

**B****True / False**PROBLEM

For  $0 < a < x$ , the minimum value of the function  $\log_a x + \log_x a$  is 2. *(1984 - 1 Mark)*

SOLUTION

Given that  $0 < a < x$ .

$$\text{Let } f(x) = \log_a x + \log_x a = \log_a x + \frac{1}{\log_a x} \geq 2$$

But equality holds for  $\log_a x = 1$   
 $\Rightarrow x = a$  which is not possible.

$$\therefore f(x) > 2$$

$\therefore f_{\min}$  cannot be 2.

$\therefore$  Statement is false.