**Functions**

**MCQ-Single Correct**

1. The function f :  defined as , is :

(1) invertible. (2) injective but not surjective.

(3) surjective but not injective. (4) neither injective nor surjective. **[2017]**

2. Let a , b , c ε R. If f(x) = is such that a + b + c = 3 and f(x+y) = f(x) +f(y) +xy x , y ε R, then  is equal to :

(1) 330 (2) 165

(3) 190 (4) 255 **[2017]**

3. If and  then S:

(1) contains exactly one element. (2) contains exactly two elements.

(3) contains more than two elements (4) is an empty set **[2016]**

4. For real x, let , then

(1) f is one-one but not onto R (2) f is onto R but not one-one

(3) f is one-one and onto R (4) f is neither one-one nor onto R **[2009]**

5. Let f : be a function defined as f(x) = 4x +3, where Y = {y ε N : y = 4x +3 for some xεN }. Show that f is invertible and its inverse is

(1) g(y) =  (2) g(y) = 

(3) g(y) =  (4) g(y) =  **[2008]**

6. The largest interval lying in  for which the function

 is defined , is

(1)  (2) 

(3)  (4)  **[2007]**

7. Let f : , be a function defined by , then f is both one-one and onto when B is the interval

(1)  (2) 

(3)  (4)  **[2005]**

8. A real valued function f(x) satisfies the functional equation f(x-y) = f(x) f(y) – f(a – x) f(a + y) where a is a given constant and f(0) = 1, f(2a – x) is equal to

(1) -f(x) (2) f(x)

(3) f(a) + f(a-x) (4) f(-x) **[2006]**

9. The range of the function f(x) =  is

(1) { 1, 2, 3} (2) {1,2,3,4,5}

(3) {1,2,3,4} (4) {1,2,3,4,5,6} **[2004]**

10. If f : , defined by , is onto, then the interval of S is

(1) [0,3] (2) [-1,1]

(3) [0,1] (4) [-1,-3] **[2004]**

11. The graph of the function  is symmetrical about the line x = 2 , then

(1) f(x + 2) = f(x -2) (2) f(2+x) = f(2-x)

(3) f(x) = f(-x) (4) f(x) = -f(-x) **[2004]**

12. The domain of the function  is

(1) [2,3] (2) [2,3)

(3) [1,2] (4) [1,2) **[2004]**

13. A function f from the set of natural numbers to integers defined by

f(n) =  is

1. one-one but not onto (2) onto but not one-one

(3) one-one and onto both (4) neither one-one nor onto **[2003]**

14. If satisfies f(x+y) = f(x) + f(y), for all x,y ε R and f(1) = 7, then  is

(1)  (2) 

(3) 7n(n+1) (4)  **[2003]**

15. Domain of definition of the function f(x) = , is

(1) (1,2) (2) 

(3)  (4)  **[2003]**

16. The function f(x) = , is

(1) an even function (2) an odd function

(3) a periodic function (4) neither an even nor an odd function **[2003]**

17. The period of  is

(1)  (2) 

(3)  (4)  **[2002]**

18. Which one is not periodic

(1)  (2) 

(3) cos4x +  (4)  **[2002]**

19. If f(x+y) = f(x).f(y) x,y and f(5) = 2, f’(0) = 3, then f’(5) is

(1) 0 (2) 1

(3) 6 (4) 2 **[2002]**

20. The domain of  is

(1) [1,9] (2) [-1,9]

(3) [-9,1] (4) [-9,-1] **[2002]**

**Assertion – Reason Type**

1. Let f be a function defined by 

**Statement – I** : The set { x : f(x) = } = {1,2}.

**Statement – II** : f is bijection and = , .

2. Let f(x) = , 

**Statement – I** : The set { x : f(x) = } = {0,-1}

**Statement – II** : f is a bijection.