

SAPTARSHI

Math-I

Logarithm

Marks 20

Time 1 Hr

Q.1 Attempt any four

[8]

1. Show that : $\log\left(\frac{75}{16}\right) - 2\log\left(\frac{5}{9}\right) + \log\left(\frac{32}{243}\right) = \log 2$
2. Evaluate : $\log_{10}\left(\frac{12}{5}\right) + \log_{10}\left(\frac{25}{21}\right) - \log_{10}\left(\frac{2}{7}\right)$
3. Evaluate : $\frac{(2.41)^2 \times 2.61}{1.374}$
4. Show that : $\log_y \sqrt{x} \cdot \log_z y^3 \cdot \log_x \sqrt[3]{z^2} = 1$
5. Find the value of : 1) $\log_7 \sqrt[3]{7}$ 2) $\log_5 3125$

Q.2 Attempt any four

[12]

1. If $\log_8 x + \log_4 x + \log_2 x = 11$ find x
2. If $\log\left(\frac{x+y}{6}\right) = \frac{1}{2}(\log x + \log y)$, Show that : $\frac{x}{y} + \frac{y}{x} = 34$
3. Evaluate : $\sqrt{\frac{35.87 \times 0.0514}{0.0578}}$
4. If $x = \log_5 7$, $y = \log_7 27$, $z = \log_3 5$, show that : $xyz = 3$
5. If $a^2 - 12ab + 4b^2 = 0$
Prove that: $\log(a+2b) = \frac{1}{2}(\log a + \log b) + 2\log 2$
6. If $\frac{\log x}{b-c} = \frac{\log y}{c-a} = \frac{\log z}{a-b}$. Show that $xyz = 1$