

CADET COLLEGE KALLAR KAHAR
KAHARIAN GIRLS CADET COLLEGE KALLAR KAHAR

ENTRANCE TEST CLASS XI-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 $(\tan\theta + \cot\theta) = \sec\theta \operatorname{cosec}\theta$

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 $\frac{(81)^n \cdot 3^5 - 3^{4n-1} \cdot (243)}{(9)^{2n} \cdot 3^3}$