Solution to Assignment 3N EDS-6344 Spring 2023
Do not distribute

Q2.

P(d) = prior probability of defective parts in the assembly = 0.01
Among the defective parts, John identified or observed 92% of them are defective
P(obsDef|d) = 0.92
Also note that John also identified 6% among the non defective parts as defective. That is
P(obsDef|-d) = 0.06

a. What is the probability of John identifying assembly as defective?
   P(obsDef) = P(obsDef & d) + P(obsDef & - d)
   =P(obsDef|d)*P(d) + P(obsDef|-d)*P(-d)
   =0.92*0.01 +0.06*0.99
   =0.0686

b. What is the probability of the assembly actually being defective when John identified the assembly as defective?
   P(d|obsDef) = P(obsDef & d)/P(obsDef)
   =P(obsDef |d) * P(d)/P(obsDef) =0.92*0.01/P(obsDef)
   =0.134

c. Probability of John rejecting good assemble?
   P(obsDef| -d) = 0.06 (already given to you)

3.

		True Class		
		A	B	C
Predicted Class	A	30	7	14
	B	8	28	12
	C	12	10	42

				True Class		
			A	B	C	
		A	30	7	14	
	Predicted	B	8	28	12	
		C	12	10	42	
	Total		50	45	68	
		Class	A	B	C	
	True Positive		30	28	42	
	False Positive		21	20	22	
	Precession		0.5882353	0.5833333	0.65625	
	Recall		0.6	0.6222222	0.6176471	
	Overall Prediction Accurac		0.6134969			