**HOLIDAY HOMEWORK**

**CLASS XI**

***CHAPTER 1***

**1. Write the following sets in roster form:**

**i) A={ x : x is an integer and -3** $\leq $ **x** $<$ **7}**

**ii) B={ x : x is a natural number less than 6}**

**iii) D={ x : x is a prime number which is divisor of 60}**

**2. Write the following sets in the set builder form :**

**i) {3, 6, 9, 12}**

**ii) {2, 4, 6,....}**

**iii) {1, 4, 9,....,100}**

**3. Which of the following sets are finite or infinite?**

**i) The set of months of a year.**

**ii) {1, 2, 3,.....}**

**iii) {1, 2, 3,.....99, 100}**

**iv) The set of positive integers greater than 100.**

**v) The set of prime numbers less than 99.**

**4. State whether each of the following sets is finite or infinite.**

**i) The set of lines which are parallel to the x - axis**

**ii) The set of letters in the English alphabet.**

**iii) The set of numbers which are multiple of 5.**

**iv) The set of animals living on earth.**

**v) The set of circles through the origin (0, 0)**

**5. Write down all the subsets of the following sets :**

**i) {a} ii) {a, b} iii) {1, 2, 3} iv)** $∅$

**6. Write the following as intervals :**

**i)** $\left\{x:x\in R, -4<x\leq 6\right\}$ **ii)** $\left\{x:x\in R, -12<x<-10\right\}$

**iii)** $\left\{x:x\in R, 0\leq x<7\right\}$ **iv)** $\left\{x:x\in R, 3\leq x\leq 4\right\}$

**7. Write the following intervals in the set builder form :**

**i) (-3, 0) ii) [6, 12] iii) (6, 12] iv) [-23, 5)**

**8. Find the union of each of the following pairs of sets :**

**i) A={a, e, i, o, u}, B={a, b, c}**

**ii) A=**$\left\{x:x is a natural number and multiple of 3\right\}$

 **B=**$\left\{x:x is a natural number less than 6\right\}$

**iii) A=**$\left\{x:x is a natural number and 1<x\leq 6\right\}$

 **B=**$\left\{x:x is a natural number and 6<x<10\right\}$

**9. If A={1, 2, 3, 4}, B={3, 4, 5, 6}, C={5, 6, 7, 8} and D={7, 8, 9, 10} ; find**

**i)** $A∪B$ **ii)** $B∪C$ **iii)** $B∪D$ **iv)** $A∪B∪D$

**10. If A={3, 5, 7, 9, 11}, B={7, 9, 11, 13}, C={11, 13, 15} and D={15, 17} ; find**

**i)** $A∩B$ **ii)** $B∩C$ **iii)** $A∩D$ **iv)** $\left(A∩B\right)∩(B∩C)$

**11. If A=** $\left\{x:x is a natural number\right\}$ **;**

**B=** $\left\{x:x is an even natural number\right\}$ **;**

**C=** $\left\{x:x is an odd natural number\right\}$ **;**

**D=** $\left\{x:x is a prime number\right\}$ **;**

**Find i)** $A∩B$ **ii)** $A∩C$ **iii)** $A∩D$ **iv)** $B∩C$ **v)** $B∩D$ **vi)** $C∩D$

**12. If A = {3, 6, 9, 12, 15, 18, 21}, B = {4, 8, 12, 16, 20},**

 **C = {2, 4, 6, 8, 10, 12, 14, 16} D = {5, 10, 15, 20} ;**

**i) A - B ii) A - C iii) B - A iv) C - A v) B - C vi) B – D**

**13. Let U={1, 2, 3, 4, 5, 6, 7, 8, 9} , A={1, 2, 3, 4}, B={2, 4, 6, 8}, C={3, 4, 5, 6}. find**

**i)** $A^{'}$ **ii)** $B^{'}$ **iii)** $\left(A∪C\right)^{'}$ **iv)** $\left(A∪B\right)^{'}$ **v)** $\left(A^{'}\right)^{'}$ **vi)** $\left(B-C\right)^{'}$

**14. If U={a, b, c, d, e, f, g, h}, find the complements of the following sets :**

**i) A={a, b, c} ii) B={d, e, f, g} iii) C={a, c, e, g} iv) D={f, g, h, a}**

**15. If U={1, 2, 3, 4, 5, 6, 7, 8, 9}, A={2, 4, 6, 8}, B={2, 3, 5, 7}, verify that**

**i)** $\left(A∪B\right)^{'}=A^{'}∩B^{'}$ **ii)** $\left(A∩B\right)^{'}=A^{'}∪B^{'}$

**16. If X and Y are two sets such that n(X)=17, n(Y)=23 and n(X**$ ∪Y$**)=38, find n(X** $∩$**Y).**

**17. If X and Y are two sets such that X**$∪$**Y has 18 elements, X has 8 elements and Y has 15 elements, how many elements does X**$∩$**Y have?**

**18. In a group of 400 people, 250 can speak Hindi and 200 can speak English. How many people can speak both Hindi and English?**

**19. If S and T are two sets such that S has 21 elements, T has 32 elements, and S**$∩$**T has 11 elements, how many elements does S**$∪$**T have?**

**20. If X and Y are two sets such that X has 40 elements, X**$∪$**Y has 60 elements and X**$∩$**Y has 10 elements, how many elements does Y have?**