SRI KRISHNA COACHING CENTRE RMM

STD : XI UNIT TEST TWO MARKS: 50

TIME : 2 HRS SETS,RELATIONS AND FUNCTIONS EXAM NO :

I. Answer the following 5×2=10

1. If $\mathcal{P}$(A) denotes the power set of A, n($\mathcal{P}(\mathcal{P}(\mathcal{P}(\emptyset)))$).
2. Let f and g be the two functions from $\mathbb{R}$ to $\mathbb{R}$ defined by $f(x) = 3x - 4$ and $g(x) = x^2 + 3$. Find gof and fog.
3. Find the domain of $\frac{1}{1-2\sin x}$.
4. Let P denote the set of all straight lines in a plane. The relation R defined by lRm if l is perpendicular to m. Discuss the relation for reflexivity, symmetricity, and transitivity.
5. If n(A∩B) = 3 and n(A∪B) = 10, then find n($\mathcal{P}$(AΔB)).

II. Answer the following 5×3=15

6. For a set A, A×A contains 16 elements and two of its elements are (1,3) & (0,2). Find the elements of A.
7. Check the relation R={(1,1),(1,2),(2,2),(1,3),(3,1)}. Defined on the set S = { 1,2,3,…n } for the three basic relations.
8. Let X = {a,b,c,d } and R = { (a,a),(b,b),(a,c)} write down the minimum number of ordered pairs to be included to R to make it (i).reflexive. (ii).symmetric (iii).transitive (iv).equivalence
9. If $f: \mathbb{R} - \{-1, 1\} \to \mathbb{R}$ is defined as $f(x)=\frac{x}{x^2-1}$, verifying whether by f is one-one or not.
10. Find the range of the function $f(x)=\frac{1}{1-2\cos x}$.

III. Answer the following 5×5=25

11. In the set $\mathbb{Z}$ of integers, defined mRn if m−n is a multiple of 12. Prove that R is an equivalence relation.
12. On the set of natural numbers let R be the relation defined by aRb if 2a + 3b = 30. Write down the relation by listing all the pairs. Check whether it is (i) reflexive (ii) symmetry (iii) transitive (iv)equivalence
13. If f: R→ R is defined by f(x) = 2x−3 prove that f is bijection and find its inverse.
14. Let f,g :R→R be defined as f(x) = 2x − $|x|$ and g(x) = 2x + $|x|$ Find fog.
15. From the curve y = sinx, draw y=sin$|x|$.(Hint: sin(−x) = −sinx.

ALL THE BEST