CADET COLLEGE KALLAR KAHAR

KAHARIAN GIRLS CADET COLLEGE

ENTRANCE TEST CLASS XI – JUNE 2022

PAPER MATH

Time: 50 Minutes **Marks : 50**

Q No.1: Solve the following questions: **(10×03 = 30)**

i. Solve the following equation $2^x + 64.\ 2^{-x} = 0$.

ii. The product of two positive consecutive numbers is 182.Find the numbers

iii. Resolve into partial fraction $\frac{3x-1}{x^2-1}$

iv. If a : b = c : d, (a,b,c,d ≠ 0),then show that $\frac{4a-9b}{4a+9b} = \frac{4c-9d}{4c+9d}$

v. On 5 term tests in mathematics, A student has made marks of 82, 93, 86, 92, and 79. Find the median for the marks.

vi. Express the following into D° M′ S′′ form 315.18°

vii. If $x = \sqrt{3} + 2, find\ \frac{1}{x}$

viii. Verify that $\tan\theta + cot\theta = sec\theta cosec\theta$

ix. Simplify $\frac{x^6 - y^6}{x^2 - y^2} \div (x^4 + x^2y^2 + y^4)$

x. The difference of a number and its reciprocal is $\frac{15}{4}$. *find the number*

Q No. 2: Solve the following questions: **(4×5=20)**

i. Using Componedo – dividendo theorem

Solve $\frac{\sqrt{x^2+2} + \sqrt{x^2-2}}{\sqrt{x^2+2} - \sqrt{x^2-2}} = 2$

ii. If $\text{cosec}\theta = \frac{13}{12}$ *and* $sec\theta > 0, find\ the\ values\ of\ sin\theta\ and\ tan\theta.$

iii. Determine the rational numbers a and b if $\frac{\sqrt{3}-1}{\sqrt{3}+1} + \frac{\sqrt{3}+1}{\sqrt{3}-1} = a + b\sqrt{3}$

iv. Find p, if the roots of the equation $x^2 + 3x + p - 2 = 0$ differ by 2.