Q1.   (a)   Expand and simplify $(y + 2)(y + 3)$

....

(2)

(b)   Simplify $\dfrac{3(x - 2)}{x^2 - 7x + 10}$

....

(2)
(Total 4 marks)

Q2.   (a)   Simplify m^0

....

(1)

(b)   Simplify $(2x^6 y^{-1})^3$

....

(2)
(Total 3 marks)

Q3.   (a)   Simplify $4b \times 2c$

....

(1)

(b)   Expand $3(2w - 5t)$

....

(2)

(c)   Expand and simplify $(x + 7)(x - 2)$

....

(2)
(Total 5 marks)

Q4.   (a)   Expand $3(x + 2)$

....

(2)

(b)   Factorise completely $12x^3y - 18xy^2$

....

(2)

(c)   Expand and simplify $(2x - 3)(x + 4)$

....

(2)

(d)   Simplify $5x^4y^3 \times 2x^3y^2$

....

(2)
(Total 8 marks)

Q5.   (a)   Simplify

(i) $a^5 \div a^3$

....

(ii) $2x^2 \times 3x^2y^2$

....

(3)

(b)   Expand and simplify $(x + 3)(x + 7)$

....

(2)

(c)   Factorise fully $3pq - 12p^2$

....

(2)

(d)   (i)   Factorise $3y^2 - 10y + 3$

....

Hence, or otherwise

(ii)   Factorise $3(x + 2)^2 - 10(x + 2) + 3$

....

(4)
(Total 11 marks)

M1.

	Working	**Answer**	**Mark**	**Additional Guidance**
(a)	$y^2 + 3y + 2y + 6$	$y^2 + 5y + 6$	2	**M1** for 3 terms out of y^2, $3y$, $2y$, 6 or $y^2 + 5y$ ($+ c$) or $(dy^2 +)5y + 6$ **A1** for $y^2 + 5y + 6$
(b)	$\dfrac{3(x-2)}{(x-2)(x-5)}$	$\dfrac{3}{x-5}$	2	**M1** for $(x \pm 2)(x \pm 5)$ **A1** cao
				Total for Question: 4 marks

M2.

	Answer	**Mark**	**Additional Guidance**
(a)	1	1	**B1** cao
(b)	$8x^{18}y^{-3}$	2	**M1** for $2^3x^{3\times6}y^{3\times-1}$ **or** $8x^{18}y^k$ ($k \neq 0$) **Or** $8x^ky^{-3}(k \neq 0)$ **or** $kx^{18}y^{-3}(k \neq 0, k \neq 1)$ or $2x^6y^{-1} \times 2x^6y^{-1} \times 2x^6y^{-1}$ **A1** cao
			Total for Question: 3 marks

M3.

	Working	Answer	Mark	Additional Guidance
(a)		$8bc$	1	**B1** cao
(b)		$6w - 15t$	2	**M1** for $3 \times 2w - 3 \times 5t$ or $6w$ or $-15t$ **A1** cao
(c)	$x^2 + -2x + 7x - 14$	$x^2 + 5x - 14$	2	**M1** for all 4 terms correct with or without signs **or** 3 out of no more than four terms correct with signs **or** $x(x - 2) + 7(x - 2)$ **or** $x(x + 7) - 2(x + 7)$ **A1** cao
				Total for Question: 5 marks

M4.

	Working	Answer	Mark	Additional Guidance
(a)		$3x + 6$	2	**M1** for attempted expansion of the bracket eg $3 \times x$ and 3×2 seen or $3x + k$ or $kx + 6$ **A1** for $3x + 6$
(b)		$6xy(2x^2 - 3y)$	2	**M1** or $6xy$ (two terms involving x and/or y) or correct partial factorisation by taking out two from 6 (or 3 or 2) or x or y **A1** cao
(c)	$2x^2 + 8x - 3x - 12$	$2x^2 + 5x - 12$	2	**M1** for 3 out of 4 correct terms with correct signs, or all 4 terms ignoring signs **A1** cao
(d)		$10x^7y^5$	2	**B2** for $10x^7y^5$ (**B1** for product of two of 5×2 oe, x^{4+3}, y^{3+2} ignore $\times$ signs)
				Total for Question: 8 marks

M5.

	Working	Answer	Mark	Additional Guidance
(a)		a^2	3	**B1** cao
		$6x^4y^3$		**B2** $6x^4y^3$
				(B1 for 2 out of 3 terms correct in a product)
(b)	$x^2 + 3x + 7x + 21$	$x^2 + 10x + 21$	2	**M1** 3 or 4 terms out of 4 correct in a 4 term expansion
				A1 cao
(c)		$3p(q - 4p)$	2	**B2** cao
				(B1 $p(3q - 12p)$, $12p(\frac{1}{4}q - p)$, $p(aq + bp)$ where a and b are numbers)
(d)(i)	$(3(x + 2) - 1)(x + 2 - 3)$	$(3y - 1)(y - 3)$	4	**B2** cao (B1 $(3y - m)(y - n)$ where $mn = \pm 3$ or $m + n = \pm 10$
(ii)	**OR** $3x^2 + 12x + 12 - 10x - 20 + 3$ $= 3x^2 + 2x - 5$	$(3x + 5)(x - 1)$		**M1** use of the factorised form with y replaced twice by $3x + 2$ **A1** cao **OR** **B1** $3x^2 + 2x - 5$ **B1** cao
				Total for Question: 11 marks

E1.   A variety of methods were used by candidates when answering the first part of the question. Almost 80% of answers seen gained at least one mark for writing down 3 or more correct terms in the expansion. A common error from those who did not score full marks for this part of the question was to add rather than multiply the constant terms. In part (b) partial credit was given to candidates who made a good attempt at factorising the denominator of the fraction. Some candidates multiplied out the numerator and tried to factorise the denominator (sometimes successfully) and hence failed to simplify the fraction. Clearly, for some candidates this material was unfamiliar territory. About one quarter of candidates completed this part successfully.

##

In part (a) m and 0 were commonly seen. In part (b) it was often the numerical part of the expression which caused difficulties with common incorrect answers including $6x^{18}y^{-3}$ and $2 \times 18y^{-3}$ along with a variety of incorrectly executed powers. A number added rather than multiply.

##

Part A was successfully answered with the most common error caused by an arithmetical slip with the numerical terms 4 and 2 most notably leading to $6bc$ rather than $8bc$. Part (b) was generally well done. The main errors involved combining $6w$ and $-15t$ terms to give $-9wt$ or writing $6w - 5t$ on the answer line even if $6w - 15t$ was seen in the working space.

Most candidates were able to score at least 1 mark on part (c). Clear working was often presented in a grid or table and this helped ensure that candidates found all 4 terms. Errors occurred dealing with the $-2x$ term when simplifying and $-2x + 5x$ led to either or $9x$ or $-5x$.

##

Multiplying the first term in the bracket only and leaving the second unchanged, ie $3x + 2$, was the most common incorrect answer and $3x + 5$ was often seen. A few did not score the final accuracy mark by continuing to 'simplify' their final answer, writing $3x + 6 = 9x$. Very few answers reflected no understanding of the algebra involved.

In part (b) most students found some common factors and divided well. Candidates need to ensure that they find the highest common factor, particularly for the number part of each term. They need to look at the terms left in the bracket to see if anything is still a factor. Candidates should be encouraged to check their answer by expanding as answers

such as $6xy(2x^2 - 3xy)$ were occasionally seen.

In part (c) This question was well answered with a majority of candidates familiar with the need to find four terms and many also correctly dealing with the signs and simplification of the answer. 43% of candidates could expand and simplify correctly with a further 24% able to provide 4 correct terms (ignoring the signs) or 3 correct terms with the correct signs. The most common errors were incorrect signs, incorrect product of $2x$ and x, an incorrect simplification of $-3x + 8x$ or a constant term of +1 In part (d) it was pleasing to see that nearly 60% of the candidates obtained the correct answer with a further 12% scoring one mark for obtaining 2 correct parts of the expression $10x^7y^5$. The most common error was to add the coefficients with 7 x^7y^5 frequently seen. Others left multiplication signs in their answer or occasionally an addition sign.