**MODAL PUBLIC QUESTION PAPER 2023**

**MATHEMATICS**

**PART— I**

1. A square matrix A of order n has inverse if and only if: ---------------------

(a) (b) (c) (d)

2. 3

(A) X (b) x (c) x (d) x

3. THE general **so**lution of differential equation is;

(a) Y=kx (b) xy =k (c) (d) y = k

4. The maximum value of the function: is:

(a) (B) (C) (d)

5. Angle between the curves at the origin is:

(a) (b) (c) (d)

**6.** The value of is:

(a) 8 (b) 4 (c) 2 (d) 6

7. If =1 then the value

(a) (b) z (c) 1 (d)

8. The value of is:

(a) - (b) (C) - (d)

9. The number of positive zeros of the polynomial is:

(A) (B) 0 (c) r (d) n

10. Area of the greatest rectangle inscribed in the ellipse + = 1 is:

(A) (b) 2ab (c) (d) ab

PART- II

TWO MARK

11. If p and q are the roots of the equation +nx+n =0,show that + + =0.

12. If = 2, show that 3.

13. Evaluate: dx, a b

14. Let A = , B = of the same type. Find A and A

15. Prove that is orthogonal.

PART-III

16. for what the value of x, the inequality.

17. Use the linear approximate to find an approximate value of .

18. Solve: x dx

19. If F ( , Show that = F (-

20. IF z = (2=3i) (1-i) then find

PART – IV

21. SOLVE: = 0.

22 using vector method, prove that =.

23. Function of the value is random variable X is f(x) = 200

24. If and 0 < x, y, z < 1, show that + + +2xyz = 1

25. Find the area of the region common to the ellipse + = 1 and the straight line + = 1

26. Find the maximum value of

27. Prove that P

28. Find the parametric form of vector equation and Cartesian equation of the plane containing line = + t and the perpendicular that to the plane = 8.