SRI KRISHNA COCHING CENTRE RMM

STD : X **UNIT TEST ONE** **MARKS: 50**

TIME : 1.15MIN **Relations and functions** **EXAM NO :**

I CHOOSE THE CORRECT ANSWERE 8×1=8

1. If there are 1024 relations form a set A={1,2,3,4,5} to a set B, then the number of elements in B is

A) 3 C) 4
B) 2 D) 8

2. If $n(A \times B) = 6$ and A ={1,2} then n(B) is

A) 1 C) 3
B) 2 D) 6

3. If {(a,8),(6,b)} represents an identity function , then the value of a and b are respectively

A) (8,6) C) (6,8)
B) (8,8) D) (6,6)

4. $F(x) = (x+1)^3 - (x-1)^3$ represents a function which is

A) Linear C) Reciprocal
B) Cubic D) Quadratic

5. If f(x) =3x – 7 and g(x) =2 – 3x then fog is

A) $-9x-1$ C)$-9x-2$
B) $9x+1$ D) $9x+2$

6. Which one is wrong in the given below

A) $A \cup B = B \cup A$ C) $A \cap B = B \cap A$
B) $A - B = B - A$ D) $A \times B \neq B \times A$

7. If g = {(1,1),(2,3),(3,5),(4,7)} is a function given by $g(x) = \alpha x + \beta$ then the value of α and β are

A) $(-1,2)$ C) $(-1,-2)$
B) $(2,-1)$ D) (1,2)

8. Let A={1,2,3,4} and B ={4,8,9,10} A function f : A → B given by f = {(1,4),(2,8),(3,9),(4,10)} is a

A) Many-One function
B) One-to-One function
C)Identity function
D)Into function

II. Answer any six of the following questions. Question No. 15 is compulsory. **6×2=12**

9. Find the value of k, such that fog = gof, f(x) = 3x+2, g(x) = 6x –k.
10. Let A ={1,2,3,4} and B=ℕ . Let f : A → B be defined by $f(x) = x^3$ then (i) find the rang of f (ii) identify the type of function
11. Let X={3,4,6,8}. Determine whether relation R={(x,f(x)) | x∈X, $f(x)=x^2+1$} is a function from X to N?
12. Given $f(x) = 2x-x^2$ find f(x+1).
13. A relation R is given by the set {(x,y) / y=x+3, x∈{0,1,2,3,4,5}}. Determine its domain and range.
14. If A={1,3,5} and B={2,3} Show that n(A×B)=n(B×A)=n(A)×n(B).
15. Given U = {1,2,3,…15}, A={2,3,7,8,11},B={1,3,8,11,13,15},verify (A∩B)'=A'∪ B'

III. Answer any six of the following questions. Question No.22 is compulsory.

16. A function f is defined by f(x)=2x−3
    (i) Find f(0)+f(1) /2
    (ii) Find x such that f(x)=0
    (iii) Find x such that f(x)=x
    (iv) Find x such that f(x)=f(1−x).
17. Let A={1,2,3,4} and B={2,5,8,11,14} be two sets. Let f : A → B be a function given by f(x)=3x−1. Represent this function
    (i) By arrow diagram
    (ii) In a table form
    (iii) As a set of ordered pairs
    (iv) In a graphical form
18. If f(x)=2x+3, g(x)=1−2x and h(x)=3x. prove that fo(goh)=(fog)oh

19.If the function f : R → R is defined by f(x)=$\begin{cases} 2x+7 ; & x<-2 \\ x^2-2; & -2 \le x<3 \\ 3x-2 ; & x \ge 3 \end{cases}$

(i) f(4)

(ii) f(−2)

(iii) f(2)+2f(1)

(iv) $\frac{f(1)-3f(4)}{f(-3)}$

20.Let A = The set of all natural numbers less than 8, B = The set of all prime numbers less than 8, C = The set of even prime number. Verify that

(i) (A ∩ B) × C = (A × C) ∩ (B × C) (ii) A × (B – C) = (A × B) – (A × C)

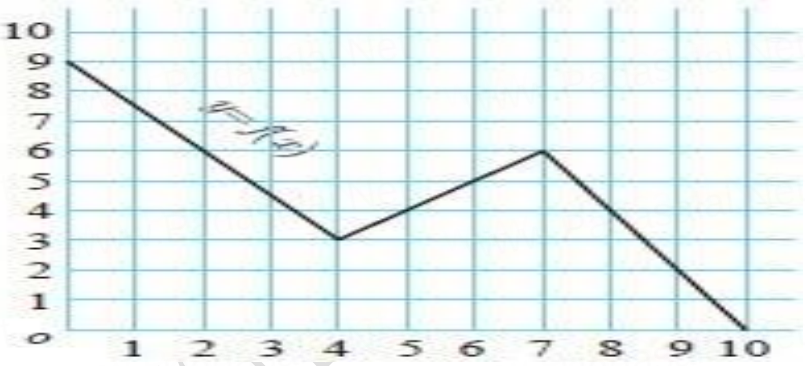
21. A graph representing the function f(x) is given in figure it is clear that f(9) = 2.

(i) Find the following values of the function (a) f(0) (b) f(7) (c) f(2) (d) f(10)

(ii) For what value of x is f(x) = 1?

(iii) Describe the following (i) Domain (ii) Range.

(iv) What is the image of 6 under f ?



21.The function 't' which maps temperature in Celsius (C) into temperature in Fahrenheit (F) is defined by t(C) = F where F = 9/5 C + 32, Find, (i) t(0) (ii) t(28) (iii) t(– 10) (iv) the value of C when t(C) = 212 (v) the temperature when the Celsius value is equal to the Fahrenheit value

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