

Qu 6	Scheme	Marks	AO
(a)	[Sum of probs = 1 implies] $\log_{36} a + \log_{36} b + \log_{36} c = 1$	M1	3.1a
	$\Rightarrow \log_{36}(abc) = 1$ so $abc = 36$	A1	3.4
	All probabilities greater than 0 implies each of a , b and $c > 1$	B1	2.2a
	$36 = 2^2 \times 3^2$ (or 3 numbers that multiply to give 36 e.g. 2, 2, 9 etc)	dM1	2.1
(b)	Since a , b and c are distinct must be <u>2, 3, 6</u> (<u>$a = 2, b = 3, c = 6$</u>)	A1	3.2a
		(5)	
	$(\log_{36} a)^2 + (\log_{36} b)^2 + (\log_{36} c)^2$	M1	3.4
	[= 0.0374137... + 0.09398737... + 0.25] = 0.38140... awrt <u>0.381</u>	A1	1.1b
		(2)	
(7 marks)			
Notes			
(a)	1 st M1 for a start to the problem using sum of probabilities leading to eq'n in a , b and c		
NB	1 st A1 for reducing to the equation $abc = 36$ [Must follow from their equation.]		
	Can go straight from $abc = 36$ to the answer for full marks for part (a).		
	B1 for deducing that each value > 1 (may be implied by 3 integers all > 1 in the next line)		
	2 nd dM1 (dep on M1A1) for writing 36 as a product of prime factors <u>or</u> 3 values with product = 36 and none = 1		
SC Ans only	2 nd A1 for 2, 3 and 6 as a list or $a = 2, b = 3$ and $c = 6$		
	M0M0 If no method marks scored but a correct answer given score: M0A0B1M0A1 (2/5)		
	This gets the SC score of 2/5 [Question says show your working clearly]		
(b)	M1 for a correct expression in terms of a , b and c or values; ft their integers a , b and c Condone invisible brackets if the answer implies they are used.		
	A1 for awrt 0.381		