## 1. PCAJZO-4 PCBJ =0.3 PCAVBJ =0.5

The agent is rational if it chooses the action that has the heightest expected utility and has possible outcomes of the action.

All possibilities are from a to I for any proportion a that 
$$0 \le pcas \le 1$$

P(true) = 1

P(felse) = 0

A L B

A C

PCA) = 0.4 = 0.4h

P(B) = 0.3 = 04C

PCANB) = 0

then P(AUB) = P(A) + P(B) - PCANB)

atbta+C-a

atbtc

given PCAUB) = 0.5

atbtc = 0.5

atb=0.4, atc=0.3

b-C=0.1

b=0.1+(

ato.1+c=0.4

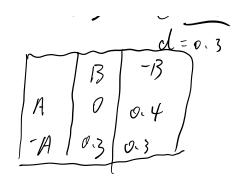
atc=0.3

c=0.3-a

atb+C=0.5

$$a = 0.2$$
 $a + b = 0.4 \rightarrow 0.2 + b = 0.4 \rightarrow b = 0.2$ 
 $a + c = 0.3 \rightarrow 0.2 + c = 0.3 \rightarrow c = 0.1$ 
 $P(-A) = 1 - P(A) = 1 - 0.4 = 0.6$ 
 $0.6 = c + d \rightarrow d = 0.5$ 

atb t 
$$c = 0.7$$
  
at  $b = 0.4$   
at  $c = 0.3$   
i.  $b = 0.4$ -a  $c = 0.3$ -a  
atb t  $c = 0.7$   
at  $c = 0.4$ -a  $c = 0.7$   
at  $c = 0.4$ -a  $c = 0.4$   
at  $c = 0.3$ -a  $c = 0.4$ 



PCANB)=a=0 means A and B will never happen together

Agentl		1 Agent 2		outcome of agentl			
Ptoposition	belif	bet	Stakes	Anis	/An-B	-A1B	1-An-8
A	0,4	19	4 to b	-6	1 4	1 4	4
B	0,3	B	3 to 7	3	-7	-7	3
A V13	0.7	- CAUB	3 to 7	5	5	5	-5
'		1017	-	2	2	2	2

(C) 
$$P$$
 Ctoothache/cavity) =  $\frac{P(t \cap c)}{p(c)} = \frac{0.108}{0.2} = 0.54$   
(d)  $PCC/tVc) = \frac{P(c \cap tVc)P(c)}{0.11} = \frac{0.108}{0.08} = 0.871$ 

- 3. PCdisease) = 0.0001

  PCT disease) = 0.8999

  PCPositive/disease) = 0.99

  PC negative I disease = 1-0.99 = 0.01

  PC negative l' disease )=0.99

  PC positive | Tdisease) = 0.1

  PCA 113) = PCA1B) | PCB)

  = 0.0001x0.99 / C0.0001x0.99 to.9919 x0.01

  -0.0098
- 4 0 Payhack = coins return  $\times$  p(coin return) 19  $\times \frac{1}{64} + 14 \times \frac{1}{64} + 4 \times \frac{1}{64} + 2 \times \frac{1}{64} + 1 \times \frac{1}{16} + 0 \times \frac{1}{64}$ =  $\frac{19+14+4+2+4}{64} = \frac{43}{64}$

@ 64 t 64 t 64 t 16 t 4 = 24

4 16 20