Topic 12 Simultaneous Equations (Post-TT) [31] MARKSCHEME

1.

trial and improvement is 0

1st-2nd — M1

6y = – 3 allow 1 error eg, 12y = – 3 6y = 3
2 – 3.6y = 5 + 2.4y allow 1 error or
2.4equation(l) + 3.6equation(2)

$y = -0.5$ or $x = 3.8$ — A1

$y = -0.5$ and $x = 3.8$ — Alft

Must have both.
Allow reversed if both seen correct in working
ft if Ml awarded

[3]

2.

$4x - 10y = 18$ $\quad 20x + 15y = 25$
$6x - 15y = 27$ — M1

Allow 1 error on any method for 1st M1

Substitution: eg $y = \frac{5-4x}{3}$

$13y = -13$ $\quad 26x = 52$ — M1 dep

Correct elimination from their equations

Substitution: eg $2x - 5\left(\frac{5-4x}{3}\right) = 9$

$y = -1$ $\quad x = 2$ — A1

$x = 2$ $\quad y = -1$ — B1 ft

ft on a correct given equation
SC1 x = 2, y = –1 no working or trial and improvement

[4]

3.

$3x + 4y = 12$: line passing through $(0, 3)$ and $(4, 0)$ [B2]
$y = 2x - 4$: line passing through $(0, -4)$ and $(2, 0)$ [B2]
Solution is where the lines cross: $x = 2.55$ and $y = 1.1$ [A2] ± 0.1

4.

$15x + 9y = 39$ $\quad 25x + 15y = 65$
$15x + 25y = 15$ $\quad 9x + 15y = 9$ — M1

Allow a total of one error in either 1st or 2nd M mark

$16y = -24$ $\quad 16x = 56$ — M1 dep
$y = -1.5$ $\quad x = 3.5$ — A1

Accept $y = -\frac{24}{16}$ *or* $x = \frac{56}{16}$

$x = 3.5$ $\quad y = -1.5$ — A1

SCI for correct answers with no working or from trial and improvement

[4]

5.

$x = 4.5$ $y = -2.5$	M1 A1 M1 A1	for a correct process to eliminate one variable (condone one arithmetic error) cao for either x or y (dep) for substituting found value into one of the equations or appropriate method after starting again (condone one arithmetic error) cao

6.

(a) $4x + 3y = 33$ B1

Ignore £ signs

(b) $6x + 6y = 57$ B1

Note: $4x + 3y$ and $6x + 6y$ without right hand side... SC1

(c) Equalised coefficients

Lhs correct + attempt to multiply either rhs

$x = 4.5$ M1

$y = 5$ A1ft

$x = 4.5$ and $y = 5$ with no working... SC1

or by trial and improvement SC1

[4]

7.

Pen £2.50 Notebook £4	**5** 1 AO1.2 1 AO2.3b 2 AO3.1d 1 AO3.3	**M2** for both equations correct Or **M1** for $5p + 8n = 44.50$ or $10p + 3n = 37$ AND **M1** for scaling one/both equations **M1** for correct method to eliminate 1 variable, allow 1 arithmetic error	For method marks, condone use of 4450 and 3700 and use of any consistent variables Answers 250 and 400 imply **M4**