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 **Bhartiyam International School**

 **Pre Mid Term Assessment (2022-23)
 Subject: Applied Mathematics**

 **Class: XI**

**Date: 02/08/2022 Max. Marks: 40
Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Roll No: \_\_\_\_\_\_ Duration: 90 mins.**

**General Instructions**:

* This question paper contains **four sections*–* A, B, C, and D**. Each part is compulsory.
* **Section - A** has 6 **very short answer type (VSA) questions** of 1 mark each.
* **Section *-* B** has 5 **short answer type (SA1) questions** of 2 marks each.
* **Section *-* C** has 3 **short answer type (SA2) questions** of 3 marks each
* **Section - D** has 3 **long answer type questions (LA)** of 5 marks each.

**SECTION – A**

1. Find the domain of the relation R = {(a, b) : a + b is an integer and a, b $ϵ$ Z}. 1
2. Express the relation $R=\{ \left(x, y\right) :y=x^{2}-1$},where A = {-4, 0, 1, 4} as a set of ordered

 pairs. 1

1. Write the following sets in the roster form A = {x : x is a positive integer less than 10

and 2x – 1 is an odd number} 1

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

find A ∪ (B ∩ C) 1

1. If n(A) = 5 and n(B) = 4 , then find number of relations between A and B. 1
2. If a set A has 1000 elements, then write number of subsets of A. 1

**SECTION – B**

1. If n (B - A) = 16, n(A ∪ B) = 68 and n(A ∩ B) = 23, then find n(A). 2
2. The Cartesian product A × A has 9 elements among which are found (–2, 0) and (0, 2).

Find the set A and the remaining elements of A × A. 2

1. If A = { 1, 3, 4}, then find P(A). 2
2. Find the domain and range of the R = { (x, y) : x – 2y = 8 ; x, y $ϵ$ N }. 2
3. If A = {1, 2, 5, 7}, B = {1, 5, 7, 8} and C = {3, 5, 8, 9};Find:
4. ( A $∩$ B)’ b) (A $∩$ B) ∪ (A $∩$ C) 2

**SECTION – C**

1. **Draw the Venn Diagram of the following :**
2. **(A – B) ii) (A** ∪ **B )’ iii) (B – A)’ 3**

1. Assume that A = {1, 2, 3,…, 14}. Define a relation R from A to A by R = {(x, y ) : x2 – y2 = 0, such that x, y ∈ A}. Determine R and write down its range, domain, and co-domain. 3
2. In a city 30 percent of the population travels by airplane, 40 percent travels by train

and 10 percent travels by both the mean of transport. How much percent of population

 are not using transport for travelling by airplanes or train? 3

**SECTION – D**

1. In a competition, a school awarded medals to the students. 36 Gold medals, 12 Silver

medals and 18 Bronze medals are distributed . If these medals went to a total of 45

medals and only 4 students got all the three medals, how many students received

exactly two types of medals? 5

1. Let R be a relation from N to N defined by R = {(a, b): a, b ∈ N and a = b}. Are the following

 true? (i) (a, a) ∈ R, for all a ∈ N (ii) (a, b) ∈ R, implies (b, a) ∈ R (iii) (a, b) ∈ R, (b, c) ∈ R implies (a, c) ∈ R. 5

1. In a town of 10,000 families, it was found that 40% family buy newspaper A, 20% buy newspaper B and 10% families buy newspaper C, 5% families buy A and B, 3% buy B and

C and 4% buy A and C. If 2% families buy all the three newspapers, then find number of families which buy A only, B only and C only. 5