ES5

COMPITO 2006

(D1)

	TEM	PRESSURE	ALARM1	ALARM2	ALARM3
1	[88 - 95]	[1083-1111]	0	0	1
2	[80 - 87]	[1025 - 1053]	1	1	0
3	[96 - 103]	[1083 - 1111]	1	1	1
4	[96 - 103]	[1083 - 1111]	1	0	0
5	[80 - 87]	[1025 - 1053]	0	1	1
6	[96 - 103]	[1054 - 1082]	1	1	0
7	[80 - 87]	[1025 - 1053]	1	0	1
8	[80 - 87]	[1025 - 1053]	1	0	0
9	[96 - 103]	[1083 - 1111]	1	1	1

(D2)

	TEMP	PRESSURE	ALARM1	ALARM2	ALARM3
1	[86 - 99]	[1090 - 1105]	0	0	1
2	[80 - 85]	[1040 - 1089]	1	1	0
3	[100 - 103]	[1090 - 1105]	1	1	1
4	[86 - 99]	[1040 - 1089]	1	0	0
5	[80 - 85]	[1025 - 1039]	0	1	1
6	[100 - 103]	[1040 - 1089]	1	1	0
7	[80 - 85]	[1025 - 1039]	1	0	1
8	[86 - 99]	[1025 - 1039]	1	0	0
9	[100 - 103]	[1090 - 1105]	1	1	1

b) D1 : A = [80 - 87] D = [1025 - 1053]
B = [88 - 95] E = [1054 - 1082]
C = [96 - 103] F = [1083 - 1111]

ITEMSET FREQ. CON MINSUP. ≥ 30%:

A, C, D, F, 1, 0, AD, A1, A0, CF, C1, D1, D0, F1, 10, 11, 00, 110, A10, A11, AD1, AD0, CF1, C11, D10, D11, A101, AD10, D101, 001.

b) D2

A = [80-85) D = [1025-1039]
B = [86-99] E = [1040-1089]
C = [100-103] F = [1090-1105]

ITEMSETS FREQ.

A, B, C, D, E, F, 1, 0, A1, A0, B1, B0, C1, D1, D0,
E1, E0, F1, 10, 11, A10, B10, D10, E10, A11, C11
F11, 110, A101,

a)

TEMP1 = [80-87]
TEMP2 = [88-95]
TEMP3 = [96-103]

PRE1 = [1025-1053]
PRE2 = [1054-1082]
PRE3 = [1083-1111]

D1

	TEMP1	TEMP2	TEMP3	PRE1	PRE2	PRE3	AL1	AL2	AL3
1	0	1	0	0	0	1	0	0	1
2	1	0	0	1	0	0	1	1	0
3	0	0	1	0	0	1	1	1	1
4	0	0	1	0	0	1	1	0	0
5	1	0	0	1	0	0	0	1	1
6	0	0	1	0	1	0	1	1	0
7	1	0	0	1	0	0	1	0	1
8	1	0	0	1	0	0	1	0	0
9	0	0	1	0	0	1	1	1	1

D2

a)

TEMP1 = [80-86]
TEMP2 = [86-99]
TEMP3 = [100-103]

PRE1 = [1025-1039]
PRE2 = [1040-1089]
PRE3 = [1090-1105]

	TEMP1	TEMP2	TEMP3	PRE1	PRE2	PRE3	AL1	AL2	AL3
1	0	1	0	0	0	1	0	0	1
2	1	0	0	0	1	0	1	1	0
3	0	0	1	0	0	1	1	1	1
4	0	1	0	0	1	0	1	0	0
5	1	0	0	1	0	0	0	1	1
6	0	0	1	0	1	0	1	1	0
7	1	0	0	1	0	0	1	0	1
8	0	1	0	1	0	0	1	0	0
9	0	0	1	0	0	1	1	1	1

A) ES. 6

OUTLOOK

	SUNNY	OVERCAST	RAIN
NO	3	0	2
YES	2	4	3

SUNNY : $P(NO) = \frac{3}{5}$ $P(YES) = \frac{2}{5}$

ERROR = $\frac{2}{5}$

OVERCAST : $P(NO) = 0$ $P(YES) = \frac{4}{4}$ ERROR = 0

RAIN : $P(NO) = \frac{2}{5}$ $P(YES) = \frac{3}{5}$ ERROR = $\frac{2}{5}$

AVERAG ERROR = $\frac{2}{5} \cdot \frac{5}{14} + 0 \cdot \frac{4}{14} + \frac{2}{5} \cdot \frac{5}{14} = \frac{2}{14} + \frac{2}{14} = \frac{4}{14}$

TEMPERATURE

	HOT	MILD	COOL
NO	2	2	1
YES	2	4	3

HOT : $P(NO) = \frac{2}{4}$ $P(YES) = \frac{2}{4}$ ERROR = $\frac{1}{2}$

MILD : $P(NO) = \frac{2}{6}$ $P(YES) = \frac{4}{6}$ ERROR = $\frac{2}{6}$

COOL : $P(NO) = \frac{1}{4}$ $P(YES) = \frac{3}{4}$ ERROR = $\frac{1}{4}$

AVG ERROR = $\frac{1}{2} \cdot \frac{4}{14} + \frac{2}{6} \cdot \frac{6}{14} + \frac{1}{4} \cdot \frac{4}{14} =$

$= \frac{2}{14} + \frac{2}{14} + \frac{1}{14} = \frac{5}{14}$

HUMIDITY

	HIGH	NORMAL
NO	4	1
YES	3	6

HIGH : $P(NO) = \frac{4}{7}$ $P(YES) = \frac{3}{7}$ ERROR = $\frac{3}{7}$

NORMAL : $P(NO) = \frac{1}{7}$ $P(YES) = \frac{6}{7}$ ERROR = $\frac{1}{7}$

AVG ERROR = $\frac{3}{7} \cdot \frac{7}{14} + \frac{1}{7} \cdot \frac{7}{14} = \frac{4}{14}$

WIND

	WEAK	STRONG
NO	2	3
YES	7	2

WEAK : $P(NO) = \frac{2}{9}$ $P(SI) = \frac{7}{9}$ ERROR = $\frac{2}{9}$

STRONG : $P(NO) = \frac{3}{5}$ $P(YES) = \frac{2}{5}$ ERROR = $\frac{2}{5}$

AVG ERROR : $\frac{2}{9} \cdot \frac{9}{14} + \frac{2}{5} \cdot \frac{5}{14} = \frac{2}{14} + \frac{2}{14} = \frac{4}{14}$

(2)

PARENT RAMO : SUNNY

HUMIDITY

	HIGH	NORMAL
NO	3	0
YES	0	2

HIGH: P(NO) = 1 P(YES) = 0 ERROR = 0

NORMAL: P(NO) = 0 P(YES) = 1 ERROR = 0

AVG ERROR : 0

TEMPERATURE

	HOT	MILD	COOL
NO	2	1	0
YES	0	1	1

HOT: P(NO) = 1 P(YES) = 0 ERROR = 0

MILD: P(NO) = $\frac{1}{2}$ P(YES) = $\frac{1}{2}$ ERROR = $\frac{1}{2}$

COOL: P(NO) = 0 P(YES) = 1 ERROR = 0

ERROR = $\frac{1}{2} \cdot \frac{2}{5} = \frac{1}{5}$

WIND

	WEAK	STRONG
NO	2	1
YES	1	1

WEAK: P(NO) = $\frac{2}{3}$ P(YES) = $\frac{1}{3}$ ERROR = $\frac{1}{3}$

STRONG = P(NO) = $\frac{1}{2}$ P(YES) = $\frac{1}{2}$ ERROR = $\frac{1}{2}$

AVG ERROR = $\frac{1}{3} \cdot \frac{3}{5} + \frac{1}{2} \cdot \frac{2}{5} = \frac{1}{5} + \frac{1}{5} = \frac{2}{5}$

RAMO : RAIN :

TEMPERATURE

	HOT	MILD	COOL
NO	0	1	1
YES	0	2	1

MILD : P(NO) = $\frac{1}{3}$ P(YES) = $\frac{2}{3}$ ERROR = $\frac{1}{3}$

COOL P(NO) = $\frac{1}{2}$ P(YES) = $\frac{1}{2}$ ERROR = $\frac{1}{2}$

AVG ERROR = $\frac{1}{3} \cdot \frac{3}{5} + \frac{1}{2} \cdot \frac{2}{5} = \frac{1}{5} + \frac{1}{5} = \frac{2}{5}$

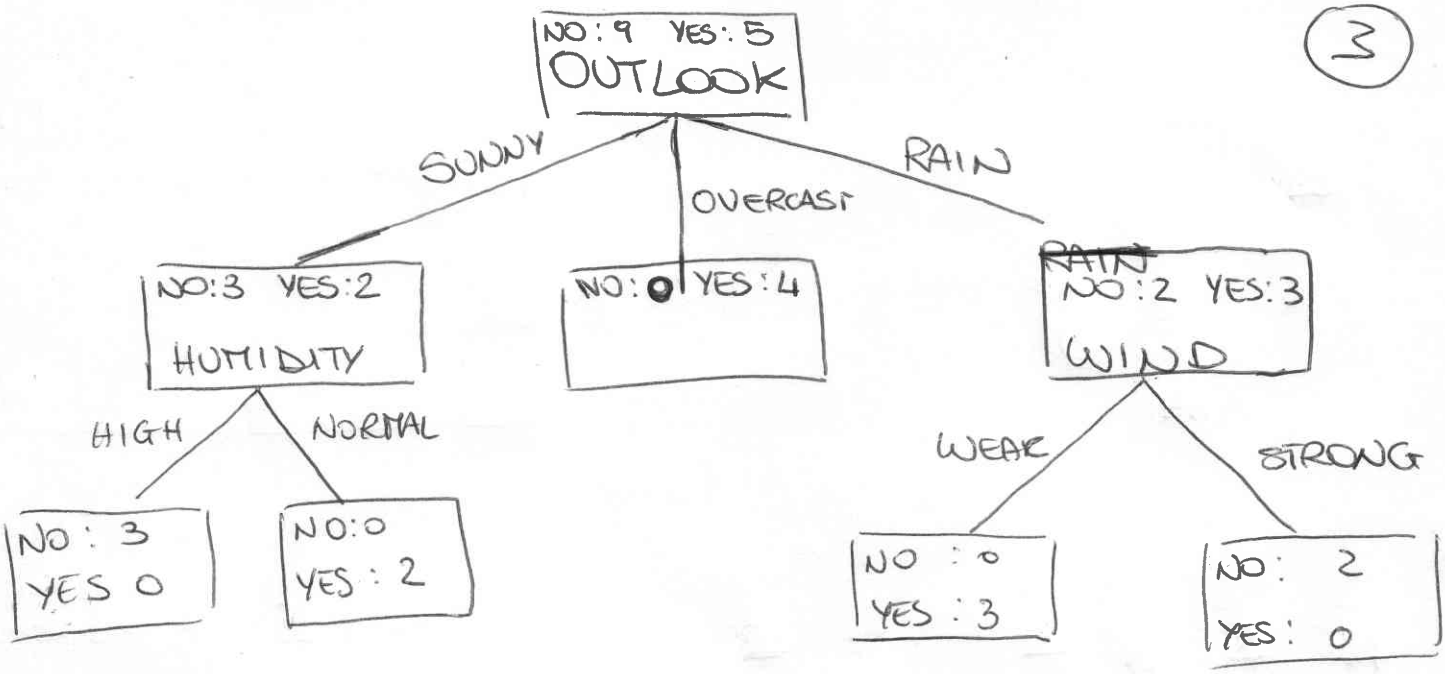
WIND

	WEAK	STRONG
NO	0	2
YES	3	0

WEAK : P(NO) = 0 P(YES) = 1 ERROR = 0

STRONG : P(NO) = 1 P(YES) = 0 ERROR 0

AVG ERROR = 0



B)

METODO PESSIMISTICO $= (0 + 5 \times 0.5) / 14 =$

$= 0,178$

METODO OTTIMISTICO $= 0$