

Name:.....Serial#:.....Sec #:.....

Q.1: Write the expression as a single logarithm with base 2 and simplify

$$3 + 2 \log_{\frac{1}{8}} (x^3 y^2) + 2 \log_{\sqrt[3]{4}} \sqrt[3]{x^4 y^4}$$

Q.2: Find the solution of the equation $\log_5 (\log_2 (\log_3 x^2)) = 0$ **Q.3:** Write True or False:

(1) $\log \left(4 + \frac{4}{3} \right) = \log (4) + \log \left(\frac{4}{3} \right)$

(2) $\log_b a > 0$ if $0 < a < 1$ and $0 < b < 1$

(3) $\log_a x = \frac{1}{\log_b a + \log_x b}$