CADET COLLEGE KALLAR KAHAR
KAHARIAN GIRLS CADET COLLEGE KALLAR KAHAR

ENTRANCE TEST CLASS X1-MAY 2023

PAPER MATHEMATICS

TIME:1 HOUR **MARKS:50**

Q NO.1: Solve the following questions: (10x3=30)

I. Solve the equation $3x^{-2} + 5 = 8x^{-1}$

II. Evaluate $(2 + 2w - 2w^2) (3 - 3w + 3w^2)$

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

IV. Solve by synthetic division , if 3 is root of equation $2x^3 - 3x^2 - 11x + 6 = 0$

V. Find mean proportional between 20 ,45

VI. Resolve into partial fraction $\frac{9}{(x-1)(x-2)^2}$

VII. Find standard deviation S of following 9,3,8,8,9,6,9,18

VIII. Express log x-2 log x+3 log (x+1) –log(x^2 -1) as a single logarithm

IX. In a circle of radius 10m, find distance travelled by a point moving on a circle if point make 3.5 revolutions

X. Verify the identity $(\tan\theta + \text{Cot } \theta) = sec\theta cosec\theta$

Q No .2 Solve the following questions (5× 4)

I. If $\tan\theta = \frac{4}{3}$ and terminal arm of angle is in iii quadrant, find the value of remaining trigonometric functions

II. Use componendo dividend theorem to solve $\frac{(x+5)^3-(x-3)^3}{(x+5)^3+(x-3)^3} = \frac{13}{14}$

III. Show that the equation $x^2 + (mx+c)^2 = a^2$ has equal roots ,if $c^2 = a^2(1+ m^2)$

IV. If $\frac{a}{b} = \frac{c}{d} = \frac{e}{f}$, then show that $\frac{a^3+c^3+e^3}{b^3+d^3+f^3} = \frac{ace}{bdf}$

V. Use law of exponents to simplify $\frac{(81)^n .3^5-3^{4n-1}.(243)}{(9)^{2n}.3^3}$

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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.