

Answer **all** the questions

1. Consider the following question.  
 'Is the number of days that a letter, posted in London, takes to reach its destination in another town affected by whether or not the post-code is used?'
- (a) What are the explanatory and response variables in this question? [2]
- (b) Two important variables which need to be considered when investigating this question are 'the time of day when the letter is posted', and 'the place in which it is posted'. Give three other variables which need to be considered in researching this question. [3]
- (c) Describe briefly the design of an experiment to investigate this question. In particular you should explain clearly how you will deal with the variables 'the time of day when the letter is posted' and 'the place in which it is posted'. [7]
- (d) What methods will you need to use to analyse your results? [2]

2. The table shows the numbers of men and women recruited into the various UK armed services in 1987/88.

	Men	Women
Navy	4601	580
Army	19895	1146
Air force	5728	885

Use a  $\chi^2$  test to see whether there is evidence of any association between a person's gender and the service into which they are recruited. State your null hypothesis clearly, and test at the 1% level. [7]