**CS-513 Midterm Exam**

**Question 2**

Let the event of going to England be E, the event of going to Italy be I and the event of going to Spain be S. The event of getting Covid is C.

Given,

P(E) = 0.5

P(I) = 0.2

P(S) = 0.3

P(C/E) = 0.0012

P(C/I) = 0.0015

P(C/S) = 0.0016

Hence P(C) = P(C/E) \* P(E) + P(C/E) \* P(I) + P(C/S) \* P(S) = 0.0012 \* 0.5 + 0.0015 \* 0.2 + 0.0016 \* 0.3

**P(C) = 0.00138 = 0.14%**

Now to find probability of going to England given Covid has been contracted.

P(E/C) = ( P(C/E) \* P(E) ) / P(C) = ( (0.0012 \* 0.5) / 0.00138)

**P(E/C) = 0.43478 = 43.48%**