

Question 10

Do not write
in this margin

A hydrologist was modelling the incidence of faults in sections of piping. Two random variables in which she was interested were the number of faults, N , in a section of piping and the distance, D , from a given fault to the next. Which random variable would appropriately be modelled by a discrete probability distribution and which by a continuous probability distribution?

[1]

N - discrete

D - continuous

Question 11

If the random variable X is binomial $B(6, 0.2)$, calculate the probability $P(X \geq 1)$.

[2]

$$\begin{aligned} P(X \geq 1) &= 1 - P(0) \\ &= 1 - 0.8^6 = 1 - 0.262144 \\ &= 0.737856 \end{aligned}$$

Question 12

From your own experience, suggest two random variables which are not independent, explaining why.

[2]

Car make & breakdown rate
some makes are more reliable
than others