4/2/22

Vidyasagar College for Women
Internal Examination 2022
Mathematics (Hons.) 1st Sem

Full Marks-10 **CC-2** **Time- 30 Min**

CU ROLL NO.....

CU REGISTRATION NO.....

Choose the correct option with proper explanation

1. If $\left(\frac{3}{2}+i\frac{\sqrt{3}}{2}\right)^{50} = 3^{24}(a-ib)$ then a and b are respectively

a) $\frac{3}{2},\frac{3\sqrt{3}}{2}$ b) $\frac{1}{2},\frac{\sqrt{3}}{2}$ c) $\frac{3}{2},-\frac{3\sqrt{3}}{2}$ d) $\frac{1}{2},-\frac{\sqrt{3}}{2}$

2. The number of real roots of $x^3+x-1=0$ is

a) 0 b) 1 c) 2 d) 3

3. Consider the assertion (A) and reason (R) given below:

(A) The system of linear equations $x-4y+5z=8,\ 3x+7y-z=2,\ x+15y-11z=-14$ is inconsistent.

(R) Rank of the coefficient matrix of the system is equal to 2 which is less than the number of variables.

Which of the following is true?

a) Both A and R are true and R is the correct explanation for A

b) Both A and R are true but R is not the correct explanation for A

c) A is true but R is false

d) A is false but R is true

4. A relation ρ is defined on natural numbers by $a\rho b$ if and only if a divides b. Then ρ is

a) symmetric and transitive

b) reflexive and transitive

c) reflexive and symmetric

d) equivalence

5. Let $S = \{x \in \mathbb{R} \mid -1 < x < 1\}$ and $f: \mathbb{R} \to S$ be defined by $f(x) = \frac{x}{1-|x|}$. Then f is

a) injective but not surjective

b) surjective but not injective

c) bijective

d) neither surjective nor injective