

Question 14

(10 marks)

A suburban council hires a consultant to estimate the proportion of residents of the suburb who use its library.

- (a) The consultant decides to estimate a 95% confidence interval for the proportion to within an error of 0.01. What minimum sample size should be selected? (3 marks)

- (b) If resource limitations dictate that the maximum sample size that can be managed is 500, what is the maximum margin of error in estimating a 99% confidence interval? (3 marks)

The consultant decides to select the sample by standing on the roadside outside the library at lunchtime and asking a random sample of the passers-by whether they use the library.

- (c) Identify and explain **two** possible sources of bias with this sampling scheme. (4 marks)