The times taken to run 400 metres by students at two large colleges P and Q are being compared. There is no evidence that the population variances are equal. The time taken by a student at college P and the time taken by a student at college Q are denoted by x seconds and y seconds respectively. A random sample of 50 students from college Q and a random sample of 60 students from college Q give the following summarised data.

$$\Sigma x = 2620$$
  $\Sigma x^2 = 138200$   $\Sigma y = 3060$   $\Sigma y^2 = 157000$ 

- (i) Using a 10% significance level, test whether, on average, students from college P take longer to run 400 metres than students from college Q. [9]
- (ii) Find a 90% confidence interval for the difference in the mean times taken to run 400 metres by students from colleges P and Q. [3]