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**The Poisson Distribution**

(Haf 2005)

2. The number of batteries sold per week by a garage may be assumed to have a Poisson distribution with a mean 5.
- (a) Find the probability that
- (i) exactly 6 are sold in a randomly chosen week, [2]
  - (ii) exactly 6 are sold in each of 3 randomly chosen weeks, [2]
  - (iii) exactly 18 are sold in a randomly chosen 3-week period. [3]
- (b) Find, approximately, the probability that more than 240 are sold in a randomly chosen 52-week period. [5]

(Haf 2006)

4. There are 5 computers in an office working continuously. You may assume that, for each computer independently of the others, the number of 'crashes' occurring during a week follows a Poisson distribution with mean 0.8.
- During a randomly chosen week, find the probability that
- (a) each computer crashes exactly once, [4]
- (b) the total number of crashes on all the computers is five. [4]

(Haf 2012)

4. (a) When Jack types a page of a document, the number of errors made may be modelled by a Poisson distribution with mean 0.8. He types a 10-page document. Determine the probability that the total number of errors is less than 5. [3]
- (b) When Mary types a page of a document, the number of errors made may be modelled by a Poisson distribution with mean  $\mu$ . Mary claims that the value of  $\mu$  is less than 0.8 but Jack claims that  $\mu$  is equal to 0.8.
- (i) State suitable hypotheses for testing these claims.
  - (ii) Mary types an 80-page document and makes 60 errors. Find the approximate  $p$ -value of this result and state your conclusion. [7]