

MATH

11. (a) The probability that Amos goes to school on cloudy day is $\frac{7}{10}$ and $\frac{1}{5}$ on a clear day. If the probability of a cloudy day is $\frac{3}{5}$, find the probability that the day was cloudy given that he did not go to school. (5mks)
- (b) If P and Q are independent
- (i) Show that P^1 and Q are also independent. (4mks)
- (ii) Find P(Q) given that $P(P) = 0.25$ and $P(P \cup Q) = 0.75$. (3mks)

12. A random variable X has the following distribution, $P(X = 0) = P(x = 1)$, $P(x = 2) = 0.3$ $P(X = 3) = P(X = 4) 0.3$
- (a) Find the mean and variance of X. (4mks)
- (b) A continuous random variable x has the distribution function.

$$F(x) = \begin{cases} 3Kx & \left(1 - \frac{x^2}{3}\right), 0 \leq x \leq 1 \\ 1 & , x \geq 1 \end{cases}$$

Determine

- (i) Value of k
- (ii) The probability density function of x
- (iii) The mean of x
- (iv) $P(X > 0.5 / 0.25 \leq x \leq 1)$
13. The weights of senior five science class in a certain school were recorded in the following table.

| Weight (kg) | Frequency |
|-------------|-----------|
| 50 – 53 | 3 |
| 54 – 57 | 8 |
| 58 – 61 | 12 |
| 62 – 65 | 18 |
| 66 – 69 | 11 |
| 70 – 73 | 5 |
| 74 – 77 | 2 |
| 78 – 81 | 1 |

- (a) Estimate the mean and standard deviation of the students' weights
- (b) Plot an O-give.
- (c) Use your O-give to estimate the
- (i) Median height\

End