0.1 Question D2 - Binomial Distribution (2 Marks)

A biased coin yields 'Tails' on 48% of throws. Consider an experiment that consists of throwing this coin 11 times.

a. (1 Mark) Evaluate the following term ${}^{11}C_2$.

b. (1 Mark) Compute the probability of getting two 'Tails' in this experiment.

0.2 Question D1 - Binomial Distribution

An inspector of computer parts selects a random sample of components from a large batch to decide whether or not to audit the full batch.

(i) lf 20% or more of the sample is defective, the entire batch is inspected, Calculate the probability of this happening if it is thought that the population contains 4% defective components and a sample of 20 is selected.

(ii) lf 10% or more of the sample is defective, the entire batch is inspected. Calculate the probability of this happening if it is thought that the population contains 4% defective components and a sample of 50 is selected. (10 marks)

0.3 Question D2 - Binomial Distribution (2 Marks)

Under what circumstances is it appropriate to use the binomial distribution when calculating probabilities? (1 mark)

(b) Flextronics supply PCB boards to Dell. You are a production manager with Dell. There is a constant probability of 0.01 that a board will be defective. You select 20 boards at random. What is the probability that:

(i) 0 boards will be defective

(ii) 1 or more boards will be defective

(iii) 2 or less boards will be defective (6 marks)