



Prifysgol Cymru
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University of Wales
Trinity Saint David

Complete, fold and seal
(see note 2 below)

SURNAME: Evans

FORENAME(S): Elisedd

12 Pages

Instructions to Candidates

1. Please give the information requested in the boxes below.
2. Enter your name in the space provided to the right, fold over and seal down (using the label provided) to hide your name.
3. The answers must be legibly written. The Examiners can either ignore illegible script or have it typed and the expense of typing charged to the candidate.
4. Write your answers in ink.
5. Begin each answer on a fresh page. Do all rough work in the answer book and cross it through.
6. No part of this book is to be torn out; it must be handed in complete.
7. If more books than one are used, fasten them together using the tags available from the invigilator(s).
8. **Every book must be handed in. In no circumstances may answer books, used or unused, be taken out of the examination venue.**

1	Student Number	2204972
2	Title of Examination Paper	Mathematics
3	Module Code	ACDB4003
4	Date and Time of Examination	9:30 AM 12/05/26
5	Examination Venue	Room 310 UWTSD
6	Seat Number	9
7	Number of Answer Books handed in	1

List the numbers of the questions you have attempted	Office Use
1	7
2	2
3	1
4	0
Total	10

$$\frac{10}{100} = 10\%$$

Q1

$$i) \quad 3x + 4y - 7 - 2x - 3y + 2z + x + 4z$$

$$3x - 2x + x = 2x$$

$$4y - 3y = 1y$$

$$-7 + 2z + 4z = -7z$$

$$= 2x + 1y - 7z$$

(2)

$$ii) \quad x(x+4) - (x-3)$$

$$\Rightarrow x^2 + 4x - x + 3$$

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

$$3(x-1)$$

$$\Rightarrow x^2 + 3x + 3$$

$$= 4x^2 - 3 - 1x$$

(0)

$$iii) \quad p^3 q^1 r \times 2 p^1 q^4 \times 4 q^1 r^2$$

$$p = 3+1 = p^4$$

$$2 \times 4 = 8$$

$$q = q^1 + q^4 + q^1 = q^6$$

$$r = r^1 + r^2 = r^3$$

$$= 8 p^4 q^6 r^3$$

(2)

$$iv) \quad \frac{48 p^2 q^3 r}{12 p q r^{-3}} = \frac{48}{12} = 4$$

$$p^{2-1} q^{3-1} r^{1+3}$$

$$= 4 p^1 q^2 r^4$$

(2)

$$v) \quad \frac{f g}{16 h} \times \frac{g h^3}{4 f h} \times \frac{32 f h^5}{f^4} = f^{1+1} g^1 h^{3-5} = f^2 g h^{-2}$$

$$= f^{2+4} h^{1+1} = f^6 h^2$$

$$16 \times 4 = 64 \quad \frac{32}{64} = \frac{1}{2} = f^{2-5} g^1 h^{1+1-2-2}$$

$$= \frac{1}{2} f^{-3} g h^{-4}$$

(1)

Q2

$$i) \quad x^2 + 7x = -12$$

$$x^2 + 7x + 12 = 0$$

$$6 + 6 = 12$$

$$\text{OR } x = -6$$

$$x = 6$$

$$3+4$$

$$? + ? = 12$$

$$? \times ? = 0$$

$$3 \times 4 = 12$$

(1)

ii) $\frac{8(x-3)}{x^1} = \frac{(2x+1)}{3} = \frac{8(x-3)}{8^1} =$
 $\frac{(x-3)}{2} = \frac{(2x+1)}{3} = \frac{(3)(x-3)}{2} = \frac{3(2x+1)}{2}$
 $= 1(x-3) = 2x+1$
 $= 1-3 = x+2x$
 $= -2 = 3x$
 Use larger number
 x6 or cross multiply!

①

Q3

i) $5^{x+1} = 6 =$
 $5^{(\log x + 1)} = 6$
 $\log 5^{x+1} = \log 6$

Take log both sides here!
 $\log 5^{x+1} = \log 6$

$(x+1) \log 5 = \log 6$
 then solve for x

②

ii) $2 \log x = \log(5x-6)$
 $2 \log x = \log 5x - \log 6$
 $\Rightarrow x^2 = 5x - 6$

③

b) i) $\log(x^2 y^2)$ $\log = x$
 $\log = 2y$
 $\log = 2$

④

ii) $\log\left(\frac{y^2 x}{2}\right) = \log(y^2 x) - \log 2$

⑤

Q4

i) $\underline{a} = \underline{i} + 2\underline{j} + 3\underline{k}$ $\underline{b} = \underline{i} + \underline{j} + \underline{k}$

⑥

$2\underline{i} + 2\underline{j} + 3\underline{k}$

$\underline{a} \cdot \underline{b}$ is a scalar!

More Revision needed prior to sitting
examinations!