Question	Scheme	Marks	AOs
1(a)	$93\,\text{m}^2$	B1	3.4
		(1)	
(b)	$40 = 105 - 12\text{e}^{0.08t} \Rightarrow 12\text{e}^{0.08t} = 65$	M1	3.1b
	$\Rightarrow 0.08t = \ln\left(\dfrac{65}{12}\right) \Rightarrow t = ...$	dM1	1.1b
	21.1 days	A1	1.1b
		(3)	
(c)	Substitutes $t = 30$ into $A = 105 - 12\text{e}^{0.08t} \Rightarrow A = ...$	M1	3.4
	$A = -27.3$ and states that Stuart cannot use the model as it gives a negative area	A1	2.4
		(2)	
		(6 marks)	

Notes:

(a)

B1: $93\,\text{m}^2$. This requires the units

(b)

M1: For using the model with $A = 40$ and proceeding to $P\text{e}^{0.08t} = Q$

dM1: For correct use of lns and proceeding to a value for *t*

A1: Accept awrt 21.1 days or $t = 21.1$

(c)

M1: Uses the model in an attempt to find *A* when $t = 30$

A1: Finds $A = -27$ at $t = 30$ and states the area of weed cannot be negative