MBA PIONEER 2024

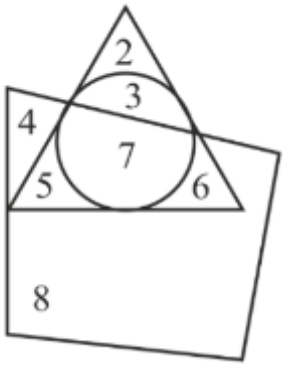
Data Interpretation & Logical Reasoning

DPP -01

Venn Diagrams - 1

Directions (1-5) Read the following passage and answer the given questions.

In the following figure, the triangle represents the number of people who like soaps of type-1, the circle represents the number of people who like soaps of type-2, and the quadrilateral represents the number of people who like soaps of type-3.



Q1 Find the number of people who like soaps of type-1 only.

(A) 2 (B) 3
(C) 4 (D) 8

Q2 How many people are there who like soap of all types?

(A) 6 (B) 7
(C) 8 (D) 9

Q3 Find the number of people who like soap of type-1.

(A) 13 (B) 10
(C) 23 (D) 5

Q4 Find the number of people who like soap of type-2.

(A) 23 (B) 13
(C) 10 (D) 21

Q5 Find the number of people who like soap of type-3.

(A) 23 (B) 10
(C) 30 (D) 13

Directions (6-10) Read the following passage and answer the given questions.

In a society of 100 people, a survey has been conducted to know how many people like Chai and Co ee. It was found that 56 people like Chai, 34 people like only Co ee, 14 people like both Chai and Co ee.

Q6 How many people are there who like co ee?

(A) 44 people (B) 48 people
(C) 34 people (D) 38 people

Q7 How many people are there who like none of chai and co ee?

(A) 5 (B) 10
(C) 15 (D) 20

Q8 How many people like exactly one type of drinks?

(A) 75 (B) 76
(C) 77 (D) 78

Q9 What is the di erence between the number of people who like Chai only and Co ee only?

(A) 8 (B) 10
(C) 12 (D) 14

Q10 Find the number of people who like atleast one of Chai and Co ee.

(A) 76 (B) 90
(C) 80 (D) 88

Directions (11-15) Read the following passage and answer the given questions.

In a class of 189 students of Physicswallah Vidhyapeeth 66 students passed in Physics, 53 students failed in Chemistry only and 21 students failed in both subjects

Q11 Find the number of people who passed in chemistry?

(A) 66 (B) 115
(C) 102 (D) 13

Q12 Find the number of people who failed in exactly 1 subject.

(A) 155 (B) 53
(C) 102 (D) 21

Q13 How many students are there who passed in both subjects?

(A) 13 (B) 21
(C) 53 (D) 102

Q14 Find the number of students who failed in atleast 1 subject.

(A) 155 (B) 176
(C) 21 (D) None of these

Q15 Find the difference in the number of students who passed in only Chemistry and only Physics.

Directions (16-20) Read the following passage and answer the given questions.

A short survey is conducted among the student of MBA Wallah to know which subject is interesting among Quant and LRDI.

It is found that 40% student like Quant, 60% like LRDI and 56 student like both subject. 56 students like none of the above subjects.

Note : Suppose total number of students = 100 x

Q16 Which of the following can't be the value of x?

(A) 1 (B) 2
(C) 3 (D) 4

Q17 If x = 2 then the number of student who like atleast 1 subject.

(A) 144 (B) 169
(C) 196 (D) 225

Q18 If x = 3 then the number of student who like only Quant.

(A) 64 (B) 56
(C) 84 (D) 76

Q19 If x = 7 then find the number of total students participate in survey except those who doesn't like any subject.

(A) 644 (B) 700
(C) 56 (D) 656

Q20 If x = 5.6 then the difference of number of students who like only LRDI and only Quant.

(A) 114 (B) 118
(C) 124 (D) 112

Directions (21-25) Read the following passage and answer the given questions.

A Survey of 560 employees of a company X some are part of different cross functional team among Operations, Digital Marketing and Content Development.

220 people are from Operations, 200 people are from Digital Marketing and 360 people are from Content Development.

70 people are part of Operation and Digital Marketing, 100 are part of Digital Marketing and Content and 90 people are part of Operations and Content Development. 30 people are part of all 3 department.

Q21 Find the number of employees who do not belong to any of the three teams.

(A) 5 (B) 10
(C) 15 (D) 20

Q22 Find the number of employees who are a part of exactly 1 team.

(A) 300 (B) 350
(C) 400 (D) 450

Q23 Find the number of employees who are a part of exactly two teams.
(A) 160 (B) 170
(C) 180 (D) 150

Q24 Find the number of people who are a part of atmost 1 team.
(A) 300 (B) 360
(C) 390 (D) 400

Q25 Find the difference of number of employees who are a part of exactly 1 and 2 teams.
(A) 150 (B) 170
(C) 180 (D) 200

Directions (26-30) Read the following passage and answer the given questions.

PW launched a survey among 350 students to check which exam they are going to target in 2023. After the completion of survey, the results are as follows:

1. 120 students target CAT.
2. 160 students target XAT.
3. 200 students target OMETs.
4. 15 students are going to target all three exam.
5. Each student out of 350 students targets one type of exam.

Q26 Find the number of students who are going to target only one type of exam.
(A) 235 (B) 236
(C) 240 (D) 250

Q27 Find the number of students who are going to target only two type of exams.
(A) 235 (B) 100
(C) 45 (D) 150

Q28 If the number of students who are going to target CAT and OMET only is 30 then what will be the number of students who are going to target XAT only.
(A) 70 (B) 75
(C) 80 (D) 85

Q29 If the number of students who are going to target CAT and XAT only is 60 then the number of students who are going to target OMET only.
(A) 140 (B) 145
(C) 150 (D) 155

Q30 What is the maximum number of student who are going to target CAT only?
(A) 100 (B) 105
(C) 110 (D) 120

Answer Key

Q1	(A)
Q2	(B)
Q3	(C)
Q4	(C)
Q5	(C)
Q6	(B)
Q7	(B)
Q8	(B)
Q9	(A)
Q10	(B)
Q11	(B)
Q12	(A)
Q13	(A)
Q14	(B)
Q15	49
Q16	(A)
Q17	(A)
Q18	(A)
Q19	(A)
Q20	(D)
Q21	(B)
Q22	(B)
Q23	(B)
Q24	(B)
Q25	(C)
Q26	(A)
Q27	(B)
Q28	(B)
Q29	(B)
Q30	(B)

Hints & Solutions

Q1. Text Solution:
Topic: Venn Diagram
From the figure we can see that 2 people like soap of type-1 only.
Option A is correct.

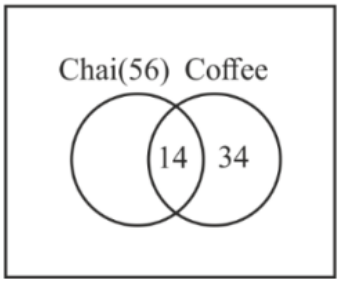
Q2. Text Solution:
Topic: Venn Diagram
Here we need to find the common region of all three figure.
So, from the figure we can say that 7 people are there who like all types of soaps.

Q3. Text Solution:
Topic: Venn Diagram
Here we need to add those number of people who lie in triangle.
Requied number of people = 2 + 3 + 7 + 5 + 6 = 23 people.

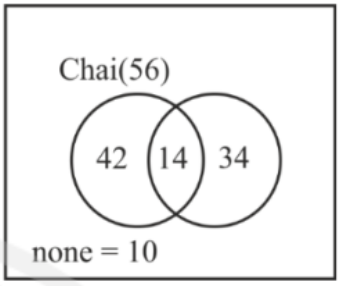
Q4. Text Solution:
Topic: Venn Diagram
Here we need to find those people who lie in circle.
Required number of people = 7 + 3 = 10.

Q5. Text Solution:
Topic: Venn Diagram
Here we need to find those people who lie in quadrilateral.
Required number of people = 4 + 5 + 6 + 7 + 8 = 30.

Q6. Text Solution:
Topic: Venn Diagram
100 people are there out of which 56 people like chai, 34 people like coffee only and 14 people like both chai and coffee.

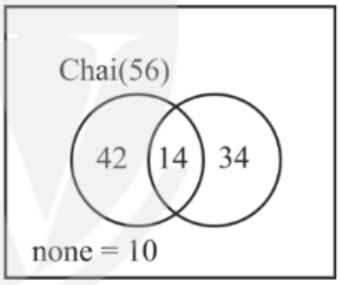


If 56 people like chai and 14 people like both chai and coffee then (56 – 14) = 42 people are there who like chai only.
Total 100 people are there so number of people who like none of chai and coffee
= 100 – 42 – 14 – 34
=10.



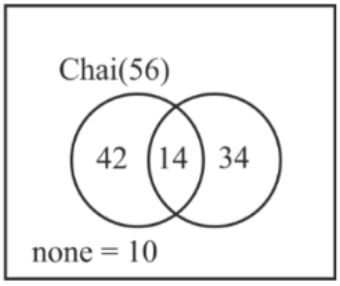
Required number of people = 14 + 34 = 48 people.
The answer is option B.

Q7. Text Solution:
Topic: Venn Diagram



As one can see from the venn diagram. 10 people are there who doesn't like chai and coffee.
The answer is option B.

Q8. Text Solution:
Topic: Venn Diagram

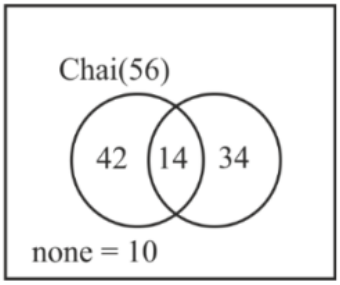


Required number of people = 42 + 34 = 76 people.

The answer is option B.

Q9. Text Solution:

Topic: Venn Diagram

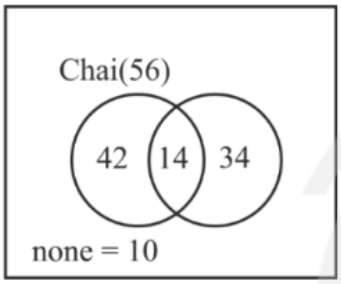


Required solution = 42 – 34 = 8 people.

The answer is option A.

Q10. Text Solution:

Topic: Venn Diagram



Required number of people = 42 + 14 + 34 = 90 people.

The answer is option B.

Q11. Text Solution:

Topic: Venn Diagram

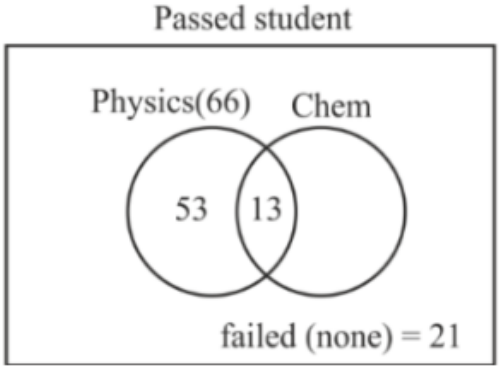
There were total of 189 students

66 students passed in Physics

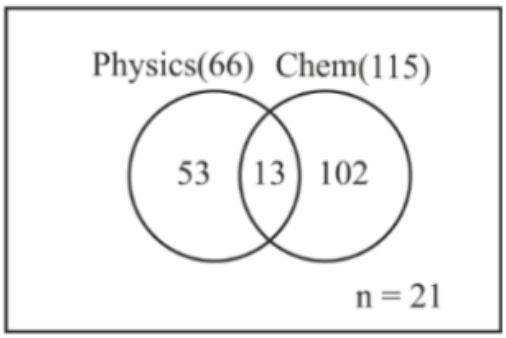
53 students failed in Chemistry only means these students are passed only in Physics

21 students failed in both subjects.

This can represented as,



Number of students who passed in chemistry only = 189 – 53 – 13 – 21 = 102 students.



Required number of people = 13 + 102

= 115 people.

The answer is option B.

Q12. Text Solution:

Topic: Venn Diagram

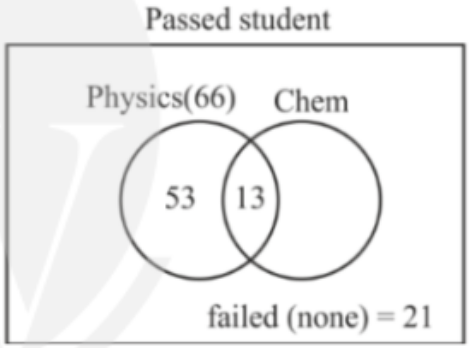
There were total of 189 students

66 students passed in Physics

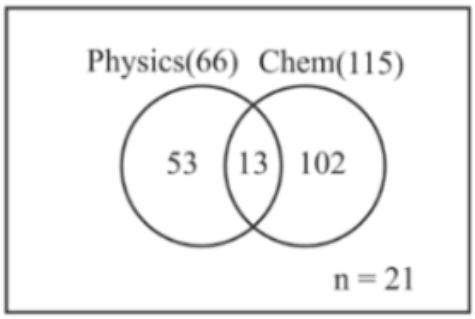
53 students failed in Chemistry only means these students are passed only in Physics

21 students failed in both subjects.

This can represented as,



Number of students who passed in chemistry only = 189 – 53 – 13 – 21 = 102 students.



53 students failed in only chemistry

102 students failed in physics

Required sum = 53 + 102 = 155 people.

The answer is option A.

Q13. Text Solution:

Topic: Venn Diagram

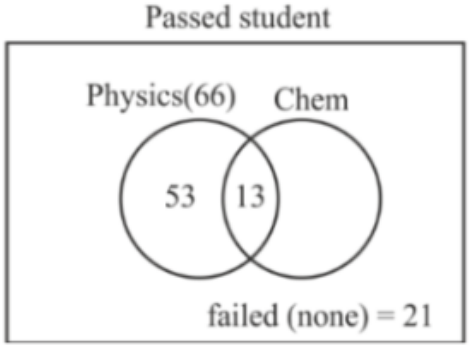
There were a total of 189 students

66 students passed in Physics

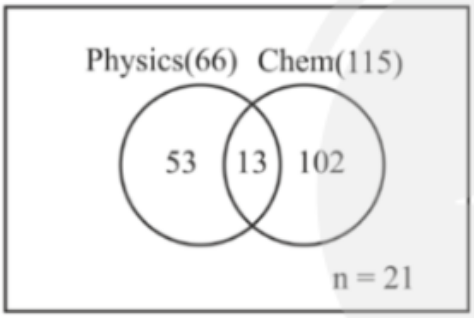
53 students failed in Chemistry only means these students passed only in Physics

21 students failed in both subjects.

This can represented as,



Number of students who passed in chemistry only = 189 – 53 – 13 – 21 = 102 students.



From the Venn diagram, 13 students are there who passed in both subjects.

Option A is correct.

Q14. Text Solution:

Topic: Venn Diagram

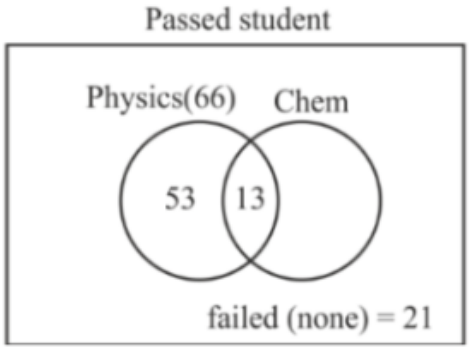
There were total of 189 students

66 students passed in Physics

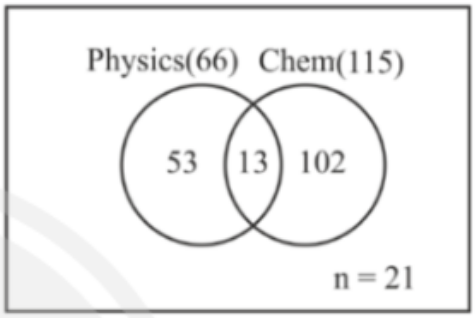
53 students failed in Chemistry only means these students are passed only in Physics

21 students failed in both subjects.

This can represented as,



Number of students who passed in chemistry only = 189 – 53 – 13 – 21 = 102 students.



Required number of students = 53 + 102 + 21 = 176 students.

Or one can directly find this as,189 – 13 = 176 students.

The answer is option B.

Q15. Text Solution:

Topic: Venn Diagram

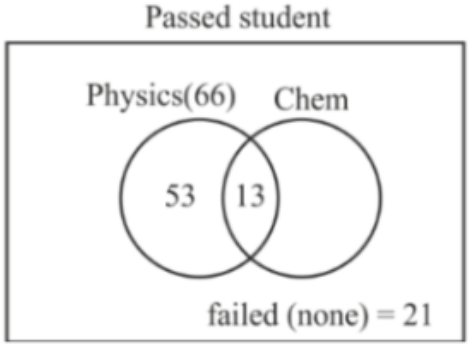
There were a total of 189 students

66 students passed in Physics

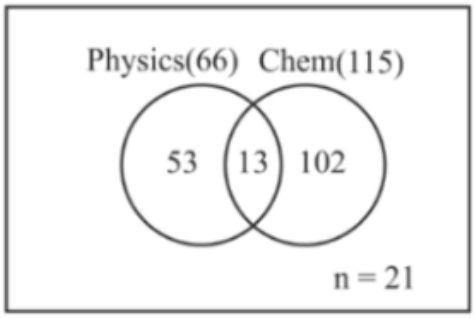
53 students failed in Chemistry only means these students passed only in Physics

21 students failed in both subjects.

This can represented as,



Number of students who passed in chemistry only = 189 – 53 – 13 – 21 = 102 students.



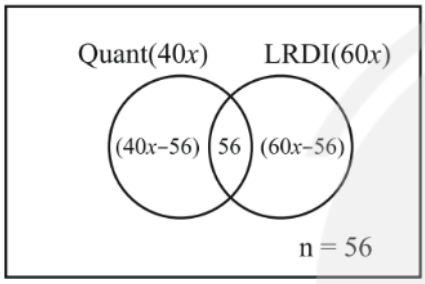
Required difference = 102 – 53 = 49 students.

Q16. Text Solution:

Topic: Venn Diagram

Suppose 100x student participate is this survey then 40x like quants and 60 x like LRDI.

If 56 like both then (40 x -56) likes Quant only and 60 x – 56 like LRDI only.



40 x – 56 + 56 + 60 x – 56 + 56 = 100 x

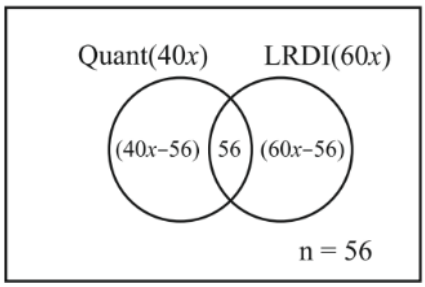
Now we can't find the exact value of x so this set becomes dependent on the value of x.

If we put x = 1 then the values become negative which is not possible.

The answer is option A.

Q17. Text Solution:

Topic: Venn Diagram



40 x – 56 + 56 + 60 x – 56 + 56 = 100 x

Now we can't find the exact value of x so this set becomes dependent on the value of x.

Number of Students who like at least 1 subject

= 40 x – 56 + 56 + 60 x - 56

= 100 x - 56

= 100 × 2 – 56

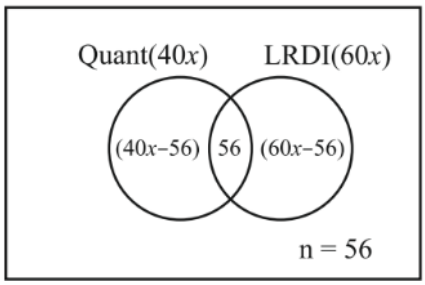
= 200 – 56

= 144 students.

The answer is option A.

Q18. Text Solution:

Topic: Venn Diagram



40 x – 56 + 56 + 60 x – 56 + 56 = 100 x

Now we can't find the exact value of x so this set becomes dependent on the value of x.

Number of students who like only Quant

= 40 x – 56

= 40 × 3 - 56

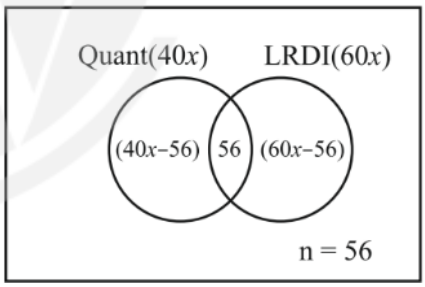
= 120 – 56

= 64

The answer is option A.

Q19. Text Solution:

Topic: Venn Diagram



40 x – 56 + 56 + 60 x – 56 + 56 = 100 x

Now we can't find the exact value of x so this set becomes dependent on the value of x.

Required number of person = 100x – 56

= 100 × 7 – 56

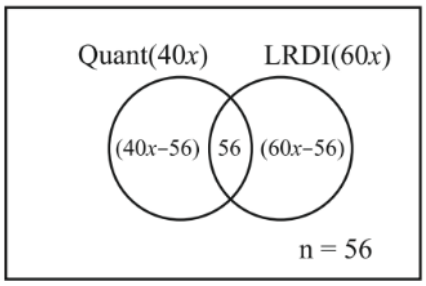
= 700 – 56

= 644 students

The answer is option A.

Q20. Text Solution:

Topic: Venn Diagram



40x – 56 + 56 + 60x – 56 + 56 = 100x

Now we can't find the exact value of x so this set becomes dependent on the value of x.

Required difference = (60x – 56) – (40x – 56)

= 60x - 56 – 40x + 56

= 20x

= 20 × 5.6

= 112 students

The answer is option D.

Q21. Text Solution:

Topic: Venn Diagram

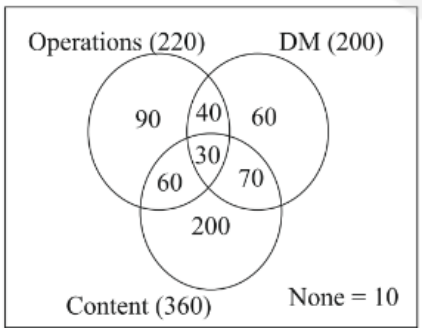
Here it is given that 30 people are part of all three departments

So, (70-30) =40 people are part of operation and digital marketing only.

(60 - 30) = 30 people are part of the operation and content only.

(220 - 40 – 30 – 60) = 90 people are a part of operations only.

Similarly, we can find for the other two teams as well our final diagram will be



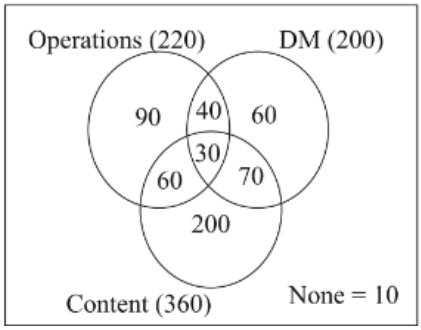
None = 560 - (90 + 40 + 60 + 60 + 30 + 70 + 200)

None = 10

The answer is option B.

Q22. Text Solution:

Topic: Venn Diagram



Required number of people

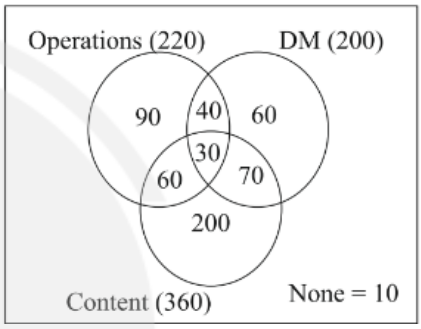
= 90 + 60 + 200

= 350

The answer is option B.

Q23. Text Solution:

Topic: Venn Diagram



Required number of people

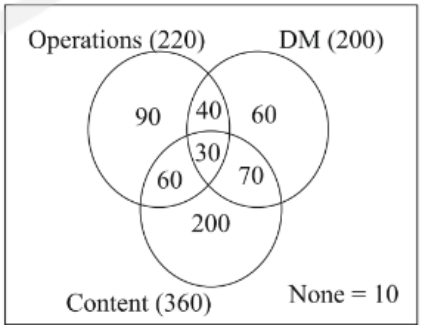
= 60 + 40 + 70

= 170

The answer is option B.

Q24. Text Solution:

Topic: Venn Diagram



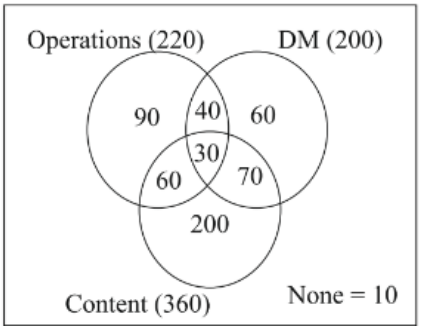
Required sum = 90 + 60 + 200 + 10

= 360 employees

The answer is option B.

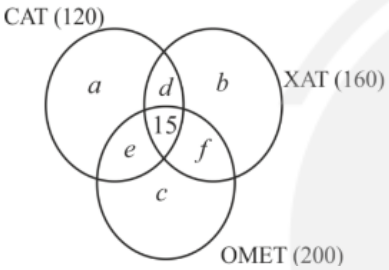
Q25. Text Solution:

Topic: Venn Diagram



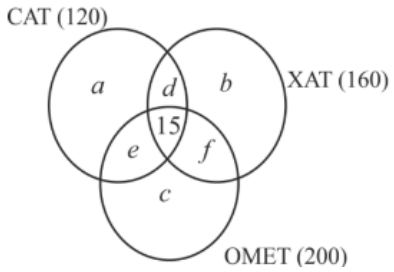
Required difference
= (200 + 90 + 60) – (60 + 40 + 70)
= 350 – 170
= 180 employees.
The answer is option C.

Q26. Text Solution:
Topic: Venn Diagram
From the data given



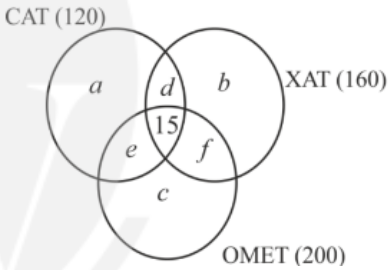
(a + b + c) + 2(d + e + f) + 3(15) = 120 + 160 + 120
(a + b + c) + 2(d + e + f) = 480 – 45
(a + b + c) + 2(d + e + f) = 435..... (i)
a + b + c + d + e + f + 15 = 350 (as per condition 5)
(a + b + c) + (d + e + f) = 335 . . . . . (ii)
From (i) and (ii) we get
(d + e + f) = 435 – 335 = 100 ..... (iii)
Put the value of eq. (iii) in (i) we get,
(a + b + c) + 2 × 100 = 435
(a + b + c) = 435 – 200 = 235
(a + b + c) = 235.
The answer is option A.

Q27. Text Solution:
Topic: Venn Diagram
From the data given



(a + b + c) + 2(d + e + f) + 3(15) = 120 + 160 + 120
(a + b + c) + 2(d + e + f) = 480 – 45
(a + b + c) + 2(d + e + f) = 435..... (i)
a + b + c + d + e + f + 15 = 350 (as per condition 5)
(a + b + c) + (d + e + f) = 335 ..... (ii)
Subtract eq. (ii) form (i) we get
(d + e + f) = 435 – 335
= 100
The answer is option B.

Q28. Text Solution:
Topic: Venn Diagram
From the data given



(a + b + c) + 2(d + e + f) + 3(15) = 120 + 160 + 120
(a + b + c) + 2(d + e + f) = 480 – 45
(a + b + c) + 2(d + e + f) = 435..... (i)
a + b + c + d + e + f + 15 = 350 (as per condition 5)
(a + b + c) + (d + e + f) = 335 . . . . . (ii)
From (i) and (ii) we get
(d + e + f) = 435 – 335 = 100 ..... (iii)
Put the value of eq. (iii) in (i) we get,
(a + b + c) + 2 × 100 = 435
(a + b + c) = 435 – 200 = 235
(a + b + c) = 235.
d + e + f = 100
Where e = 30
d + f = 100 – 30 = 70
b + d + 15 + f = 160
b + 70 + 15 = 160

b = 160 – 85

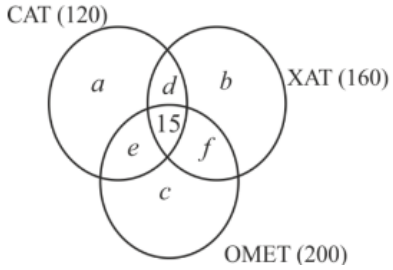
b = 75 students.

The answer is option B.

Q29. Text Solution:

Topic: Venn Diagram

From the data given



(a + b + c) + 2(d + e + f) + 3(15) = 120 + 160 + 120

(a + b + c) + 2(d + e + f) = 480 – 45

(a + b + c) + 2(d + e + f) = 435..... (i)

a + b + c + d + e + f + 15 = 350 (as per condition 5)

(a + b + c) + (d + e + f) = 335 . . . . . (ii)

From (i) and (ii) we get

(d + e + f) = 435 – 335 = 100 ..... (iii)

Put the value of eq. (iii) in (i) we get,

(a + b + c) + 2 × 100 = 435

(a + b + c) = 435 – 200 = 235

(a + b + c) = 235.

d + e + f =100

60 + e + f = 100

e + f = 100 – 60

e + f = 40

c + e + f + 15 = 200

c + 40 + 15 = 200

c = 200 – 55

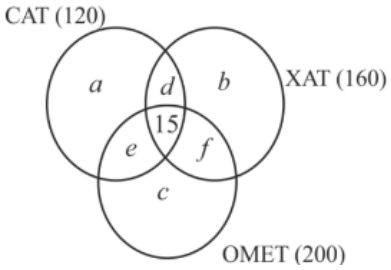
c = 145 students.

The answer is option B.

Q30. Text Solution:

Topic: Venn Diagram

From the data given



(a + b + c) + 2(d + e + f) + 3(15) = 120 + 160 + 120

(a + b + c) + 2(d + e + f) = 480 – 45

(a + b + c) + 2(d + e + f) = 435..... (i)

a + b + c + d + e + f + 15 = 350 (as per condition 5)

(a + b + c) + (d + e + f) = 335 . . . . . (ii)

From (i) and (ii) we get

(d + e + f) = 435 – 335 = 100 ..... (iii)

Put the value of eq. (iii) in (i) we get,

(a + b + c) + 2 × 100 = 435

(a + b + c) = 435 – 200 = 235

(a + b + c) = 235.

Here a + d + e + 15 = 120

a + d + e = 105

Here we need to find the maximum value of a so d + e must be as minimum as possible which is equal to 0.

a + d + e = 105

a + 0 + 0 = 105

a = 105

The answer is option B.