Question number	Scheme	Marks
6 (a)	Mark parts (i) and (ii) together	
	$987 = \frac{21}{2}\left(2\times a+(21-1)d\right)\ \left(\Rightarrow 987 = 21a+210d\right)$	M1
	$35 = a+(8-1)d\ \ \left(\Rightarrow 35 = a+7d\right)$	A1 (M1 on e-PEN
	Solve simultaneous equations, by elimination or substitution $987 = 21a+210d\ \div 21 \Rightarrow 47 = a+10d$ $735 = 21a+147d\ \div 21 \Rightarrow 35 = a+7d\ \Rightarrow a = 7, d = 4$	dM1A1A1 (5)
(b)	$\Rightarrow A = 4$	B1ft
	$7 = 4\times 1+B \Rightarrow B = 3$	M1A1 (3)
(c)	$S_n = \frac{n}{2}\left(2\times 7+(n-1)4\right)$ or $\frac{n}{2}\left(7+\left(4n+3\right)\right)$	M1
	$\frac{n}{2}\left(2\times 7+(n-1)4\right) > 2000 \Rightarrow \frac{n}{2}\left(10+4n\right) > 2000 \Rightarrow 2n^2+5n-2000 > 0$	dM1A1
	$\Rightarrow n = 30.39747..... \Rightarrow n = 31$	ddM1A1 (5) [13]

(a)M1 Attempt an equation using either piece of information
A1 NB: M1 on e-PEN. Two correct unsimplified equations
dM1 Solve the simultaneous equations to obtain a value for either *a* or *d*. Depends on the first M mark.
A1 One correct answer
A1 Both answers correct

(b)
B1ft *A* = their value of *d*
M1 Use $S_n = \sum_{r=1}^{n}\left(Ar+B\right)$ with $n=1$ and their values of *A* and *a* to obtain a value of *B* or with $n=1$ and $n=2$, their *a* and *d* and solve the simultaneous equations for either *A* or *B* or any other complete method.
A1 $B = 3$ (no ft)

(c)
M1 Use either form of the sum of an arithmetic series to obtain an expression for S_n. Formulae used must be correct.
dM1 Set up an inequality or equation with their sum and 2000 and obtain a 3TQ. Depends on the first M mark
A1 Correct 3TQ, terms in any order, can have > or = Can be a multiple of the one shown.
ddM1 Solve by formula or calculator. If formula used, the formula must be correct (can be by implication due to numbers substituted). Negative answer need not be shown. If by calculator award mark by implication if answer is 30.4 or better. Depends on both previous M marks.
A1cao $n = 31$

(c) Solution by trial and error:
M1 As above
Further marks depend on sight of an inequality(dM1) Correct inequality (A1)
Substitution of at least two values of *n* (M1)
n = 31 obtained from correct working.