CECS 451 ASSIGNHENT #8

1. (a) 
$$P(\text{toothache}) = 0.108 + 0.012 + 0.016 + 0.069$$
 $V(\text{cavity})$ 
 $V(\text{cavity})$ 
 $V(\text{coothache}) = 0.20$ 

(b) 
$$\vec{P}(cavity) = \langle P((avity), P(7cavity) \rangle$$
  
 $P(cavity) = 0.108 + 0.012 + 0.072 + 0.008$   $q = \frac{1}{0.2 + 0.8} = 1$   
 $= 0.20$   
 $P(7cavity) = 0.016 + 0.064 + 0.144 + 0.376$   $d(0.20, 0.80)$   
 $= 0.80$   
 $\vec{P}(cavity) = \langle 0.20, 0.80 \rangle$ 

(C) 
$$\vec{P}$$
 (toothacke | cavity) =  $\langle P(\text{toothacke } | \text{cavity}) \rangle$ ,  $P(\tau \text{ toothacke}, \text{cavity}) \rangle$ 

$$= \langle \langle 0.108 + 0.012 \rangle, \quad 0.072 + 0.008 \rangle$$

$$= \langle \langle 0.12 + 0.08 \rangle$$

$$= \langle 0.12 + 0.08 \rangle$$

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2. (a) P(b, i, -m, g, i)
         = P(b) . P(7m) . P(i | b, 7m) . P(g | b, i, 7m) . P(j | g)
        = (0.9) . (0.8) . (0.5) . (0.8) . (0.8)
                  = [0.23]
     (b) P(J|b,i,m) = a.P(J,b,i,m)
                           = a. & P(J1g'). P(b). P(i 15,m). P(m). P(g'1i,b,m)
                       = B. Sp (3 1g) . P (g'li,b,m)
    = $. \[ P(j|g) \cdot P(g|l,b,m) + P(j|rg) \cdot P(rg|l,b,m), \] \[ P(rj|g) \cdot P(g|l,b,m) + P(rj|rg) \cdot P(rg|l,b,m) \]
    =\beta \times [(0.8) \times (0.9) + (0.1) (0.1) , (0.2) (0.9) + (0.9) (0.1) , (0.2) (6.9)
   = B · [.73,.27]
    = [0.73, 0.27]
 (c). P(5/76,7i,m) = a P(J,76,7i,m) = aP(J,76,7i,m,g)
     = QP (J, 9) 8(76) 8(71 bb,m) P(m) P(g'176,71,m)
  OK=B. & P (J19'). P(g'17b, 7i,m)
= B. [ P(jig). P($175,7i,m) + P(017g). P(7g175,7i,m) ]

P(7jig). P(g[75,7i,m) + P(7jin). P(7g175,7i,m)]
  = B. [(0.8)(0)+ (0.1)(0.1), (0.2)(0)+(0.9)(0.1)]
  = B. [0.1, 0.9]
        = [0.1,0.9]
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