**HW 8**

1. Prior probability of having the disease: >= 0.013493

Probability of false positive for the test: <= 0.002196

Probability of false negative for the test: impossible

2. Reduced decision graph:





3.

(a)

Largest set of features to be turned off without changing decision = or { }

(b)

Smallest set of features that render remaining features irrelevant:

4.

(a) Prior marginal distribution for BMI: 34.6% for high and 65.4% for nothigh

Prior marginal distribution for blood pressure: 45.77% for high and 54.23% for nothigh

(b) Posterior marginal probability for over 60: 62.30% for older, 37.70% for younger

(c) The MAP for the two variables are: BloodPressure = nothigh and BMI = nothigh with P(map, e) = 0.134855, and P(map|e) = 0.337137

(d) For the MPE, the tuple with the highest probability in the joint distribution is:

|  |  |
| --- | --- |
| **Variable** | **Value** |
| AgeCausal | Causal |
| BloodPressure | High |
| BMI | High |
| Over60 | Older |
| Sex | Male |
| SexCausal | Causal |

With probability P(mpe, e) = 0.007812, P(mpe|e)= 0.144668