A random sample of 7 observations of a variable X are as follows.

$$8.26 \quad 7.78 \quad 7.92 \quad 8.04 \quad 8.27 \quad 7.95 \quad 8.34$$

The population mean of X is μ.

(a) Test, at the 10% significance level, the null hypothesis $\mu = 8.22$ against the alternative hypothesis $\mu < 8.22$. [6]

(b) State an assumption necessary for the test in part **(a)** to be valid. [1]