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**ASSIGNMENT DISTCRETE STRUCTURE**

**DEPARTMENT BS (SE-2)**

**QNO 1:**

What is Venn diagram? Explain in detail the application of Venn diagram?

**ANS:**

**VENN DAIGRAM:**

A Venn diagram (also called primary diagram, Set diagram or logic diagram) is a diagram that show all possible logical relations between a finite collection of different Sets. These diagram depict element as point in the plane, and sets as regions inside closed curves. A Venn diagram consist of multiple overlapping closed curves using circles each represent a set. The point inside the curve labelled S elements represent the element of sets S while points outside the boundary are not represent the element of S.

**APPLICATIONS:**

The Venn diagram is suggested as the graphical solution to conjunction fallacies and a modification of it is suggested to more fully communicate set relations.

This lend to easily lead visualization for example the set of all elements that are member of both set S is represent visually by the area of overlap of the region S and T. in Venn diagram the curves are overlapped in every possible way showing all possible relationship between the sets they are turn a special case of Euler diagram. Which do not necessary show all relation. Venn diagram is conceived around 1880 by john Venn. They are used to teach elementary set theory as well as illustrate simple set relationship in probability, logic, statistics, linguistic and computer science.

A Venn diagram in which the area of each shape is proportional to the number of element it contain is called an area proportional or scaled Venn diagram.

**QNO 2:**

What is union? Draw membership table for union using different examples?

**ANS:**

**UNION:**

The set made by combining the elements of two sets.

So the union of set A and B is the set of elements in A or B or both.

This symbol is special “U”.

In sets theory the union is donated by “U” the union of collection of set is set of all elements in the collection is the one of the fundamental operation through which the sets can be combined and related to each other.

**UNION OF TWO SETS:**

The union of two sets A and B is the set of the elements which are in A in B or both A and B in symbol.

A U B = {x: x e A or x e B }

For example it A = {1,3,5,7} and B= {1,2,4,6,7} the A U B={1,2,3,4,5,6,7}

A more elaborate example involving two infinite sets

A={x is an even integer larger than 1}

B={x is an odd integer larger than 1}

A U B={2,3,4,5,6……}

**EXAMPLE:**

Soccer = {Alex, hunter, Casey, drew}

Tennis = {Casey, drew, Jade}

Soccer u tennis = {Alex, hunter, Casey, drew, Jade}

In words, the union of the “soccer” and “tennis” sets is Alex, hunter, Casey, drew and Jade.

**QNO 3:**

What is intersection? Draw membership table for intersection using different examples?

**ANS:**

**INTERSECTION:**

The intersection of two sets A and B denoted by A n B is the set containing all elements of A that also belong to B or equivalently all elements of B that’s also belong to A.

The intersection is the set of all the objects that are member of both the sets A and B.

A n B={x: x e A and x e B}

That’s x is an element of intersection A n B if and only if x is both an element A and the element of B.

**FOR EXAMPLE:**

The intersection of the set {1,2,3} and {2,3,4} is {2,3}

The number 9 is not in the intersection of the set of primary numbers {2,3,5,7,11….} and the set of odd numbers {1,3,5,7,9,11….}

Because 9 is not prime.

Intersection is an associative operation that is for any set A B and C one has A n (B n C)=(A n B)n C

Intersection is also commutative for any A and B one has A n B=B n A It thus make sense about intersection of multiple sets.

Intersection of a two given sets is the largest set which contain all the elements that are common to both the set.

To find the intersection of two given sets A and B is a set which consist of all element which are common to both A and B.

The symbol for denoting the intersection of set is “n”.

**FOR EXAMPLE:**

Let set A={6,7,8,9,10}

Set B={1,3,5,7,9}

In this two sets the elements 7 and 9 are common. The set containing these common element {7,9} is the intersection of sets A and B.

**QNO 4:**

What is Difference? Draw a membership table for Difference using different examples.

**ANS:**

**DIFFERENCE:**

The (set difference) between two sets S and T is written as S/T and mean the sets that consist of the element of S which are not the elements of T.

The set difference is

The dyadic operation between two sets S and T say resulting in the S-T consisting of those elements that are in S but Not in T.

Set difference is the generalization of the idea of the complement of the Set and as such as sometime called the relative complement of T with respect to S. the symmetric difference between two sets S and T is the union of S-T and T-S.

**FOR EXAMPLE:**

{1,2,3}/[2,4,5,6}

Let S and T be the sets such that

S={1,2,3}

T={2,4,5,6}

let/ denote the set difference

then

S/T={1,3}

While

T/S={4,5,6}

**END**