Question 9 from Booklet.

1)

Symbol		2	3	- (5	6	7	8	9	10	
die A	6	4	3	7	1	1	1	1	1	G	
die B	3	3	2	2	2	2	2	2	Appendix	- Constitution of the Cons	

Romdomly chosen die is rolled 7 times, with outcomes: 5,3,9,3,8,4,7.

die is A?

$$= \frac{1}{2} \times \left(\frac{1}{20} \times \frac{3}{20} \times \frac{1}{20} \times \frac{3}{20} \times \frac{1}{20} \times \frac{2}{20} \times \frac{1}{20} \right)$$

$$\frac{1/2 \times \left(\frac{9 \times 2}{20^{7}}\right)}{\frac{1}{2} \left(\frac{9 \times 2}{20^{7}}\right) + \frac{1}{2} \times \left(\frac{2^{6}}{20^{7}}\right)} = \frac{18}{2 \times 20^{7}} = \frac{18}{18 + 2^{6}} = 0.219$$

2) outcomes: 3,5,4,8,3,9,7.

$$\frac{\sqrt{3} \times (\sqrt{20} \times 20^{\times} 20^$$

$$= \frac{\frac{1}{3} \times \frac{18}{(20)^{7}}}{\frac{1}{3} \times \frac{18}{(20)^{7}}} = \frac{18}{18 + 2^{6} + 1} = \frac{18}{83}$$

$$\frac{1}{3} \times \frac{18}{(20)^{7}} + \frac{1}{3} \times \frac{2^{6}}{(20)^{7}} + \frac{1}{3 \times (20)^{7}}$$

$$3 \times (20)^{7}$$

$$3 \times (20)^{7}$$

$$P(\text{die=B}|\text{outcomes}) = \frac{\frac{1}{3} \times \frac{2^{6}}{(20)^{7}}}{\frac{18+2^{6}+1}{3\times(20)^{7}}} = \frac{2^{6}}{18+2^{6}+1} = \frac{2^{6}}{18+2^{6}+1} = \frac{64}{83}$$

$$P(\text{die}=\text{C}|\text{outcomes}) = \frac{\frac{1}{3x(20)^7}}{\frac{18+2^6+1}{3x(20)^7}} = \frac{1}{18+2^6+1} = \frac{1}{83}$$

3)
$$P(x) = p(x|A)p(A) + P(x|B)p(B)$$

$$P(A)$$
 $P(B)$
 $P(X|A)$
 $P(X|B)$

$$P(X) = P(X|A) P(A) + P(X|B) P(B) + P(X|C) P(C)$$

