

Question 2 (Sample Variant 2)[25 marks]

(a) ***Probability Distribution (8 Marks)***

A computer software company which specializes in statistical software sells 4 software licences every day, on average. Answer the following questions.

- i (2 marks) What is the probability that the software company sells at least two licence in one particular day?
- ii (3 marks) What is the probability that the software company will sell exactly one licence in one particular day?
- iii (3 marks) What is the probability that the software company will sell sixteen licences or more in a five day working week?

(b) ***Normal Distribution (9 Marks)***

A telecommunications company has determined that the number of products sold on a weekly basis is normally distributed with a mean of 900 and standard deviation of 40.

- i (3 Mark) Estimate the proportion of weeks will the company sell more than 960 products.
- ii (3 Mark) Estimate the proportion of weeks will the company sell less more than 860 products.
- iii (3 Mark) Estimate the proportion of weeks will there be sales of between 880 products and 960 products?

(c) ***Probability Distribution (8 Marks)***

For a digital communication channel, the probability of a bit being received in error is 10%. Consider the case where 100 bits are transmitted. Answer the following questions.

- i (3 marks) What is the probability that the number of bits received in error is 10?
- ii (2 marks) What is the probability that the number of bits received in error is greater than 10?
- iii (2 marks) What is the probability that the number of bits received in error does not exceed 20?