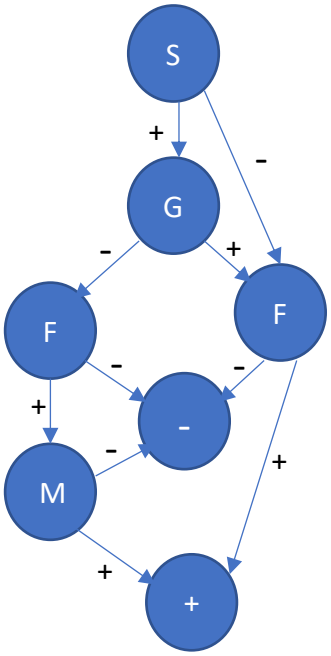
1. Constraints for each:
Pr(Disease = true) >= 0.013493
Pr(Test = true | Disease = false) <= 0.002196
Pr(Test = false | Disease = true) = No constraint possible

2.



3. a) {S, F, M}
b) α = {F, M}, β = {S, G}

4. a) Prior marginal distribution for BMI:
Pr(BMI = high) = 0.3460
Pr(BMI = nothigh) = 0.6540

Prior marginal distribution for blood pressure:
Pr(BloodPressure = high) = 0.4577
Pr(BloodPressure = nothigh) = 0.5423

b) Posterior marginal distribution for 'over 60' assuming either high BMI or high blood pressure:
Pr(Over60 = older | HighBMI v HighBP = true) = 0.6230
Pr(Over60 = younger | HighBMI v HighBP = true) = 0.3770

c) SNP 2 is causal, so MAP instantiation is:
{ BloodPressure = nothigh, BMI = nothigh}
e = SNP2Causal
P(MAP, e) = 0.134855
P(MAP | e) = 0.337137

d) Both SNPs are present and are causal, so MPE instantiation is:

{AgeCausal = causal, BloodPressure = high, BMI = high, Over60 = older, Sex = Male, SexCausal = causal}

e = HasSNP1 & SNP1Causal & HasSNP2 & SNP2Causal

P(mpe, e) = 0.007812

P(mpe | e) = 0.144668