MATHEMATICS OF CLASS XI
CHAPTER-1 SETS

VERY SHORT ANSWER TYPE – 1 MARK QUESTIONS:

1. **Write the set in roster form:**
   a) **T = The set of all letters in the word TRIGONOMETRY.**
   b) **A = {x:x is a positive integer and $x^2 < 40$}.**
2. **Write the set in the set-builder form.**
   a. **A = {1, 4, 9, 16, 25….}**
   b. **{1/4, 2/5, 3/6, 4/7, 5/8}**
   c. **{……..,-5, 0, 5, 10,….}**
   d. **{-4, 4}**
3. **State which of the following sets are finite or infinite:**
   (i) **{x : x ∈ N and (x – 1) (x – 2) = 0}**
   (ii) **{x : X ∈ N and $x^2 = 4$}**
   (iii) **{x : x ∈ N and x is prime}**
   (iv) **{x : x ∈ N and x is odd}**
4. **Are the following pair of sets equal? Give reasons.**
   (i) **A = {1,2} ; B = {x : x is solution of $x^2 – 3x + 2 = 0$}**
   (ii) **B = {1, 2, 3, 4}; D = {3, 1, 4, 2}**
   (iii) **A = {2,3} ; B = { x : x is a solution of $x^2 + 5x + 6 = 0$. }**

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co

(iv) A = {x : x is a letter in the word FOLLOW} ; B = {y : y is a letter in the word WOLF}.

5. From the sets given below, select equal sets and equivalent sets:

   A = {0,a} B = {1,2,3,4}

   C = {4,8,12} D = {3,1,2,4}

   E = {1,0} F = {8,4,12}

   G = {1,5,7,11} H = {a,b}

6. Let A = {1,2{3,4},5}. Which of the following statements are false and why?

   (i) $\{3,4\} \subset A$ (ii) $\{1,2,5\} \in A$ (iii) $\{1,2,3\} \subset A$ (iv) $\{\emptyset\} \subset A$

7. Let A = {1,2,3,4} ,B = {1,2,3} and C = {2,4}. Find all sets X satisfying each pair of conditions:

   (i) $X \subset B$ and $X \not\subset C$ (ii) $X \subset B$, $X \neq B$ and $X \not\subset C$ (iii) $X \subset A$, $X \subset B$ and $X \subset C$.

8. Let A = {∅,{∅},1,{1,∅},7}, which of the following are true?

   (i $\{\emptyset\} \in A$ (ii) $\{7,\{1\}\} \not\subset A$ (iii) $\{\{7\},\{1\}\} \not\subset A$ (iv) $\{\emptyset,\{\emptyset\},\{1,\emptyset\}\} \subset A$ (V) $\{\{\emptyset\}\} \subset A$

9. How many elements will the power set of the given set have D = {0,1,2,3,4,5,6,7,8,9,10}.

10. If X = {a,b,c,d} and Y = {f,b,d,g}, find, (i) X - Y, (ii) Y - X, (iii) $X \cap Y$.

SHORT ANSWER TYPE – 4 MARKS QUESTIONS :

11. Using the venn diagram, prove that

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co

a) $(A \cup B) \cap (A \cup B) = A$

b) b) $(A \cup B) - (A \cap B) = (A - B) \cup (B - A)$

c) $A \cap (A \cup B) = \varphi = A - (A \cup B)$

d) $A - (B - C) = (A - B) - C = A - (B \cup C)$

e) $A - B = A - (A \cap B)$

12. Let A = {1,2,3,4,5,6}, B = {2,4,6,8,10} and C = {1,2,3,6,8} are three sets then prove the following:

i) $A - (A \cap B) = A - B$

ii) $(A - B) \cup (B - A) = (A \cup B) - (A \cap B)$

iii) $A - (B \cap C) = (A - B) \cup (A - C)$

iv) $A \cap (B - C) = (A \cap B) - (A \cap C)$

13. In a class 40% of the students enrolled for math and 70% enrolled for Economics. If 15% of the students enrolled for both Math and economics, what % of the students of the class did not enroll for either of the two subjects?

14. Let A and B be two finites sets such that n(A) = m and n(B) = n. If the ratio of number of elements of power sets of A and B is 64 and n(A) + n(B) = 32. Find the value of m and n.

15. Using properties of sets and $A \subseteq B$, prove that (i) $A \cup (A \cap B) = A$

(ii) $A \cap (A \cup B) = A$.

LONG ANSWER TYPE – 6 MARKS QUESTIONS :

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co

16. In a survey of 100 students, the number of students studying the various languages were found to be English only 18, English but not Hindi 23, English and Sanskrit 8, English 26, Sanskrit 48, Sanskrit and Hindi 8, Number of no language 24. Find

    i) How many students were studying Hindi?

    ii) How many students were studying English and Hindi?

17. In a survey of 25 students it was found that 15 had taken Maths, 12 had taken Physics and 11 had taken Chemistry, 5 had taken Maths and Chemistry, 9 had taken Maths and Physics, 4 had taken Physics and Chemistry and 3 had taken all the three subjects. Find the number of students that had taken:

    i) Only Chemistry

    ii) Only Maths

    iii) Only Physics

    iv) Physics and Chemistry but not Maths

    v) Maths and Physics but not Chemistry

    vi) Only one of the subject

    vii) At least one of the subjects

    viii) None of the subjects.

18. Of the members of three athletic team in a certain school, 21 are in the Basketball Team, 26 in the Hockey team and 29 in the Football team. 14 play hockey and basketball, 15 play hockey and football, 12 play football

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co

and basketball and 8 play all the three. How many members are there in all? How many are playing exactly two of the sports?

19. In a university out of 100 teachers. 15 like reading newspapers only, 12 like learning computers only and 8 like watching movies only on TV in the spare time. 40 like reading news papers and watching movies, 20 like learning computer and watching movies, 10 like reading newspaper and learning computer, 65 like watching movies. Draw a venn diagram and show the various portion and hence evaluate the numbers of teachers who:

i) Like reading newspapers

ii) Like learning computers

iii) Did not like to do any of the things mentioned above.

Q.20. In a class of 120 students numbered 1 to 120, all even numbered students opt for Physics, whose numbers are divisible by 5 opt for Chemistry and those whose numbers are divisible by 7 opt for Math. How many opt for none of the three subjects?

Address: Plot No 420, Behind Shopprix Mall, Vaishali Sector 5, Ghaziabad – 201010
M: 9999907099, 9818932244 O: 0120-4130999
Website: www.vaishalieducationpoint.com , www.educationsolution.co