

Solution – II

Question 1

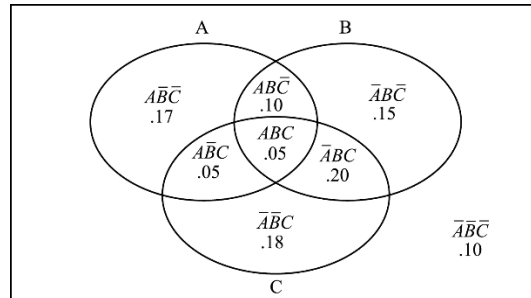
- a. $S = \{1, 2, \dots, 24\}$
- b. $S = \{p : p > 0\}$, p is tire pressure in psi
- c. $S = \{0, 1, 2, \dots, 50\}$
- d. $S = \{t : t \geq 0\}$, t is time in days.

Question 2

- a. $S = \{125, 152, 251, 215, 512, 521\}$
- b. $P(\text{less than } 400) = \frac{4}{6} = \frac{2}{3}$
- c. $P(\text{even number}) = \frac{2}{6} = \frac{1}{3}$

Question 3

- a. Venn Diagram



- b. $P(AB) = 0.05 + 0.10 = \mathbf{0.15}$
 $P(A\bar{C}) = 0.10 + 0.14 = \mathbf{0.24}$
 $P(C) = 0.05 + 0.08 + 0.18 + 0.20 = \mathbf{0.51}$
- c.

	B	\bar{B}
A	0.15	0.22
\bar{A}	0.35	0.28

- d(i). Student is good at answering both essay and T/F questions.

$$P(BC) = 0.05 + 0.20 = \mathbf{0.25}$$

- d(ii). Student is good at answering at least one of essay or T/F type questions.

$$P(B \cup C) = P(B) + P(C) - P(BC)$$

$$P(B) = 0.05 + 0.10 + 0.20 + 0.15 = 0.50$$

$$P(C) = 0.08 + 0.05 + 0.20 + 0.18 = 0.51$$

$$P(BC) = 0.25$$

Therefore, $P(B \cup C) = P(0.50) + P(0.51) - P(0.25) = \mathbf{0.76}$

Alternatively, $P(B \cup C) = P(B) + P(\bar{B}C) = 0.50 + 0.26 = \mathbf{0.76}$

d(iii). Student is good at answering essay questions, but not T/F questions.

$$P(B\bar{C}) = 0.10 + 0.15 = \mathbf{0.25}$$

d(iv). Student is only good at answering one of the three different types of questions.

$$P(A\bar{B}\bar{C}) \cup P(\bar{A}B\bar{C}) \cup P(\bar{A}\bar{B}C) = 0.14 + 0.15 + 0.18 = \mathbf{0.47}$$