Question	Scheme	Marks	AOs
4(a)	$I = e^{\int 0.4\,dt} = e^{0.4t} \implies Ve^{0.4t} = \int \cos\left(\frac{t}{2}\right)\,dt$	M1	3.1b
	$Ve^{0.4t} = 2\sin\left(\frac{t}{2}\right) + c$	A1	1.1b
	$V = 10, t = 0 \implies c = 10$	M1	3.4
	$t = 8 \implies V = e^{-0.4\times 8}\left[2\sin\left(\frac{1}{2}\times 8\right) + 10\right]$	M1	1.1b
	Value = £345.92	A1	2.2b
		(5)	
(b)	e.g. Does not take into account any accidents, wear and tear etc e.g. Does not take into account mileage e.g. The value of the car tends to 0 which may be unrealistic	B1	3.5b
		(1)	
		(6 marks)	

Notes:

(a)
M1: A complete method to find the integrating factor and then solve the differential equation
A1: Correct solution in any form
M1: Uses the model and the initial condition to find the constant of integration
M1: Substitutes $t = 8$ and finds a value for V
A1: Correct value of the car in £'s (allow awrt £345 or £346)

(b)
B1: Suggests a valid limitation of the model