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1

(b) Factorise fully $8p^2 - 2p$

$$8p^2 = 4 \times 2 \times p \times p$$
$$2p = 2 \times p$$

$$2p(4p - 1)$$

.....
(2)



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1

(b) Factorise fully $15b^5c - 35b^3c^9$

$$15b^5c = 5 \times 3 \times b \times b \times b \times b \times b \times c$$

$$35b^3c^9 = 5 \times 7 \times b \times b \times b \times c \times c$$

$$5b^3c(3b^2 - 7c^8)$$

(2)



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You must write down all the stages in your working.

- 1 (a) Factorise fully $4p + 6pq$

$$4p = 2 \times 2 \times p$$
$$6pq = 2 \times 3 \times p \times q$$
$$2p(2 + 3q)$$

(2)



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1

(c) Factorise fully $18e^2f^3 - 12e^3f$

$$18e^2f^3 = 6 \times 3 \times e \times e \times f \times f \times f$$

$$12e^3f = 6 \times 2 \times e \times e \times e \times f$$

$$6e^2f(3f^2 - 2e)$$

(2)



P 5 4 6 9 5 A 0 3 2 4

3

Turn over ►

2 (a) Factorise fully $12pq - 18p$

$$12pq = 6 \times 2 \times p \times q$$
$$18p = 6 \times 3 \times p$$

$$6p(2q - 3)$$

(2)

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3

(d) Factorise fully $16c^4p^2 + 20cp^3$

$$16c^4p^2 = 4 \times 4 \times c \times c \times c \times c \times p \times p$$
$$20cp^3 = 5 \times 4 \times c \times p \times p \times p$$

$$4cp^2(4c^3 + 5p)$$

(2)

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6



3

(b) Factorise fully $9ef - 12f$

$$9ef = 3 \times 3 \times e \times f$$

$$12f = 3 \times 4 \times f$$

$$3f(3e - 4)$$

(2)

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4



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4

(c) Factorise fully $28y^2 - 21y$

$$28y^2 = 7 \times 4 \times y \times y$$
$$21y = 7 \times 3 \times y$$

$$7y(4y - 3)$$

.....
(2)



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5 (a) Factorise fully $15y^4 + 20uy^3$

$$15y^4 = 5 \times 3 \times y \times y \times y \times y$$
$$20uy^3 = 5 \times 4 \times u \times y \times y \times y$$
$$5y^3(3y + 4u)$$

.....
(2)



6

(d) Factorise fully $20x^5y + 12x^3y^4$

$$20x^5y = 4 \times 5 \times x \times x \times x \times x \times x \times y$$

$$12x^3y^4 = 4 \times 3 \times x \times x \times x \times y \times y \times y \times y$$

$$4x^3y(5x^2 + 3y^3)$$

(2)

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8



6

(d) Factorise fully $10c^3d^2 + 15cd^4$

$$10c^3d^2 = 5 \times 2 \times c \times c \times c \times d \times d$$
$$15cd^4 = 5 \times 3 \times c \times d \times d \times d \times d$$

$$5cd^2(2c^2 + 3d^2)$$

(2)

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7

(b) Factorise fully $5y + 20y^2$

$$5y = 5 \times y$$
$$20y^2 = 5 \times 4 \times y \times y$$

$$5y(1 + 4y)$$

(2)

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7

(b) Factorise fully $16m^3g^3 + 24m^2g^5$

$$16m^3g^3 = 8 \times 2 \times m \times m \times m \times g \times g \times g$$

$$24m^2g^5 = 8 \times 3 \times m \times m \times g \times g \times g \times g \times g$$

$$8m^2g^3 (2m + 3g^2)$$

(2)

(c) (i) Factorise $y^2 - 2y - 48$

$$\begin{array}{r|l} 48 & \\ 1 & 48 \\ 2 & 24 \\ 3 & 8 \\ 4 & 6 \end{array} \quad +4 - 6 = -2$$

$$(y + 4)(y - 6)$$

(2)

(ii) Hence, solve $y^2 - 2y - 48 = 0$

$$y + 4 = 0 \quad y - 6 = 0$$

$$y = -4 \quad y = +6$$

(1)

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8 (a) Factorise fully

$$18c^3d^2 - 21c^2$$

$$18c^3d^2 = 6 \times 3 \times c \times c \times c \times d \times d$$

$$21c^2 = 7 \times 3 \times c \times c$$

$$3c^2(6cd^2 - 7) \quad (2)$$

(b) (i) Factorise

$$y^2 - 3y - 18$$

$$\begin{array}{r|l} 18 & \\ \hline 1 & 18 \\ 2 & 9 \\ 3 & 6 \end{array} \quad +3 -6 = -3$$

$$(y+3)(y-6)$$

(2)

(ii) Hence, solve

$$y^2 - 3y - 18 = 0$$

$$y+3=0$$

$$y=-3$$

$$y-6=0$$

$$y=+6$$

(1)

(Total for Question 8 is 5 marks)

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9 (a) Factorise fully $25a^4c^7d + 45a^9c^3h$

$$25a^4c^7d = 5 \times 5 \times a \times a \times a \times a \times c \times d$$

$$45a^9c^3h = 5 \times 9 \times a \times c \times c \times c \times h$$

$$5a^4c^3(5c^4d + 9a^5h)$$

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5 Factorise $x^2 - 5x - 36$

	36	
1	36	
2	18	
3	12	
4	9	+4 - 9 = <u>-5</u>
6	6	

$(x+4)(x-9)$

(Total for Question 5 is 2 marks)



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6

(d) (i) Factorise $x^2 + 9x - 22$

$$\begin{array}{r|l}
 22 & \\
 1 & 22 \\
 \hline
 2 & 11
 \end{array}
 \quad +11 - 2 = +9$$

$$(x + 11)(x - 2)$$

(2)

(ii) Hence solve $x^2 + 9x - 22 = 0$

$$\begin{aligned}
 x + 11 &= 0 \\
 x &= -11
 \end{aligned}$$

$$\begin{aligned}
 x - 2 &= 0 \\
 x &= +2
 \end{aligned}$$

(1)



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6

(c) Factorise $x^2 - 11x + 24$

24		
1	24	
2	12	
3	8	-3 - 8 = -11
4	6	

$$(x - 3)(x - 8)$$

(2)



P 6 6 2 9 8 A 0 7 2 8

7

(b) Factorise $y^2 - 9y + 20$ →

$$\begin{array}{r|l} 20 & \\ 1 & 20 \\ 2 & 10 \\ \hline 4 & 5 \end{array} \quad -4 - 5 = \underline{\underline{-9}}$$

$$(y-4)(y-5)$$

(2)

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9

(c) Factorise fully $14x^2y^4 + 21x^3y^2$

$$14x^2y^4 = 7 \times 2 \times x \times x \times y \times y \times y \times y$$

$$21x^3y^2 = 7 \times 3 \times x \times x \times x \times y \times y$$

$$7x^2y^2(2y^2 + 3x)$$

(2)



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9

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9 (a) Factorise $x^2 - x - 42$

$$\begin{array}{r|l}
 42 & \\
 \hline
 1 & 42 \\
 2 & 21 \\
 3 & 14 \\
 \hline
 6 & 7
 \end{array}
 \quad +6 - 7 = \underline{-1}$$

$$(x+6)(x-7)$$

(2)



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9

(c) Factorise $n^2 - 7n + 12$

$$\begin{array}{r|l}
 12 & \\
 \hline
 1 & 12 \\
 2 & 6 \\
 \hline
 3 & 4
 \end{array}
 \quad -3 - 4 = \underline{\underline{-7}}$$

$$(n-3)(n-4)$$

(2)



P 6 8 7 2 7 A 0 1 1 3 2

10 (a) Factorise $y^2 - 2y - 48$

$$\begin{array}{r|l} 48 & \\ \hline 1 & 48 \\ 2 & 24 \\ 3 & 16 \\ 4 & 12 \\ \hline 6 & 8 \end{array} \quad +6 - 8 = \underline{\underline{-2}}$$

$$(y+6)(y-8)$$

(2)

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11 (a) Factorise $9x^2 - 4y^2$

$$(3x - 2y)(3x + 2y)$$

.....
(2)

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12

(c) Factorise fully $2e^2 - 18$

$$2(e^2 - 9)$$

$$2(e+3)(e-3)$$

.....
(2)

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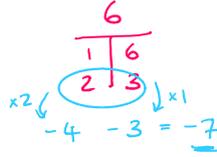


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12 (a) Factorise $2x^2 - 7x + 6$



$$(2x - 3)(x - 2)$$

(2)



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12 (a) Factorise fully $6y^2 - 5y - 4$

$$\begin{array}{c}
 4 \\
 \hline
 1 \quad 4 \\
 \hline
 2 \quad 2 \\
 \hline
 +3 \quad -8 = \underline{\underline{-5}}
 \end{array}$$

$(3x - 4)(2x + 1)$

.....
(2)



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14 Factorise fully $50g^2 - 18$

$$2(25g - 9)$$

$$2(5g + 3)(5g - 3)$$

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(Total for Question 14 is 3 marks)



