Bhavan's Tripura Vidyamandir
1st Quarterly Test: (2025-2026)

Class:- 11 **Subject:- Mathematics**
Time:- 1 Hour Total :- 25 Marks
Roll: Sec:
Name of the Student:

General Instructions :

- ***This Question Paper has 4 Sections***
- ***Section A has 06 MCQ Carrying 1 mark each.***
- ***Section B has 4 Questions Carrying 2 marks each.***
- ***Section C has 2 Questions Carrying 3 marks each.***
- ***Section D has 1 Questions Carrying 5 (4+1) marks.***

SECTION: A **1X6=06**

1. Let n(A) = 3, n(B) = 2, then the total number of non empty relations that can be defined from A to B is

a) 64 b) 65 c) 63 d) 62

2. $\frac{cosx}{1+sinx}$ is equal to…

a) $tanx$ b) $\tan(\frac{\pi}{4}+\frac{x}{2})$ c) $\tan(\frac{\pi}{4}-\frac{x}{2})$ d) none of these

3. The value of $tan1^0\ tan2^0 tan3^0$ …… $tan88^0 tan89^0$ is

a) $\frac{1}{\sqrt{2}}$ b) 0 c) 1 d) none of these

4. If A={ 1, 2, {4}, 5, B} and B={ 2, 6} then which of the following is true?

a) $4 \in A$ b) $\{4\} \subset A$ c) $B \subset A$ d) None of these

5. If A= { 1, 2, 3} and B = { x, y} then the number of function that can be defined from A to B is

a) 12 b) 8 c) 6 d) 3

6. The principal value of the amplitude of $(-1+i)$ is

a) $\frac{3\pi}{4}$ b) $\frac{-\pi}{4}$ c) $\frac{-3\pi}{4}$ d) $\frac{\pi}{4}$

SECTION: B **2X4=08**

7. If $\frac{(1+i)^2}{2+i} = x + iy$ then find the value of x and y
8. If A =$\{x : x = 2n, n \in Z\}$ and $B = \{x: x = 4n, n \in Z\}$, then find $A \cap B$.
9. $A = \{(x, y): 2x + y = 6\ and\ x, y \in W\}$ find dom R and range R ?
10. If $sinx + cosx = 0$ and x lies in 4th quadrant then find sinx and cosx.

SECTION: C **3X2=6**

11. If A, B , C, D are the angles of a cyclic quadrilateral then prove that $cosA + cosB + cosC + cosD = 0$
12. If $A + B = \frac{\pi}{4}$ then prove that $(1 + tanA)(1 + tanB) = 2$

Or,

Prove that $cos20\ cos40\ cos60\ cos80 = \frac{1}{16}$

SECTION: D **(4+1)**

13. a) In a group of 950 persons, 750 can speak Hindi and 460 can speak English. Find
    i) How many can speak both Hindi and English? **2**
    ii) How many persons can speak Hindi only? **1**
    iii) How many persons can speak English only? **1**

    b) Find the value of $\tan(-1050^0)$ **1**