Q4.

Question	Scheme	Marks	AOs
(a)	Resolve perpendicular to the plane	M1	3.4
	$R = mg\cos\alpha = \frac{4}{5}mg$	A1	1.1b
		(2)	
(b)	Resolve parallel to the plane or horizontally or vertically	M1	3.4
	$F = mg\sin\alpha$ or $R\sin\alpha = F\cos\alpha$	A1	1.1b
	Use $F = \mu R$ and solve for μ	M1	2.1
	$\mu = \frac{3}{4}$*	A1*	2.2a
		(4)	
(c)	The forces acting on Q will still balance as the m's cancel oe Other possibilities: e.g. the friction will increase in the same proportion as the weight component or force down the plane. The force pulling the brick down the plane increases by the same amount as the friction oe This mark can be scored if they do the calculation.	B1	2.4
		(1)	
(d)	Brick Q slides down the plane with **constant** speed.	B1	2.4
	No resultant force down the plane (so no acceleration) oe	B1	2.4
	These marks can be scored if they do the calculation.	(2)	
			(9 marks)

Notes:		
a	M1	Correct no. of terms, condone sin/cos confusion
	A1	cao with no wrong working seen. mgcos36.86 is A0
b	M1	Correct no. of terms, condone sin/cos confusion
	A1	Correct equation
	M1	Must use $F = \mu R$ (not merely state it) to obtain a numerical value for μ. This is an independent M mark.
	A1*	Given answer correctly obtained
c	B1	Must have the 3 underlined phrases/word oe
d	B1	Must say **constant** speed.
	B1	Any appropriate equivalent statement