Question	Scheme	Marks
For part (a) of this question, mark using the scheme which gives the most marks.		
2 (a)	$A=2 \quad B=1 \quad C=7$	B1B1B1
ALT	$2x^2+4x+9=2\left(x^2+2x\right)+9=2\left[\left(x+1\right)^2-1\right]+9$ $\Rightarrow \mathrm{f}\left(x\right)=2\left(x+1\right)^2+7 \qquad A=2 \quad B=1 \quad C=7$	M1M1 A1 [3]
(b)(i)	-1	B1ft
(ii)	$\frac{1}{7}$	B1ft [2]
		Total 5 marks

Part	Mark	Notes
• **Mark using the B scheme first.** • If not full marks – use the MMA scheme also, if appropriate. • Same score – apply the B marks. • Higher score – apply the marks from the MMA scheme. Allow the candidate to state A, B and C or the values to be embedded within an expression.		
(a) Different marks on ePen	B1	For one of *A, B,* or *C* correct.
	B1	For two of *A, B,* or *C* correct.
	B1	For all of *A, B,* and *C* correct.
ALT	M1	For correctly factorising the given expression to achieve either: $2\left(x^2+2x\right)+9$ or $2\left(x^2+2x+\frac{9}{2}\right)$
	M1	Completes the square correctly, **regardless of any factor on the outside – follow through their factorisation.** $\left(x^2+ax+b\right)$ or $\left(x^2+ax\right)+c \Rightarrow$ ie $\left[\left(x+\frac{a}{2}\right)^2-\left(\frac{a}{2}\right)^2+b\right]$ or $\left[\left(x+\frac{a}{2}\right)^2-\left(\frac{a}{2}\right)^2\right]+c \qquad a,b,c\neq 0$
	A1	For all of A, B and C correct.
Note, the question does not ask students to show working nor preclude the use of a calculator, so if values are simply listed, these can be given marks from the B scheme throughout.		
(b)(i)	B1ft	For the correct value or follow through their $-B$
(ii)	B1ft	For the correct value or follow through their $\frac{1}{C}$
Only if no labelling of (i) and (ii)	SC2	If candidate clearly writes max value of $\frac{1}{7}$ when $x = -1$. Allow ft
	SC1	If candidate clearly writes $\left(-1,\frac{1}{7}\right)$ Allow ft Marked as 1st B1
If no labelling of (i) and (ii) is present for parts (b) – marks may be awarded for the values presented in the correct order. **B0 B0 if not labelled and work doesn't meet this condition.**		