Also if number of low (L) pipes = 4
number of high (H) pipes = 8
number of medium (M) pipes = 8
P7 and P8 can be HH or MM
Therefore, two cases arise for P1 – P10

1	2	3	4	5	6	7	8	9	10
H	M	H	M	H	L	M	M	H	M
H	M	H	M	H	L	H	H	M	H

Combining (1) & (2), we get the following possible cases for P1 – P 20

Case 1:
H M H M H L H H M H
M H M H M L M L M L
No. (L) = 4
No. (H) = 8
No. (M) = 8

Case 3:
H M H M H L H H M H
M L H M H M L M L M
No. (L) = 4
No. (H) = 8
No. (M) = 8

Solution
Given, Indu was recruited and Indu scored 100% in exactly one section.
Jatin scored 100% in exactly one section
=> Jatin's scored are

DI	WE	GA
20	16	14

Composite score = 20 x + 2 + 16 + 14 = 70
Indu's score is 70 – 10 =60
If Indu scores 20 in DI, Indus's score in GA = 60 – 40 – 8 = 12
In this case, Indu will not quality Hence, Indu scored 20 in GA.

score in $= \frac{60-20-8}{2} = \frac{32}{2} = 16$

Danish, Harini and Indu scored 20 in GA
Score of Danish is 2(8) + 15 + 20 = 51
Hence, Score of Ajay is 2(8) + 20 + 16 = 52

(As Ajay scores either 19 or 20 in DI, the composite score cannot be 51)

	DI	WE	GA	Total
A	8	20	16	52
B		9	11	
c	19	4	12	54
d	8	15	20	51
e	12	18	16	58
f	15	7	10	47
g	14	> 14	6	
h	5		20	
i	16	8	20	60
j	20	16	14	70

Question 1:
(Jatin's composite score was more than that of Danish) and (Indu scored less than Chetan in DI).
Ans : Both 1 and 2

Question 2:
If Bala scores 20 in DI, Score $= 2(20) + 9 + 11 = 60$, which is the same as that of Indu.
Not possible
Hence, Bala scored same as Jatin in DI must be false. **Ans : Bala scored same as Jatin in DI**

Question 3:
Ans: 13

Question 4:
Ans: 14
Solution

	Research	Teaching	Administration
Bureaucrats	3x	3x	4x
Educationalist	m > n	n	o
Politicians	y	y	3y

Total $= 24$
Bureaucrats are in the ratio 3 : 3 : 4 only value will be 3, 3, 4. So x = 1

Educationalist and $n < m < 0$ and $m = \frac{o+n}{2}$

Politicians are in ratio 1 : 1 : 3 only value will be 1, 1, 3.
Possible value of m, n, o are 3, 2, 4 and 3, 1, 5.

Case (i)

	R	T	A	
B	3	3	4	10
E	3	2	4	9
P	1	1	3	5
	7	6	11	24

	7	5	12	24