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| **CLASS REVISION TEST-1**  **MATHS** | | | | | |
| **EX.NO** |  | **AD.NO** |  | **GRADE** | **XII-EINSTEIN** |
| **DATE** | **20/11/19** | **MARKS** | **80** | **TIME** | **3 Hrs** |

**SECTION - A**

**I. Choose the correct answer/Fill in the blanks:- 20x1=20**

1. Let us define a relation R in R as a R b if a b. Then R is

a. an equivalence relation

b. reflexive, transitive but not symmetric

c. symmetric, transitive but not reflexive

d. neither transitive nor reflexive but symmetric

2. If 3 tan-1*x* + cot-1 *x* = , then *x* equals

a. 0 b. 1 c. -1 d. 1/2

3. The domain of the function cos-1 (2*x* – 1) is

a. b. c. (-1, 1) d.

4. If *f*(*x*) = *x*2 sin , where *x* 0, then the value of the function *f* at *x* = 0, so that the function is continuous at *x* = 0, is

a. 0 b. -1 c. 1 d. none of these

5. *f* : N N : *f*(*x*) = 2*x* is ……………………….

6. If *f*(*x*) = 2*x* and g(*x*) = + 1, then which of the following can be a discontinuous function

a. *f*(*x*) + g(*x*) b. *f*(*x*) - g(*x*) c. *f*(*x*) . g(*x*) d.

7. tan-1 - sec-1 (-2) is equal to ………………….

8. A one-one onto function is called an ……………. function.

9. Let A = , then the relation R = on A is

a. reflexive b. symmetric c. transitive d. None of these

10. If sin-1 *x* = *y*, then

a. 0 *y* b. - *y* c. 0 < *y* < d. - < *y* <

11. A function *f* : X to Y is known as ……… if *f* is both one-one and onto.

12. What is the principal value of tan-1 ?

13. Let *f* : Q Q : *f*(*x*) = 2*x* + 3, then value of *f*-1 (*y*) is ………..

14. The principal value of sin-1 is ……………..

15. If *f*(*x*) = , then *f*-1 (*x*) = …………….

16. Find the composite mapping fog of the maps *f* : R R, *f* (*x*) = sin *x*, g : R R, g(*x*) = *x*2.

17. Write the principal value of .

18. Range of function *y* = sin-1 *x* is ………………….

19. Prove that the function f : R R, given by *f*(*x*) = 2*x*, is one-one and onto.

20. R = A x A (A x A) is the …………… relation on A.

**SECTION - B**

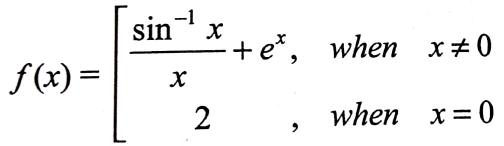
**II. Answer the following questions:- 6x2=12**

21. If sin-1 *x* + sin-1 *y* + sin-1 *z* = , then find the value of *x*100 + *y*100 + *z*100 - .

22. If tan-1 + tan-1 = , find the value of *x*.

23. Simplify cot-1 for *x* < -1.

24. A function *f* is defined by



Show that *f* is continuous at *x* = 0.

25. If *f*(*x*) = *x* + 7 and g (*x*) = *x* – 7, find *fog* (7).

26. If 3 tan -1 *x* + cot-1 *x* = , then find the value of *x*.

**SECTION - C**

**III. Answer the following questions briefly:- 6x4=24**

27. In each of the following cases, state whether the function is one-one, onto or bijective. Justify your answer.

i. *f* : R R defined by *f* (*x*) = 3 – 4*x*

ii. *f* : R R defined by *f* (*x*) = 1 + *x*2

28. If (tan-1 *x*)2 + (cot-1 *x*)2 = then find the value of *x*.

29. Show that *f* : R, given by *f* (*x*) = is one-one.

Find the inverse of the function *f* : Range of *f*.

30. Prove that tan-1 *x* + cot-1 (*x* + 1) = tan-1 (*x*2 + *x* + 1).

31. If tan-1 + tan-1 + … + tan-1 = tan-1 , then find the value of .

32. If *y* = cot-1 - tan-1 , then prove that sin *y* = tan2 .

**SECTION - D**

**IV. Answer the following questions briefly:- 4x6=24**

33. Let A = R - and B = R - . Consider the function

*f* : A B defined by *f* (*x*) = . Is f one-one and onto? Justify your answer.

34. If cos-1 + cos-1 = then prove that + - cos = sin2 .

35. Let *f* : R be a function defined by *f* (*x*) = 9*x*2 + 6*x* – 5. Prove that *f* is not invertible. Modify, only the codomain of *f* to make *f* invertible and then find its inverse.

36. Let N be the set of all natural numbers and let R be a relation in N x N defined by

(a, b) R (c, d) ad = bc

For all (a, b), (c, d) N x N, show that R is an equivalence relation on N x N.