**Probability:**

A1) a) 1-P(A) b)1-P(B) c)P(A)+P(B) d) 0 e) 1-[P(A)+P(B)]

A2) a) P(A)+P(B)-P(AΩB) b) 1-[P(A)+P(B)-P(AΩB)] c) P(A) – P(AΩB)

A3) 67/150\*66/149\*83/148

A4) (O1\*F2\*F3)+(F1\*O2\*F3)+(F1\*F2\*O3) = (3/4\*2/4\*3/4)+(1/4\*2/4\*3/4)+(1/4\*2/4\*1/4)

For rest of the answers, only the modelling has been done; please use Classical theorem (Favorable / Total) to solve

A5) a) W1\*W2\*B3 b) (B1\*W2\*W3\*B4)+(W1\*B2\*W3\*B4)+(W1\*W2\*B3\*B4)

A6) 4/52\*4\*52\*4/52

A7) (345/345)\*(344/345)\*(343/365)\*(343/365)

A8) (R1\*R2)+(B1\*R2)

A9) P(O)+P(V)+P(OΩV) >1

A10) a) (W1\*B2) b)(W1\*B2)+(B1\*W2)

A11) a) P(M)\*P(W) b) 1-[P(M’)\*P(W’)] c) P(M’)\*P(W’) d) P(W)\*P(M’)

A12) a)P(S/E)=P(SΩE)/P(E) b)P(E/P)=P(SΩP)/P(P) c) P(EUS)=P(E)+P(S)-P(EΩS)

A13) 1-[P(T’)\*P(T’)]

A14) 1-[P(J1’)\*P(J2’)\*P(J3’)]

A15) a) (13/52)\*(12/51) b) (13/52)\*(13/51)

A16) 1-[P(A’)\*P(A’)]

A17) P(B3/W) = {P(B3)\*P(W/B3)}/[{P(B1)\*P(W/B1)}+{P(B2)\*P(W/B2)}+{P(B3)\*P(W/B3)}]

A18) P(G/6)= {P(G)\*P(6/G}/[{P(G)\*P(6/G)+P(B)\*P(6/B)}]

**Business Questions\_Bank: (Probability)**

**(The R codes for the variables associated with the questions are given; calculate using classical theory)**

A1)

>table(gb $ GoodBad)

P(B)

A2)

>table(gb $ GoodBad, gb $ Credit.History)

P(B)\*P(A31)

A3)

>table(gb $ Check.Account.Status)

P(G)\*P(A14)

A4)>gb1<-subset(gb, GoodBad = = “1”)

>table(gb1 $ Credit.History)

P(A34) from the above table

A5) P(A34/G) = P(A34ΩG) / P(G) # Values you will get from the above tables…Conditional Probability #

A6)

P(G/A34) = {P(G)\*P(A34/G)} / [{P(G)\*P(A30/G)}+ {P(G)\*P(A30/G)}+ {P(G)\*P(A31/G)}+ {P(G)\*P(A32/G)}+ {P(G)\*P(A33/G)}+ {P(G)\*P(A34/G)}]

# The above one would be solved through Thomas Bayes theorem as: Type of customer = f(Credit History) #

A7)

P(B/A11)\*P(B/A12)\*P(B/A13)\*P(B/A14)

= P(BΩA11)/P(A11) + P(BΩA12)/P(A12) + P(BΩA12)/P(A12) + P(BΩA12)/P(A12)

A8)

>gb2<-subset(gb, GoodBad = =”0”)

>table(gb2 $ Check.Account.Status)

>table(gb2 $ Credit.History)

P(A11) + P(A34)

A9)

>table(gb1 $ Credit.History)

P(A34) from the above table

P(A34’) = 1 – P(A34)

At Least one = 1 – P(A34’)