Concepts and Formulae

Key Concepts

1. f f: A→B is a function then set A is the domain, set B is co-domain and set {f(x):x ∈ A } is the range of f. Range is a subset of codomain.

2. f: A → B is one-to-one if

For all x, y∈ A f(x) = f(y) ⇒ x = y or x ≠ y ⇒ f(x) ≠ f(y)

A one- one function is known as injection or an Injective Function. Otherwise, f is called many-one.

**3.f: A → B is an onto function ,if for each b ∈ B there is atleast one a ∈ A such that f(a) = b**

i.e if every element in B is the image of some element in A, f is onto.

4. A function which is both one-one and onto is called a bijective function Or a bijection.

5.A one – one function defined from a finite set to itself is always Onto but if the set is infinite

then it is not the case.

6.Let f : A B → and g : B C → be two functions. Then the composition Of f and g, denoted by gof

is   defined as the function gof: A C → given By   gof(x): A → C defined by gof(x) = g(f(x)) ∀ x∈

A
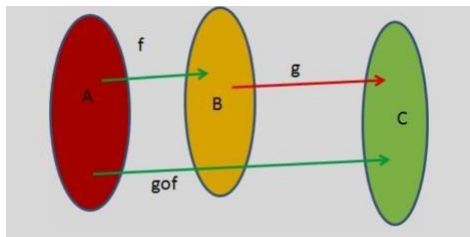
7.Composition of functions is not commutative in general Fog(x) ≠ gof(x).Composition

is associative If f: X→Y, g: Y→Z and h: Z→S are functions then

Ho(g o f)=(h o g)of

8.A function f: X → Y is defined to be invertible, if there exists a function   g : Y → X such

that gof = IX and fog = IY. The function g is called the inverse of f and   is denoted by f –1

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9.et f: X → Y and g: Y → Z be two invertible functions. Then gof is also   Invertible with

(gof)–1 = f –1o g–1

10.If f: R→ R is invertible,

F(x)=y, then 1 F–(y)=x and (f-1)-1 is the function f itself.

11. A binary operation * on a set A is a function from A X A to A.

Go through this following link for the following topic to understand more better.

Link for NPTEL course :- **https://nptel.ac.in/courses/111/106/111106086/**

1) **Intro of Function:-**
    https://youtu.be/ogpkAneNkG0
    https://youtu.be/csxjE3u2A0Y

2) **Type of Function:-**
    https://youtu.be/fek4DCfxQ7M
    https://youtu.be/-saLtjd9Ts4
    https://youtu.be/ToGSk6zIm6s

3) **Identical Function:-**
    https://youtu.be/lQPMbDjiVQ8
    https://youtu.be/k4cnCp8QnI0

4) **Reference:-**
    https://youtu.be/plmLF3772K8