Assignment-2

EE22BTECH11012-A.Chhatrapati

Question 12.13.2.16) In a hostel, 60% of the students read Hindi newspaper, 40% read English newspaper and 20% read both Hindi and English newspapers. A student is selected at random.

(a) Find the probability that she reads neither Hindi nor English newspapers.
(b) If she reads Hindi newspaper, find the probability that she reads English newspaper.
(c) If she reads English newspaper, find the probability that she reads Hindi newspaper.

Solution: Given,

$$P(Hindi) = P(H) = 60\% = \frac{6}{10}; \tag{1}$$

$$P(English) = P(E) = 40\% = \frac{4}{10}; \tag{2}$$

$$P(H.E) = 20\% = \frac{2}{10} \tag{3}$$

$$(a)P(H'.E') = P((H+E)') \tag{4}$$

$$= 1 - P(H+E) \tag{5}$$

$$= 1 - (P(H) + P(E) - P(H.E)) \tag{6}$$

$$= 1 - \left(\frac{6}{10} + \frac{4}{10} - \frac{2}{10}\right) \tag{7}$$

$$= \frac{2}{10} \tag{8}$$

$$(b)P\left(\frac{E}{H}\right) = \frac{P(E.H)}{P(H)} \tag{9}$$

$$= \frac{\frac{2}{10}}{\frac{6}{10}} \tag{10}$$

$$= \frac{1}{3} \tag{11}$$

$$(c)P\left(\frac{H}{E}\right) = \frac{P(H.E)}{P(E)} \tag{12}$$

$$= \frac{\frac{2}{10}}{\frac{4}{10}} \tag{13}$$

$$= \frac{1}{2} \tag{14}$$