

- 10** A certain forest contains only trees of a particular species. Dipak wished to take a random sample of 5 trees from the forest. He numbered the trees from 1 to 784. Then, using his calculator, he generated the random digits 14781049. Using these digits, Dipak formed 5 three-digit numbers. He took the first, second and third digits, followed by the second, third and fourth digits and so on. In this way he obtained the following list of numbers for his sample.

147 478 781 104 49

- (i) Explain why Dipak omitted the number 810 from his list. [1]
- (ii) Explain why Dipak's sample is not random. [1]

The mean height of all trees of this species is known to be 4.2 m. Dipak wishes to test whether the mean height of trees in the forest is less than 4.2 m. He now uses a correct method to choose a random sample of 50 trees and finds that their mean height is 4.0 m. It is given that the standard deviation of trees in the forest is 0.8 m.

- (iii) Carry out the test at the 2% significance level. [7]