Instructions
4 colleges A, B, C and D participated in 3 surveys BS, KIRF and GT. All the 4 colleges managed to secure a rank less than 7 in all the 3 surveys. Further, it is known that no 2 colleges were tied for the same position in any of the surveys.

Only A had a better rank than D in the survey conducted by KIRF.
B managed to get a better rank than C in 2 of the 3 surveys.
D was ranked second in the survey conducted by KIRF. It is the only survey in which D managed to bag a rank within the top 3.
GT deemed C to be a better college than A.
The average rank secured by D was 4.
D had a better rank in the survey conducted by BS than the one conducted by GT.
No college had the same rank in 2 surveys.
D was ranked the worst among the 4 colleges in 2 of the 3 surveys.
A managed a position within the top 3 in all 3 surveys.

Question 1
If B was ranked third in the survey conducted by BS and the average ranks of B and C were not equal, then the rank of B in the survey conducted by KIRF is

A 3
B 4
C 5
D 6

Answer: B

Explanation:
No college had the same rank in 2 surveys.
A managed a position within the top 3 in all the surveys.
Only A had a better rank than D in all 3 surveys.
Average rank of D is 4. => Sum of the ranks secured by D = 12.
We know that D secured the second rank in the survey by KIRF.
=> Sum of ranks secured by D in the BS and GT surveys = 10.
10 can be represented as (5,5) or (6,4).
We know that no college secured the same rank in 2 surveys. Therefore, the ranks secured by D must be 6 and 4.
D had a better rank in the survey conducted by BS than the one conducted by GT.
We know that A managed a position within the top 3 in all 3 surveys.
Therefore, A must have secured second and third positions in the other 2 surveys. Also, the average rank secured by A must be 2.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td></td>
<td></td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>KIRF</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GT</td>
<td></td>
<td></td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

Let us solve each question separately now. The points that one must bear in mind while filling the table are
(I) B managed to get a better rank than C in 2 of the 3 surveys.
(II) GT deemed C to be a better college than A.

B was ranked third in the survey conducted by BS. Also, we know that the average ranks of B and C were not equal.

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>3</td>
<td></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>KIRF</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GT</td>
<td></td>
<td></td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

Now, A must have secured second rank and C must have secured first rank in the survey conducted by BS.
In the other 2 surveys, B must have a better rank than C. A must have secured third rank in the survey conducted by GT.
C must have secured second rank (since GT deems C to be a better college than C) and B must have secured first rank.

Since B has secured third rank in BS rankings, it must have secured the fourth or fifth rank in the KIRF rankings. Had B secured fifth rank, C must have secured the sixth rank (Since 2 of the 3 surveys place B above C).

In this case, the average rank secured by both B and C will be equal (3). Therefore, we can eliminate this possibility.

B must have secured 4th rank and C must have secured sixth rank.

Therefore, option B is the right answer.

Question 2

If the average rank secured by C is 3 and B is 2 in the 3 surveys, what is the rank secured by C in the survey conducted by KIRF?

A 3
B 4
C 5
D 6

Answer: C

Explanation:

We know that no college secured the same rank in 2 surveys. Therefore, the ranks secured by D must be 6 and 4.

D had a better rank in the survey conducted by BS than the one conducted by GT.

We know that A managed a position within the top 3 in all 3 surveys. Therefore, A must have secured second and third positions in the other 2 surveys. Also, the average rank secured by A must be 2.

Let us solve each question separately now. The points that one must bear in mind while filling the table are

(I) B managed to get a better rank than C in 2 of the 3 surveys.
(II) GT deemed C to be a better college than A.

Average rank secured by B is 2 and C is 3.

Therefore, sum of the ranks secured by B and C must be 6 and 9 respectively.

Sum of ranks secured by B is 6. Therefore, the ranks must be 1,2 and 3.

B must have secured third rank in the survey conducted by KIRF (Since the first 2 ranks are already taken up).
C had a better rank than A in the survey conducted by GT.

Had C secured first rank in the survey conducted by BS, then C must have secured second rank in the survey conducted by GT. A must have secured third rank in the survey conducted by GT and second rank in the survey conducted by BS. However, B could not have secured third rank in the survey conducted by BS since A has secured third rank. Therefore, this case can be eliminated.

Had C secured first rank in the survey conducted by GT, B must have secured first rank in the survey conducted by BS. A must have secured second rank in the survey conducted by BS and C must have secured the third rank. The rankings will be as follows:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>KIRF</td>
<td>1</td>
<td>3</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>GT</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

As we can see, C must have secured fifth rank in the survey conducted by KIRF.

Therefore, option C is the right answer.

**Question 3**

If the average rank secured by C is the same as the average rank secured by B and the rank secured by A in GT is better than the one it secured in BS, then the rank secured by B in GT survey is (The average rank secured across the 3 surveys is an integer for all the 4 colleges)

A 3 or 5
B 5 or 6
C 4 or 5
D 1 or 3

**Answer: A**

**Explanation:**

We know that no college secured the same rank in 2 surveys. Therefore, the ranks secured by D must be 6 and 4.

D had a better rank in the survey conducted by BS than the one conducted by GT.

We know that A managed a position within the top 3 in all 3 surveys. Therefore, A must have secured second and third positions in the other 2 surveys. Also, the average rank secured by A must be 2.

Let us solve each question separately now. The points that one must bear in mind while filling the table are

(I) B managed to get a better rank than C in 2 of the 3 surveys.
(II) GT deemed C to be a better college than A.

Average rank secured by B and C is the same.

Average rank secured by B and C cannot be 2 since in KIRF one of the 2 must have secured a rank greater than 3. Average rank cannot be 6 as well.

Average rank cannot be 5 since both of them have a rank less than 4 in the BS survey.

Let us consider the possibility that the average rank is 4.
Therefore, sum of ranks must be 12.
Also, we know that rank secured by A in GT is better than the one it secured in the survey by BS. Therefore, A must have secured second rank in GT and third rank in BS. In the BS survey, B and C must have secured first and second ranks, respectively.
Since C is ranked better than A by GT, C must have secured the first rank in the GT survey.

Downloaded from cracku.in
Now, C must have secured a rank of 8 in the KIRF ranking for the average rank to be 4. As we can see, this case is impossible.

Therefore, the average rank of both B and C must be 3. C must have secured first rank in the GT survey and second rank in the BS survey. For the average rank to be 6, C must have secured sixth rank in the KIRF survey. B must have secured first rank in the BS survey.

Now, the sum of the ranks secured by B in the other 2 surveys must be $9.1 = 8$. 8 can be represented as $(4,4)$, $(5,3)$ or $(6,2)$.

We can eliminate the case $(4,4)$ since no college secured the same ranking in 2 colleges. We can eliminate $(6,2)$ too since no 2 colleges secured the same ranking in a survey. Therefore, the final ranking will be as follows:

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>BS</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>KIRF</td>
<td>1/3</td>
<td>6</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>GT</td>
<td>2</td>
<td>3/3</td>
<td>1</td>
<td>6</td>
</tr>
</tbody>
</table>

Rank secured by B in the GT survey will be 3 or 5. Therefore, option A is the right answer.

**Question 4**

If the average rank secured by B is one more than the average rank secured by A, then the rank secured by C in the survey conducted by BS is

A 1  
B 2  
C 3  
D Can be more than one of the above  

**Answer:** D
Explanation:
We know that no college secured the same rank in 2 surveys. Therefore, the ranks secured by D must be 6 and 4.
D had a better rank in the survey conducted by BS than the one conducted by GT.

We know that A managed a position within the top 3 in all 3 surveys. Therefore, A must have secured second and third positions in the other 2 surveys. Also, the average rank secured by A must be 2.

Let us solve each question separately now. The points that one must bear in mind while filling the table are
(I) B managed to get a better rank than C in 2 of the 3 surveys.
(II) GT deemed C to be a better college than A.

Average rank secured by B = Average rank secured by A + 1.
Therefore, the average rank secured by B must be 3.
Sum of the ranks secured by B = 9.
Now, had A secured second rank in the GT survey and third rank in the BS survey, C must have secured the first rank in the GT survey and second rank in BS survey.
B must have secured the first rank in the BS survey.

Now, B must have secured either fifth or third rank in the KIRF and GT surveys.

Let us consider the other possibility.
Had A secured third rank in the GT survey, A would have secured second rank in the BS survey.
C must have secured the second or first rank in the GT survey.
Had C secured first rank in the GT survey, it would have secured third rank in the BS survey.
B would have secured first rank in the BS survey.

Had C secured second rank in the GT survey, C could have secured first or third rank in the BS survey.

As we can see, C could have secured any of the top 3 ranks and hence, option D is the right answer.

Instructions
Answer the questions on the basis of the information given below.

In a birthday party for kids, six different desserts were available. Each kid had to select 3 out of these 6 deserts under following conditions:

a) The kid who selects Ice-cream has to select Pastry and vice-versa.
b) The kid who selects Candy or Tiramisu, cannot select Ambrosia.
c) The kid who selects Ice-cream cannot select Cookie.
Following are the number of each type of deserts distributed in the party:

- Ice-cream: 93
- Pastry: 93
- Candy: 107
- Tiramisu: 112
- Cookie: 84
- Ambrosia: 42

**Question 5**

How many kids selected combination of Ice-cream, Pastry and Candy?

**Answer:** 23

**Explanation:**
From given data, we know that,
the kid who selected Ice-Cream and Pastry or none of the two
the kid who selected Candy or Tiramisu didn't select Ambrosia
the kid who selected Ice-cream and Pastry didn't select Cookie.

Thus the possible ways of selecting three deserts are:
1) Ice-cream, Pastry and Candy
2) Ice-cream, Pastry and Tiramisu
3) Ice-cream, Pastry and Ambrosia
4) Candy, Tiramisu and Cookie

Let's start by the desert which least number of kids selected, i.e. Ambrosia - 42
We see that those who selected Ambrosia also selected Ice-cream and Pastry.
So, 42 kids who selected Ice-cream and Pastry also selected Ambrosia.
Thus, remaining kids who selected Ice cream and Pastry:
- Ice-cream = 93 - 42 = 51
- Pastry = 93 - 42 = 51

Now, let's consider the desert which was selected by second least number of kids, i.e. Cookie - 84
We see that those who selected Cookie also selected Candy and Tiramisu.
So, 84 kids selected Candy, Tiramisu and Cookie.
Thus, remaining kids who selected Candy, Tiramisu:
- Candy = 107 - 84 = 23
- Tiramisu = 112 - 84 = 28

Now, let's consider the remaining desert which was selected by least number of kids, i.e. Candy - 23
These 23 kids must also select Ice-cream and Pastry.
So, 23 kids who selected Ice-cream and Pastry also selected Candy.
Thus, remaining kids who selected Ice cream and Pastry:
- Ice-cream = 51 - 23 = 28
- Pastry = 51 - 23 = 28

Thus, remaining 28 kids who selected Ice-cream and Pastry would’ve also selected Tiramisu.
Thus, we get our final table as shows the combination and the number of kids who opted for it:

<table>
<thead>
<tr>
<th>Combination</th>
<th>Number of kids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice-cream, Pastry and Candy</td>
<td>23</td>
</tr>
<tr>
<td>Ice-cream, Pastry and Tiramisu</td>
<td>28</td>
</tr>
<tr>
<td>Ice-cream, Pastry and Ambrosia</td>
<td>42</td>
</tr>
<tr>
<td>Candy, Tiramisu and Cookie</td>
<td>84</td>
</tr>
</tbody>
</table>

Thus, total number of kids = 23 + 28 + 42 + 84 = 177
23 is the right answer.

**Question 6**

How many kids were present for the birthday party?
(Enter ‘0’ if the answer is 'cannot be determined')

**Answer:** 177

**Explanation:**
From given data, we know that, the kid who selected Ice-Cream and Pastry or none of the two the kid who selected Candy or Tiramisu didn’t select Ambrosia the kid who selected Ice-cream and Pastry didn’t select Cookie.

Thus the possible ways of selecting three deserts are:
1) Ice-cream, Pastry and Candy
2) Ice-cream, Pastry and Tiramisu
3) Ice-cream, Pastry and Ambrosia
4) Candy, Tiramisu and Cookie

Let’s start by the desert which least number of kids selected, i.e. Ambrosia - 42 We see that those who selected Ambrosia also selected Ice-cream and Pastry. So, 42 kids who selected Ice-cream and Pastry also selected Ambrosia. Thus, remaining kids who selected Ice cream and Pastry: Ice-cream = 93 - 42 = 51 Pastry = 93 - 42 = 51

Now, let’s consider the desert which was selected by second least number of kids, i.e. Cookie - 84 We see that those who selected Cookie also selected Candy and Tiramisu. So, 84 kids selected Candy, Tiramisu and Cookie. Thus, remaining kids who selected Candy, Tiramisu: Candy = 107 - 84 = 23 Tiramisu = 112 - 84 = 28

Now, let’s consider the remaining desert which was selected by least number of kids, i.e. Candy - 23 These 23 kids must also select Ice-cream and Pastry. So, 23 kids who selected Ice-cream and Pastry also selected Candy. Thus, remaining kids who selected Ice cream and Pastry: Ice-cream = 51 - 23 = 28 Pastry = 51 - 23 = 28

Thus, remaining 28 kids who selected Ice-cream and Pastry would’ve also selected Tiramisu. Thus, we get our final table as shows the combination and the number of kids who opted for it:

<table>
<thead>
<tr>
<th>Combination</th>
<th>Number of kids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice-cream, Pastry and Candy</td>
<td>23</td>
</tr>
<tr>
<td>Ice-cream, Pastry and Tiramisu</td>
<td>28</td>
</tr>
<tr>
<td>Ice-cream, Pastry and Ambrosia</td>
<td>42</td>
</tr>
<tr>
<td>Candy, Tiramisu and Cookie</td>
<td>84</td>
</tr>
</tbody>
</table>

Thus, total number of kids $= 23 + 28 + 42 + 84 = 177$

Or

Number of kids present in the part = $\frac{\text{Number of deserts distributed}}{3} = \frac{93+93+107+112+84+42}{3} = \frac{531}{3} = 177$

**CAT Complete Cracku - 2019**

**Question 7**

How many kids selected Candy and Tiramisu both?

**Answer:** 84

**Explanation:**
From given data, we know that, the kid who selected Ice-Cream and Pastry or none of the two the kid who selected Candy or Tiramisu didn’t select Ambrosia the kid who selected Ice-cream and Pastry didn’t select Cookie.
Thus the possible ways of selecting three deserts are:
1) Ice-cream, Pastry and Candy
2) Ice-cream, Pastry and Tiramisu
3) Ice-cream, Pastry and Ambrosia
4) Candy, Tiramisu and Cookie

Let’s start by the desert which least number of kids selected, i.e. Ambrosia - 42 We see that those who selected Ambrosia also selected Ice-cream and Pastry. So, 42 kids who selected Ice-cream and Pastry also selected Ambrosia.

Thus, remaining kids who selected Ice cream and Pastry: Ice-cream = 93 - 42 = 51 Pastry = 93 - 42 = 51

Now, let’s consider the desert which was selected by second least number of kids, i.e. Cookie - 84 We see that those who selected Cookie also selected Candy and Tiramisu. So, 84 kids selected Candy, Tiramisu and Cookie. Thus, remaining kids who selected Candy, Tiramisu: Candy = 107 - 84 = 23 Tiramisu = 112 - 84 = 28

Now, let’s consider the remaining desert which was selected by least number of kids, i.e. Candy - 23 These 23 kids must also select Ice-cream and Pastry. So, 23 kids who selected Ice-cream and Pastry also selected Candy. Thus, remaining kids who selected Ice cream and Pastry: Ice-cream = 51 - 23 = 28 Pastry = 51 - 23 = 28

Thus, remaining 28 kids who selected Ice-cream and Pastry would’ve also selected Tiramisu. Thus, we get our final table as shows the combination and the number of kids who opted for it:

<table>
<thead>
<tr>
<th>Combination</th>
<th>Number of kids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice-cream, Pastry and Candy</td>
<td>23</td>
</tr>
<tr>
<td>Ice-cream, Pastry and Tiramisu</td>
<td>28</td>
</tr>
<tr>
<td>Ice-cream, Pastry and Ambrosia</td>
<td>42</td>
</tr>
<tr>
<td>Candy, Tiramisu and Cookie</td>
<td>84</td>
</tr>
</tbody>
</table>

Thus, total number of kids = 23 + 28 + 42 + 84 = 177
Thus, 84 kids selected Candy and Tiramisu.

**Question 8**

**In how many ways can a kid select the combination of deserts?**

**Answer:**
4

**Explanation:**

From given data, we know that, the kid who selected Ice-Cream and Pastry or none of the two the kid who selected Candy or Tiramisu didn’t select Ambrosia the kid who selected Ice-cream and Pastry didn’t select Cookie.

Thus the possible ways of selecting three deserts are:
1) Ice-cream, Pastry and Candy
2) Ice-cream, Pastry and Tiramisu
3) Ice-cream, Pastry and Ambrosia
4) Candy, Tiramisu and Cookie

Let’s start by the desert which least number of kids selected, i.e. Ambrosia - 42 We see that those who selected Ambrosia also selected Ice-cream and Pastry. So, 42 kids who selected Ice-cream and Pastry also selected Ambrosia.

Thus, remaining kids who selected Ice cream and Pastry: Ice-cream = 93 - 42 = 51 Pastry = 93 - 42 = 51

Now, let’s consider the desert which was selected by second least number of kids, i.e. Cookie - 84 We see that those who selected Cookie also selected Candy and Tiramisu. So, 84 kids selected Candy, Tiramisu and Cookie. Thus, remaining kids who selected Candy, Tiramisu: Candy = 107 - 84 = 23 Tiramisu = 112 - 84 = 28

Now, let’s consider the remaining desert which was selected by least number of kids, i.e. Candy - 23 These 23 kids must also select Ice-cream and Pastry. So, 23 kids who selected Ice-cream and Pastry also selected Candy. Thus, remaining
Thus, remaining 28 kids who selected Ice-cream and Pastry would’ve also selected Tiramisu. Thus, we get our final table as follows the combination and the number of kids who opted for it:

<table>
<thead>
<tr>
<th>Combination</th>
<th>Number of kids</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice-cream, Pastry and Candy</td>
<td>23</td>
</tr>
<tr>
<td>Ice-cream, Pastry and Tiramisu</td>
<td>28</td>
</tr>
<tr>
<td>Ice-cream, Pastry and Ambrosia</td>
<td>42</td>
</tr>
<tr>
<td>Candy, Tiramisu and Cookie</td>
<td>84</td>
</tr>
</tbody>
</table>

Thus, total number of kids = 23 + 28 + 42 + 84 = 177

A kid can choose the combination of desserts in 4 ways.

Instructions
For the following questions answer them individually

**Question 9**

4 friends Praveen, Varun, Sanjay, and Gautam decided to find out their weight. No 2 persons are of the same weight. They went to a centre that had a machine which does not display the weight. Rather, it takes the weight of the first person standing on it as the base and displays a ‘+’ sign if the weight of the second person is greater than that of the first person and ‘-’ sign if the weight of the second person is less than that of the first person. Rahul is the owner of the centre and he offers to stand first on the machine to provide a base for comparison. Rahul stands on the machine first and his weight is taken as the base. Praveen, Varun, Sanjay, and Gautam stand on the machine in that order and the results displayed were +, -, +, +. Which of the following statements will help to rank the friends according to their weights?

A. Rahul is not the lightest person among the five.
B. Gautam is not the heaviest person among the five.
C. Praveen is heavier than Sanjay.
D. Praveen is not the heaviest person among the five.

**Answer:** B

**Explanation:**
Let the weight of Rahul be R.
We know that the machine displayed +, -, +, + in that order.
=> Praveen's weight > R
Varun's weight is less than Praveen's weight. However, we cannot determine whether Varun's weight is less than Rahul's weight.
Sanjay is heavier than Varun. Gautam is heavier than Sanjay.
Let us represent the weights of the persons using the first letters of their name.
The relationships that can be established are
R < P > V < S < G

Let us evaluate the options.

Option A:
Rahul is not the lightest person among the five.
=> Varun is the lightest.
No relationship can be established between P and S.

Option C:
Praveen is heavier than Sanjay.
We cannot determine whether Gautam is heavier than Praveen or not.

Option D:
Praveen is not the heaviest person among the five.
=> Gautam is the heaviest among the five.
However, we cannot determine whether Praveen is heavier than Sanjay.

Option B:
Gautam is not the heaviest person among the five.
=> Praveen is the heaviest.
=> V < S < G < P
We can rank the 4 friends using option B and hence, option B is the right answer.

Question 10
On her walk along the beach, Alex collected 50 coloured shells, all either calcium or magnesium. She sorted them by category when she got home, and found the following: The number of white magnesium shells with grooves is even and positive. The number of white magnesium shells without any groove equals the number of white calcium shells without grooves. All non-white magnesium shells have grooves, and there are five times as many of them as there are white grooved magnesium shells. There are no grooved calcium shells that are not white. There are exactly 6 white grooved calcium shells. There are exactly 22 calcium shells that are neither grooved nor white. How many magnesium shells did she collect?

A 22
B 17
C 25
D 18

Answer: B

Explanation:

<table>
<thead>
<tr>
<th></th>
<th>Non-Grooved</th>
<th>Grooved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>White</td>
<td>Non-white</td>
</tr>
<tr>
<td>Calcium</td>
<td>y</td>
<td>22</td>
</tr>
<tr>
<td>Magnesium</td>
<td>y</td>
<td>0</td>
</tr>
</tbody>
</table>

Let x and y be as shown in the table. Therefore, 28 + 6x + 2y = 50 => 6x + 2y = 22. Since x is positive and even, if x = 2, y = 5 from the eqn. If x = 4 => y = -1. Hence, x has to be less than 4. Therefore x = 2. No. of mag shells = y + 6x = 5 + 12 = 17.
25Mocks+30Sectionals
for the unbelievable price of Rs 999/-

CAT Complete Cracku - 2019

Take Free CAT Mock

HUGE QUESTION BANK
Study Room for just Rs 3200

Downloaded from cracku.in
CAT Percentile Predictor

Whatsapp "CAT" to join in CAT Group to this Number - 7661025559