Assignment – Bayes

1. Accuracy = TP + TN / (TP + TN + FP + FN)
   ⇨ 8 + 20 + 4 + 9 + 5 / (8 + 20 + 4 + 9 + 5 + 1 + 2 + 1) = 46/50 = 0.92

2. TPR when:
   - BCC is +ve: 8/10 = 0.8
   - NEV is +ve: 20/20 = 1
   - MEL is +ve: 4/5 = 0.8
   - SK is +ve: 9/10 = 0.9
   - MISC is +ve: 5/5 = 1

   AVG TPR = (0.8 +1 + 0.8 + 0.9 + 1)/5 = 0.9

3. P(MEL) = # people with MEL/ Total population = 10/50 = 0.2

4. P(NEV) =# people with NEV/ Total population = 40/50 = 0.8

5. P(BWV|NEV) = 0.1

6. P (VS| MEL) = 0.2

7. P (PN| MEL) = 0.5
   P (PN, MEL) = P(MEL) * P (PN| MEL) Bayes Theorem
   P (PN, MEL) = 0.2 * 0.5 = 0.1

8. P (PN| NEV) = 0.2
   P (PN, NEV) = P(NEV) * P (PN| NEV) Bayes Theorem
   P (PN, NEV) = 0.8 * 0.2 = 0.16

9. P (VS, y) = P (VS, MEL) + P (VS, NEV) Marginal Prob
   P (VS, MEL) = P(MEL) * P(VS|MEL) Bayes Theorem
   = 0.2 * 0.2 = 0.04
   P (VS, NEV) = P(NEV) * P(VS|NEV) Bayes Theorem
   = 0.8 *0.7 = 0.56
   P (VS, y) = 0.56 +0.4 = 0.6