

Name

Give your working and answers below the questions, using extra sheets if necessary.

Date Due: 28 January, 2019

Hand in your solutions to both problems at the beginning of your tutorial

1 . [4 marks] A torch will last at least 500 hours from new with probability 0.6. If it lasts this long, it survives the next 500 hours with probability 0.4, and if it lasts 1000 hours, the probability that it will fail within the next 500 hours is 0.9. What is the probability that the torch will last at least 1500 hours?

over please

2. [6 marks] A page of typescript contains 50 lines, with 80 characters per line. Each character has probability $p = 0.001$ (independently of the others) of being erroneous.

- i) What is the probability that a particular line contains no errors (i.e. no erroneous characters)?
- ii) What is the probability that a particular line contains more than one error?
- iii) What is the probability that the page contains exactly two errors?
- iv) Given that the page contains exactly two errors, what is the probability that they occur on separate lines?