


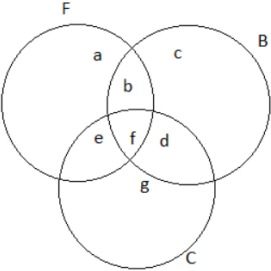
CLASS XI
CHAPTER-1
SETS
05 MARKS TYPE QUESTIONS

| Q. NO | QUESTION | MARK | | | | | | | | | | | | | | | | |
|-----------|---|---------|----------------|---|--------|---|--------|---|--------|---------|--------|---------|--------|---------|-------|-----------|-------|---|
| 1. | A college awarded 3838 medals in football, 1515 in basketball and 2020 in cricket. If these medals went to a total of 5050 men and only five men got medals in all the three sports, how many received medals in exactly two of the three sports? | 5 | | | | | | | | | | | | | | | | |
| 2. | In a class of 5050 students, 3030 students like Hindi, 2525 like science and 1616 like both. Find the no. of students who like (i) Either Hindi or Science (ii) Neither hindi nor science | 5 | | | | | | | | | | | | | | | | |
| 3. | In a class 11 th there are 200 students out of which 80 have taken mathematics, 120 have taken economics and 90 have taken physical education. If 50 have taken mathematics and economics, 60 have taken economics and physical education, 40 have taken mathematics and physical education. If 20 students have taken all three subjects then on the basis of above information answer the following: i)The number of students who have taken at least one of the subjects. a)160 b)40 c)290 d)200 ii)The number of students who have taken at most one of the subject. a)60 b)90 c)40 d)70 iii)The number of students who has taken none of the subject. a)60 b)90 c)40 d)160 iv)The number of students who have taken exactly one subject. a)20 b)50 c)40 d)70 v)The number of students who has taken mathematics and economics but not physical education. a)60 b)140 c)120 d)20 | 5 | | | | | | | | | | | | | | | | |
| 4. | In a city of 56,000 people following is the number of fans of players Rohit(R). Virat(V) and Dhoni(D). <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Players</th> <th style="text-align: center;">Number of fans</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">R</td> <td style="text-align: center;">23,000</td> </tr> <tr> <td style="text-align: center;">V</td> <td style="text-align: center;">25,000</td> </tr> <tr> <td style="text-align: center;">D</td> <td style="text-align: center;">18,000</td> </tr> <tr> <td style="text-align: center;">R and V</td> <td style="text-align: center;">12,000</td> </tr> <tr> <td style="text-align: center;">R and D</td> <td style="text-align: center;">10,000</td> </tr> <tr> <td style="text-align: center;">V and D</td> <td style="text-align: center;">8,000</td> </tr> <tr> <td style="text-align: center;">R,V and D</td> <td style="text-align: center;">3,000</td> </tr> </tbody> </table> <p>Based on the above information, answer the following: (i) How many people are fans of at least 2 players? A. 23,000 B. 24,000 C.25,000 D.27,000 (ii) How many people are fans of exactly I player? A.18,000 B. 19,000 C.21,000 D.15,000</p> | Players | Number of fans | R | 23,000 | V | 25,000 | D | 18,000 | R and V | 12,000 | R and D | 10,000 | V and D | 8,000 | R,V and D | 3,000 | 5 |
| Players | Number of fans | | | | | | | | | | | | | | | | | |
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| V and D | 8,000 | | | | | | | | | | | | | | | | | |
| R,V and D | 3,000 | | | | | | | | | | | | | | | | | |

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| | <p>(iii) How many people follows R and V but not D? A.21,000 B.23,000 C.21,000 D.24000</p> <p>(iv) How many people are not fans of any of these 3 players? A.17,000 B.19,000 C.21,000 D.23,000</p> <p>(v) How many peoples are not fan of any of these 3 players? A.17,000 B.18,000 C.20,000 D. None of these</p> | |
| 5. | <p>In a company, 100 employees offered to do work. In out of them, 10 employees offered ground floor only, 15 employees offered first floor only, 30 employees offered second and ground floor to work, 25 employees offered first and second floor, 60 employees offered second floor.</p>  <p>Based on the above information answer the following questions –</p> <ol style="list-style-type: none"> Find the number of employees who offered all the three floors. The number of employees who offered ground floor. The number of employees who offered first floor. The number of employees who offered ground floor and first floor but not second floor. The number of employees who did not offer any of the above three floors. | 5 |
| 6. | <p>In an university, out of 100 students 15 students offered Mathematics only, 12 students offered Statistics only, 8 students offered only physics, 40 students offered Physics and Mathematics, 20 students offered both Physics and Statistics, 10 students offered both Mathematics and Statistics, 65 students offered Physics.</p> <p>Based on the above information answer the following questions</p> <ol style="list-style-type: none"> Find the number of students offered all the three subjects. Find the number of students who offered Mathematics. Find the number of students who offered Statistics. Find the number of students who offered Mathematics and Statistics but not Physics. Find the number of students who did not offered any of the above subjects. | 5 |
| 7. | <p>If $A = \{x: x \in \mathbb{R}, -3 \leq x \leq 10\}$ and $B = \{x: x \in \mathbb{R}, 0 < x \leq 10\}$ then determine all the sets in interval notations (a) $A-B$ (b) $B-A$ (c) $A \cup B$ (d) $B \cup A$ (e) $(A-B) \cup (B-A)$</p> | 5 |
| 8. | <p>By laws of algebra of sets prove that for any three sets A, B, C $A \cap (B - C) = (A \cap B) - (A \cap C)$</p> | 5 |

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| 9. | Let $A = \{a, b, c, d\}$, $B = \{b, d, e, f, g\}$ and $C = \{a, c, e, f, h, i\}$ verify that, $A \cap (B - C) = (A \cap B) - (A \cap C)$ | 5 |
| 10. | If $A = \{2x : x \in N\}$, $B = \{3x : x \in N\}$, $C = \{5x : x \in N\}$, then find (i) $A \cap B$ (ii) $B \cap C$ (iii) $(A \cap B) \cap C$ | 5 |

ANSWERS:

| Q. NO | ANSWER | MARKS |
|-------|---|-------|
| 1. | <p>Let us have a notation F, B, and C for medals in football, basketball, and cricket respectively</p>  <p>C is intersection of all A,B,C and a,e,g are intersections of A and not B, B and not C, A and not C respectively.</p> <p>From the above venn diagram $f=5$(a) $a+b+ e + f=38$(b) $b+ c +d+f=15$(c) $e+d+f+g=20$(d) $a+b+c+d+e+f+g=50$(e) From equations (d), (e) we get as shown $a+b+c=30$.....(f) Now from equation (b) and (f) we get as shown $e-3=c$(g) put value of c in the equation € as shown $a+e+g+b+e+d=50-5+3$ Also from equation (d) and (e) we get $a+e+g=35$ Therefore the medals received in exactly 2 of three sports is given by solving above equations as shown $b + e + d=13$.</p> | 5 |
| 2. | <p>i) Let the total number of students be $T=50$ Let us denote number of students who like Hindi with H and who like science with S $n(H \cup S) = n(H) + n(S) - n(H \cap S)$ $\Rightarrow n(H \cup S) = 30 + 25 - 16 = 39$ Therefore the number of students who like either Hindi or Science is 39.</p> <p>ii) Let the total number of students be $T=50$ Let us denote number of students who like Hindi with H and who like science with S $n(H' \cap S') = T - n(H \cup S)$ $\Rightarrow n(H' \cap S') = 50 - 39 = 11$ $\Rightarrow n(H \cup S) = 30 + 25 - 16 = 39$ Therefore the number of students who like either Hindi or Science is 39.</p> | 5 |

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| 3. | i)2 ii)3 iii)3 iv)9 | 5 |
| 4. | i)d ii)c iii)c iv)b | 5 |
| 5. | i) A ii) A iii) B iv) D v) A | 5 |
| 6. | i) B ii) A iii) C iv) A v) B | 5 |
| 7. | (a) [-3,0] (b) (10,12] (c) [-3,12] (d) (0,10] (e) [-3,0]U(10,12] | 5 |
| 8. | $A \cap (B - C) = A \cap (B \cap C') \text{ (as } B - C = B \cap C')$ $= (A \cap B) \cap C' \quad \text{(Associative law)}$ $= \emptyset \cup (A \cap B) \cap C'$ $= ((A \cap B) \cap A') \cup ((A \cap B) \cap C') \quad \text{(As } A \cap B \subseteq A)$ $= (A \cap B) \cap (A' \cup C') \quad \text{(by converse of distributive law)}$ $= (A \cap B) \cap (A \cap C)'$ $\quad \text{(De Morgans law)}$ $= (A \cap B) - (A \cap C)$ | 5 |
| 9. | Verification | |
| 10. | Find answers | |