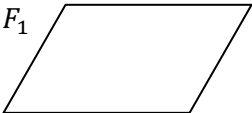

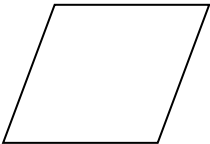
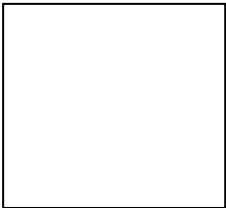
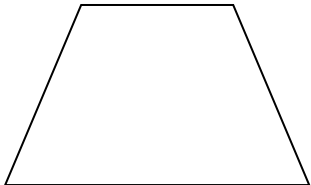


CLASS XI
CHAPTER-1
SETS
02 MARKS TYPE QUESTIONS

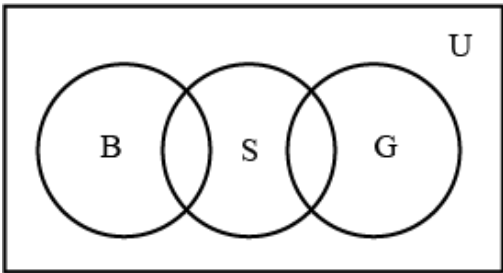
Q. NO	QUESTION	MARK
1.	Let U be the set of all boys and girls in a school, G be the set of all girls in the school, B be the set of all boys in the school, and S be the set of all students in the school who take swimming. Some, but not all, students in the school take swimming. Draw a Venn diagram showing one of the possible interrelationships among sets U, G, B and S.	2
2.	Let A, B and C be three sets $A \cup B = A \cup C$ and $A \cap B = A \cap C$ then, show that $B=C$.	2
3.	If $A \cap B' = \phi$, then show that $A = A \cap B$ and hence show that $A = A \subseteq B$.	2
4.	Write the following intervals in set builder form: (-3, 0) and (6, 12).	2
5.	Let $A=\{1,2,3,4,5,6,7\}$ and $b=\{3,6,7,9\}$, then the number of elements in the set $C \subseteq A : (C \cap B \neq \emptyset)$ is?	2
6.	Out of 280 students in class XII of a school, 135 play Hockey, 110 play Football, 80 play Volleyball, 35 of these play Hockey and Football, 30 play Volleyball and Hockey, 20 play Football and Volleyball. Also, each student plays at least one of the three games. How many students play all the three games?	2
7.	A school awarded 58 medals for Honesty, 20 for Punctuality and 25 for Obedience. If these medals were bagged by a total of 78 students and only 5 students got medals for all the three values, find the number of students who received medals for exactly two of the three values.	2
8.	A class teacher Kuldeep Singh of class XI write three sets A, B and C are such that $A = \{a,c,b,d,f\}$, $B = \{a,g,h,d,k\}$ and $C = \{d,k,g,p,u\}$. (i) Find $A - B$ (ii) Find $A - C$	2
9.	In a company, 100 employees offered to do a work. In out of them, 10 employees offered ground floor only, 15 employees offered first floor only, 10 employees offered second floor only, 30 employees offered second floor and ground floor to work, 25 employees offered first and second floor, 15 employees offered ground and first floor, 60 employees offered second floor. (i) Number of employees who did not offer any floor? (ii) Number of employees who offered first floor?	2
10.	In a survey it is found that 21 people like product A, 26 people like product B and 29 like product C. If 14 people like product A and B, 15 people like product and C, 12 people like product C and A, and 8 people like all the three products. (i) How many people are surveyed in all? (ii) How many like product C only?	2
11.	Let A, B and C are three sets. If $A \in B, B \subset C$, is it true that $A \subset C$? If not give an example.	2
12.	If $a \in N$ such that $aN = \{ax : x \in N\}$. Describe the set $3N \cap 7N$	2
13.	In a group of 950 persons, 750 can speak Hindi and 460 can speak English. Find	2

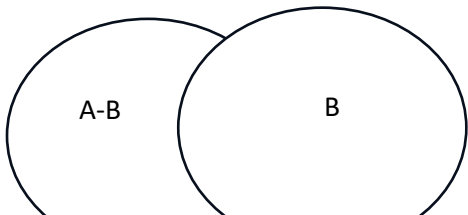
	how many can speak Hindi only.	
14.	If $A = \left\{ (x, y) : y = \frac{1}{x}, x \neq 0, x \in R \right\}$ and $B = \{ (x, y) : y = -x, x \in R \}$. Find $A \cap B$	2
15.	In a group of 50 persons, 14 drink tea but not coffee and 30 drink tea. How many persons drink tea and coffee both?	2
16.	Let $A = \{1, 3, 9, 15\}$, $B = \{1, 5, 7, 9\}$ and $C = \{3, 7, 11, 13\}$ then verify $A - (B \cup C) = (A - B) \cap (A - C)$	2
17.	For any two sets X and Y prove that $X \cap (X \cup Y)' = \emptyset$	2
18.	If A and B are two subsets of U and $n(U) = 700$, $n(A) = 200$, $n(B) = 300$, $n(A \cap B) = 100$ then find $n(A' \cap B')$	2
19.	Use Venn Diagram to prove $(A - B) \cup B = A \cup B$	2
20.	If $aN = \{ax : a, x \in N\}$ and $3N \cap 7N = kN$ then find value of k	2
21.	<p>Let F_1 be the set of all parallelograms, F_2 be the set of all rectangles, F_3 be the set of all rhombuses, F_4 be the set of all squares and F_5 be the set of trapeziums in a plane. Then what is equal to $F_1 \cup F_2 \cup F_3 \cup F_4$ from the following figures?</p> <div style="display: flex; flex-direction: column; align-items: flex-start;"> <div style="margin-bottom: 20px;"> F_1  </div> <div style="margin-bottom: 20px;"> F_2  </div> <div style="margin-bottom: 20px;"> F_3  </div> <div style="margin-bottom: 20px;"> F_4  </div> <div> F_5  </div> </div>	2
22.	In Ramgarh town some of the residents read newspaper. It has total of 840 persons. 450 persons read Hindi news paper, 300 read English newspaper and 200 read both language newspapers. Then what is the number of persons who read neither of newspapers ?	2



23.	If $A = \{3,6,9,12,15,18,21\}$ and $B = \{4,8,12,16,20\}$ then find $(A-B)$.	2
24.	Write the roster form of the set $A\{x : x \text{ is a solution of the equation } x^2 + x - 2 = 0\}$.	2
25.	Write in the form of interval of $\{x : x \in R, -4 < x \leq 6\}$.	2
26.	Let $U = \{1,2,3,4,5,6\}$, $A = \{2,3\}$ and $B = \{3,4,5\}$ then find $A' \cap B'$.	2
27.	Fill in the blank, (a) $U' \cap A = \dots\dots\dots$ (b) $U' \cup A = \dots\dots\dots$	2

ANSWERS:

Q. NO	ANSWER	MARKS
1.	<p>Given: U is the set of all boys and girls in the school. G is the set of all girls in the school. B is the set of all boys in the school. S is the set of all the student in school who take swimming. NOTE: This is one possible Venn diagram, there can be multiple Venn diagram possible here.</p> 	2
2.	<p>Prove using suitable formula of sets.</p> <p>It is given that, $A \cup B = A \cup C$...(1) and, $A \cap B = A \cap C$...(2)</p> <p>Taking '$\cap C$' on both sides in equation (1) $(A \cup B) \cap C = (A \cup C) \cap C$ We know that, $(A \cup B) \cap C = (A \cap C) \cup (B \cap C)$ and $(A \cup C) \cap C = C$ So, $(A \cap C) \cup (B \cap C) = C$ $(A \cap B) \cup (B \cap C) = C$...(3) [From (2)]</p> <p>Again, Taking '$\cap B$' on both side in equation (1) $(A \cup B) \cap B = (A \cup C) \cap B$ $B = (A \cap B) \cup (C \cap B)$ $B = (A \cap B) \cup (B \cap C)$ $B = C$ [From (3)]</p> <p>Hence, proved.</p>	2
3.	<p>If $A \cap B' = \emptyset$ Then show that $A = A \cap B$ and Show that $A \subseteq B$</p> <p>If $A \cap B' = \emptyset$ Let, $x \in A \therefore x \in B'$ $\Rightarrow x \in (B')'$ $x \in B$ $A \subseteq B \therefore A = A \cap B$</p>	2

4.	$(-3,0)=\{x:x\in\mathbb{R},-3<x<0\}$ $[6,12]=\{x:x\in\mathbb{R},6\leq x\leq 12\}$	2
5.	<p>As $C \cap B \neq \emptyset$, C must be not be formed by $\{1,2,4,5\}$ and C should not contain 9</p> <p>\therefore atleast one element from $\{3,6,7\}$ and from $\{1,2,4,5\}$ without any restriction</p> <p>So required number of elements will be $(2^3-1) \cdot 2^4 = 112$.</p>	2
6.	40	2
7.	15	2
8.	<p>i) $\{b,c,f\}$</p> <p>ii) $\{a,c,b,f\}$</p>	2
9.	<p>i) 100</p> <p>ii) 40</p>	2
10.	<p>i) 10</p> <p>ii) 27</p>	2
11.	<p>Let $A=\{a\}$, $B=\{\{a\},b\}$ and $C=\{\{a\},b,c\}$</p> <p>$A \in B$ and $B \subset C$ but $A \notin C$</p>	2
12.	$3N = \{3,6,9,12, \dots\}$ and $7N = \{7,14,21,28, \dots\}$ $3N \cap 7N = \{21,42, \dots\}$	2
13.	<p>Required number is $n(A - B) = n(A) - n(A \cap B)$</p> <p>Ans = 490</p>	2
14.	Ans: \emptyset	2
15.	$n(A - B) = 14 \Rightarrow n(A) - n(A \cap B) = 14$ $n(A \cap B) = n(A) - 14 = 30 - 14$ <p>Ans: 16</p>	2
16.	$B \cup C = \{1,3,5,7,9,11,13\} \Rightarrow A - (B \cup C) = \{15\}, \dots \dots (1)$ $A - B = \{3,15\}, A - C = \{1,9,15\}$ $(A - B) \cap (A - C) = 15, \dots \dots (2)$ <p>From (1) and (2) result follows</p>	2
17.	$X \cap (X \cup Y)' = X \cap (X' \cap Y')$ <p>DE MORGAN'S LAW</p> $= (X \cap X') \cap Y'$ <p>ASSO. LAW</p> $= \emptyset \cap Y' = \emptyset$	2
18.	$n(A \cup B) = 400$ $n(A' \cap B') = n((A \cup B)') = 700 - 400 = 300$	2
19.		2

20.	$3N = \{3, 6, 9, \dots\}$ and $7N = \{7, 14, 21, \dots\}$ $\Rightarrow 3N \cap 7N = \{21, 42, \dots\} = 21N$ $\therefore k = 21$	2
21.	$F_1 \cup F_2 \cup F_3 \cup F_4 = F_1$	2
22.	<p>Let, $n(H)$ and $n(E)$ are denotes the no. of persons read Hindi and English newspaper respectively.</p> <p>$n(H)=450$, $n(E) = 300$, $n(H \cap E)= 200$</p> <p>Then $n(H \cup E) = n(H) + n(E) - n(H \cap E)$</p> <p style="padding-left: 40px;">$= 450 + 300 - 200$</p> <p style="padding-left: 40px;">$= 550$</p> <p>The number of person who neither read newspaper is $= 840 - 550 = 290$</p>	2
23.	$\{3, 6, 9, 15, 18, 21\}$	
24.	$\{-2, 1\}$	
25.	$(-4, 6]$	
26.	$\{1\}$	
27.	(a) \emptyset (b)A	