

A manager is investigating the times taken by employees to complete a particular task as a result of the introduction of new technology. He claims that the mean time taken to complete the task is reduced by more than 0.4 minutes. He chooses a random sample of 10 employees. The times taken, in minutes, before and after the introduction of the new technology are recorded in the table.

Employee	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>E</i>	<i>F</i>	<i>G</i>	<i>H</i>	<i>I</i>	<i>J</i>
Time before new technology	10.2	9.8	12.4	11.6	10.8	11.2	14.6	10.6	12.3	11.0
Time after new technology	9.6	8.5	12.4	10.9	10.2	10.6	12.8	10.8	12.5	10.6

(a) Test at the 10% significance level whether the manager's claim is justified. [7]

(b) State an assumption that is necessary for this test to be valid. [1]