

INDU6310 Assignment Questions

All Assignments must be submitted in hardcopy only

Assignment 1

Due: Sept. 24, 2019.

Exercise Questions.

2-49. If $P(A) = 0.3$, $P(B) = 0.2$, and $P(A \cap B) = 0.1$, determine the following probabilities:

- (a) $P(A')$ (b) $P(A \cup B)$
- (c) $P(A' \cap B)$ (d) $P(A \cap B')$
- (e) $P[(A \cup B)']$ (f) $P(A' \cup B)$

2-61. Consider the data on wafer contamination and location in the sputtering tool shown in Table 2-2. Assume that one wafer is selected at random from this set. Let A denote the event that a wafer contains four or more particles, and let B denote the event that a wafer is from the center of the sputtering tool. Determine:

- (a) $P(A)$ (b) $P(A|B)$
- (c) $P(B)$ (d) $P(B|A)$
- (e) $P(A \cap B)$ (f) $P(A \cup B)$

Table 2-2 Wafers Classified by Contamination and Location

Number of Contamination Particles	Center	Edge	Totals
0	0.30	0.10	0.40
1	0.15	0.05	0.20
2	0.10	0.05	0.15
3	0.06	0.04	0.10
4	0.04	0.01	0.05
5 or more	0.07	0.03	0.10
Totals	0.72	0.28	1.00

2-67. A maintenance firm has gathered the following information regarding the failure mechanisms for air conditioning systems:

		evidence of gas leaks	
		yes	no
evidence of	yes	55	17
electrical failure	no	32	3

The units without evidence of gas leaks or electrical failure showed other types of failure. If this is a representative sample of AC failure, find the probability

- (a) That failure involves a gas leak
- (b) That there is evidence of electrical failure given that there was a gas leak
- (c) That there is evidence of a gas leak given that there is evidence of electrical failure