Q2

Sol- Probability of Black Ball from first Bag $P(B_1) = 6/10$

Probability of of first Bag to be chosen $P(I) = 1/2$

Probability of Black Ball from second Bag $P(B_2) = 3/7$

Probability of Second Bag to be chosen $P(II) = 1/2$

Probability of Black Ball & $P(S) = 9/17$

Probability that Black Ball is drawn from first Bag is =

$$\frac{P(B_1) \times P(I)}{P(S)} = \frac{6/10 \times 1/2}{9/17} =$$

$$= \frac{17}{30} = \underline{0.5667}$$

Q3

Sol → Probability of Truth $P(T) = 2/3$

Probability of lie $P(L) = 1 - 2/3 = 1/3$

Probability of four $P(F) = 1/6$

Probability of not four $P(N) = 1 - 1/6 = 5/6$

Probability that it's actually four =

$$\frac{P(T) \times P(F)}{(P(T) \times P(F)) + (P(L) \times P(N))}$$

$$= \frac{2/3 \times 1/6}{(2/3 \times 1/6) + (1/3 \times 5/6)} = \frac{1/9}{(1/9) + (5/18)} = \frac{1/9}{(2+5)/18}$$

$$= 2/7$$