



Examen Mayo, respuestas

Representación do Coñecemento e Razoamento Automático (Universidade da Coruña)

SOLUCIÓN: MODELO DEMSTER-SHAFER. MARCO = {H1, H2, H3, H4, H5, H6}. EVIDENCIAS = {PRECIO (P), TRANSPORTE (T), ACUIFERO (A), IMPACTO (I)}

EXPERTOS: n = 1, 2, 3

P → PnF (H4, H5) → F Y PnM (H1, H2, H3, H4, H5, H6) → M

T → TnF (H1, H2, H3, H4) → F Y TnM (H1, H2, H3, H4, H5, H6) → M

A → AnF (H1, H2, H3, H6) → F Y AnM (H1, H2, H3, H4, H5, H6) → M

I → InF (H1, H2, H4, H5) → F Y InM (H1, H2, H3, H4, H5, H6) → M

TODOS LOS EXPERTOS ESTÁN DE ACUERDO EN ESTO. POR LO TANTO LO UNICO QUE VARIA SON LOS PESOS:

EXPERTO 1: P1 (F) = 0.3 P1 (M) = 0.7 T1 (F) = 0.5 T1 (M) = 0.5 A1 (F) = 0.7 A1 (M) = 0.3 I1 (F) = 0.9 I1 (M) = 0.1

EXPERTO 2: P2 (F) = 0.7 P2 (M) = 0.3 T2 (F) = 0.8 T1 (M) = 0.2 A2 (F) = 0.4 A2 (M) = 0.6 I2 (F) = 0.5 I2 (M) = 0.5

EXPERTO 3: P3 (F) = 0.4 P3 (M) = 0.6 T3 (F) = 0.5 T3 (M) = 0.5 A3 (F) = 0.9 A3 (M) = 0.1 I3 (F) = 0.6 I1 (M) = 0.4

Pn/Tn	H4, H5 (0.3-0.7-0.4)	M (0.7-0.3-0.6)
H1, H2, H3, H4	H4	H1, H2, H3, H4
(0.5-0.8-0.5)	(0.15-0.56-0.20)	(0.35-0.24-0.30)
H1, H2, H3, H4, H5, H6	H4, H5	M
(0.5-0.2-0.5)	(0.15-0.14-0.20)	(0.35-0.06-0.30)

	H4	H1, H2, H3, H4	H4, H5	M	SUMA
EXPERTO 1	0.15	0.35	0.15	0.35	1.00
EXPERTO 2	0.56	0.24	0.14	0.06	1.00
EXPERTO 3	0.20	0.30	0.20	0.30	1.00

An/In	H1, H2, H3, H6 (0.7-0.4-0.9)	M (0.3-0.6-0.1)
H1, H2, H4, H5 (0.9-0.5-0.6)	H1, H2 (0.63-0.20-0.54)	H1, H2, H4, H5 (0.27-0.30-0.06)
H1, H2, H3, H4, H5, H6 (0.1-0.5-0.4)	H1, H2, H3, H6 (0.07-0.20-0.36)	M (0.03-0.30-0.04)

	H1,H2	H1,H2,H4,H5	H1,H2,H3,H6	M	SUMA
EXPERTO 1	0.63	0.27	0.07	0.03	1.00
EXPERTO 2	0.20	0.30	0.20	0.30	1.00
EXPERTO 3	0.54	0.06	0.36	0.04	1.00

(PnTn/AnIn)	H4 (0.15-0.56-0.20)	H1, H2, H3, H4 (0.35-0.24-0.30)	H4, H5 (0.15-0.14-0.20)	M (0.35-0.06-0.30)
H1, H2 (0.63-0.20-0.54)	VACIO (0.0945-0.1120-0.1080)	H1, H2 (0.2205-0.0480-0.1620)	VACIO (0.0945-0.0280-0.1080)	H1, H2 (0.2205-0.0120-0.1620)
H1, H2, H4, H5 (0.27-0.30-0.06)	H4 (0.0405-0.1680-0.0120)	H1, H2, H4 (0.0945-0.0720-0.0180)	H4, H5 (0.0405-0.0420-0.0120)	H1, H2, H4, H5 (0.0945-0.0180-0.0180)
H1, H2, H3, H6 (0.07-0.20-0.36)	VACIO (0.0105-0.1120-0.0720)	H1, H2, H3 (0.0245-0.0480-0.1080)	VACIO (0.0105-0.0280-0.0720)	H1, H2, H3, H6 (0.0245-0.0120-0.1080)
M (0.03-0.30-0.04)	H4 (0.0045-0.1680-0.0080)	H1, H2, H3, H4 (0.0105-0.0720-0.0120)	H4, H5 (0.0045-0.0420-0.0080)	M (0.0105-0.0180-0.0120)

AGRUPANDO TERMINOS

	VACIO	H1H2	H4	H1H2H4	H4H5	H1H2H4H5	H1H2H3	H1H2H3H6	H1H2H3H4	M	SUMA
EXPERTO1	0.2100	0.4410	0.0450	0.0945	0.0450	0.0945	0.0245	0.0245	0.0105	0.0105	1.000
EXPERTO2	0.2800	0.0600	0.3360	0.0720	0.0840	0.0180	0.0480	0.0120	0.0720	0.0180	1.000
EXPERTO3	0.3600	0.3240	0.0200	0.0180	0.0200	0.0180	0.1080	0.1080	0.0120	0.0120	1.000

CONFLICTO EXPERTO 1 = $K1 = 0.2100 \rightarrow$ FACTOR DE NORMALIZACION DEL EXPERTO 1 = 1.266

CONFLICTO EXPERTO 2 = $K2 = 0.2800 \rightarrow$ FACTOR DE NORMALIZACION DEL EXPERTO 2 = 1.389

CONFLICTO EXPERTO 3 = $K3 = 0.3600 \rightarrow$ FACTOR DE NORMALIZACION DEL EXPERTO 1 = 1.563

RESULTADOS NORMALIZADOS

	H1H2	H4	H1H2H4	H4H5	H1H2H4H5	H1H2H3	H1H2H3H6	H1H2H3H4	M	SUMA
EXPERTO1	0.56	0.06	0.12	0.06	0.12	0.03	0.03	0.01	0.01	1.0
EXPERTO2	0.08	0.47	0.10	0.12	0.03	0.07	0.02	0.10	0.03	1.0
EXPERTO3	0.51	0.03	0.03	0.03	0.03	0.17	0.17	0.02	0.02	1.0

LA UNICA HIPOTESIS INDIVIDUAL QUE APARECE DURANTE TODO EL PROCESO DE RAZONAMIENTO ES –H4- POR LO TANTO:

CREDIBILIDAD-EXPERTO-1 (H4) = 0.06

PLAUSIBILIDAD-EXPERTO-1 (H4) = $0.06+0.12+0.06+0.12+0.01+0.01 = 0.38$

INTERVALO DE CONFIANZA EXPERTO-1 (H4) = [0.06 , 0.38]

CREDIBILIDAD-EXPERTO-2 (H4) = 0.47

PLAUSIBILIDAD-EXPERTO-2 (H4) = $0.47+0.10+0.12+0.03+0.10+0.03 = 0.85$

INTERVALO DE CONFIANZA EXPERTO-2 (H4) = [0.47 , 0.85]

CREDIBILIDAD-EXPERTO-3 (H4) = 0.03

PLAUSIBILIDAD-EXPERTO-3 (H4) = $0.03+0.03+0.03+0.03+0.02+0.02 = 0.16$

INTERVALO DE CONFIANZA EXPERTO-1 (H4) = [0.03 , 0.16]

INTERPRETACION: A PESAR DE QUE EL UNICO EMPLAZAMIENTO QUE PARECE SER POSIBLE, Y EN EL QUE TODOS PARECEN ESTAR DE ACUERDO, ES H4, LOS EXPERTOS 1 Y 3 (RESPECTIVAMENTE “MEDIO AMBIENTE” Y “COMPAÑÍA DE AGUAS”) VAN A TENER QUE ACEPTAR TRAS LA NEGOCIACION LOS ARGUMENTOS DEL EXPERTO 2 (REPRESENTANTE MUNICIPAL)... PODEROSO CABALLERO ES DON DINERO.