OXFORD CAMBRIDGE AND RSA EXAMINATIONS

General Certificate of Secondary Education

MATHEMATICS A A503/02

Unit C (Higher)

Specimen Mark Scheme

The maximum mark for this paper is **100**.

This document consists of **6** printed pages and **2** blank pages.

1		10	**3**	**B2** for 9·3 or better **Or M1** for $\frac{2}{3} \times 2 \times 7$
2	(a)	(i) (0,7,3)	**1**	
		(ii) (8,7,3)	**1**	
	(b)	(4,0,3)	**2**	**SC1** for correct 3 values in any order
	(c)	(4,3.5,3) oe	**1**	
3	(a)	All 9 pairs correct	**2**	**B1** for 4 correct pairs Ignore entries in shaded sections
	(b)	(i) Cannot play themselves oe	**1**	
		(ii) Play each other once only	**1**	
4	(a)	1·11(11…) oe	**2**	**B1** for 12·6 ÷ 11·34
	(b)	$\frac{13}{35}$ or 0·371…	**1**	
	(c)	8·169 or 8·17 or 8·2	**2**	**B1** for 66·73 seen
5	(a)	20	**2**	**M1** for 50 ÷ 2·5 oe Condone 2·30 for **M1**
	(b)	BC, steeper line	**1**	
	(c)	Horizontal line to (4,120) Line(s) from *their* (4,120) to (6,0)	**1** **ft1**	By eye May be curve as long as no vertical part
6		Value between 1 and 2 inclusive 1·8 or 1·9 Value between 1·8 and 1·9 1·8	**1** **1** **1** **1**	 Or after 1·8 **and** 1·9 used, mention of closer to 1·8

7 *		Calculates correct amount of interest (AB: 650, MP: 616.77 or 616.78 or 617) or correct total sum (AB: 10 650, MP: 10 616.77 or 10 616.78 or 10 617) for each plan **and** recommends that Brian uses Annual Booster plan as he will earn more money. Well laid-out answer with correct and clear language throughout.	**5**	
		Makes minor errors in calculating amount of interest or total sum for each plan **and** makes a recommendation based on their calculations. Some structure to the calculations or recommendation with minor errors in spelling, punctuation or grammar.	**3-4**	For lower mark – calculates amount of interest or total sum for each plan but makes no recommendation/incorrect recommendation based on their calculations **or** there are a number of errors in spelling, punctuation or grammar.
		Correctly calculates amount of interest or total sum for one plan, and may or may not make a recommendation. Little structure evident.	**1-2**	For lower mark – attempts to calculate amount of interest or total sum for one plan (working must be seen) and no recommendation made.
		No relevant calculations	**0**	
8		Missing length 1 or 2 soi $5 \times 4 + 4 \times 2$ or $6 \times 4 + 1 \times 4$ or $6 \times 5 - 2 \times 1$ *Their* $28 \times 8{\cdot}99$ $251{\cdot}72$	**1** **M2** **M1** **A1**	**M1** for correct area of one rectangle
9	(a)	$6x + 15$	**2**	**B1** for $6x$ or $+ 15$ seen
	(b)	(i) $\frac{t+50}{7}$	**2**	**M1** for $t + 50 = 7p$ or other correct first step
		(ii) $\frac{y^2}{2}$	**2**	**M1** for $y^2 = 2x$
10		$4{\cdot}9$ to $4{\cdot}95 \times 10^6$	**3**	**M1** for $1{\cdot}4 \times 10^5 \div 28{\cdot}3 \times 1000$ oe **And A1** for 4900000 to 4950000

11	(a)	Correct front elevation including semi-circle radius 4 Correct plan including two dotted 'hidden' lines	**2** **2**	**B1** for 10 by 5 rectangle **B1** for 10 by 3 rectangle
	(b)	3 × 10 × 5 150 (0·5 ×) π × 4^2 × 3 75·4 74·5 to 74·7	**M1** **A1** **M1** **A1** **A1**	Alternative method **Or M1** for 10 × 5 **And M1** for – (0·5 ×) π × 4^2 **And A1** for 24·87 or 24·9 **And M1** for (24·87 or 24·9) × 3 **And A1** for 74·5 to 74·7
12	(a)	0, 15, 75, 120	**2**	**B1** for two values correct
	(b)	8 points correctly plotted Curve through *their* points	**2** **1**	**B1** for 4 points correctly plotted $\pm\frac{1}{2}$ sm sq. $\pm\frac{1}{2}$ small square
	(c)	275 to 287	**1**	
	(d)	35·5 to 37	**2**	**M1** for reading from 100 feet
13	(a)	(i) $4x(x - 5)$	**2**	**M1** for 4 $(x^2 - 5x)$ or $x(4x - 20)$
		(ii) $(x - 5)(x + 5)$	**1**	
	(b)	$6x^2 + 5x - 4$	**3**	**B1** for each of $6x^2$, $5x$, -4
14		44 325	**4**	**M2** for 35 460 ÷ 0·4 **Or M1** for 40% of pay = 35 460 **And A1** for 88 650
15		147·8° to 148°	**3**	**M2** for 385 × sin19 ÷ sin122 **Or M1** for $\frac{x}{\sin 19} = \frac{385}{\sin 122}$
16		$3x + 2(x^2 - 2x + 3) = 7$ $2x^2 - x - 1 = 0$ $(2x + 1)(x - 1)$ $x = 1$ and $x = -\frac{1}{2}$ oe $y = 2$ $y = 4\frac{1}{4}$ oe $(1, 2)$ and $(-\frac{1}{2}, 4\frac{1}{4})$	**M1** **A1** **FTM2** **B1** **B1** **B1** **B1**	oe method to eliminate one variable or $4y^2 - 25y + 34 = 0$ oe of these terms or $(4y - 17)(y - 2)$ or factorisation for their trinomial **or M1** for $(2x \pm 1)(x \pm 1)$ or for $(4y \pm 17)(y \pm 2)$ or ft "correct", wrong signs Last four marks are independent of any previous method

17		$\pi \times 5^2 \times 18$ $\frac{4}{3} \times \pi \times 2^3$ *their* 1413·7 ÷ *their* 33·5 42·(…) 42	**1** **1** **M1** **A1** **1**	soi by 1413·7 soi by 33·5
18	(a)	$\frac{27}{60}$ oe	**4**	**M1** for $\frac{2}{5}\times\frac{2}{3}\times\frac{3}{4}$ **And M1** for $\frac{3}{5}\times\frac{1}{3}\times\frac{3}{4}$ **And M1** for $\frac{3}{5}\times\frac{2}{3}\times\frac{1}{4}$ After 0 scored **SC1** for sight of two of $\frac{3}{5},\frac{2}{3},\frac{3}{4}$
	(b)	$\frac{12}{60}$ oe	**3**	**M2** for $\frac{3}{5}\times\frac{1}{3}$ **Or M1** for $\frac{3}{5}\times\frac{1}{3}\times\frac{1}{4}$ **And M1** for $\frac{3}{5}\times\frac{1}{3}\times\frac{3}{4}$
19		Using $\frac{2\times'60'}{'12'}$ soi $\frac{2\times65}{11.5}$ oe 11.3 $\frac{2\times55}{12.5}$ oe 8.8	**M1** **M1** **A1** **M1** **A1**	

Assessment Objectives and Functional Elements Grid

GCSE MATHEMATICS A

A503/02: Unit C (Higher)

Qn	Topic	AO1	AO2	AO3	Functional
1	Fractions			3	3
2	3-D coordinates	2	3		
3	Listing		4		2
4	Calculator work	5			
5	Dist/time graph		3	2	
6	Trial and improvement	4			
7	Repeated percentage change			5	5
8	Compound area		5		5
9	Expand brackets, Rearrange formula	6			
10	Standard form			3	
11	Views. Volume	4		5	
12	Quadratic graph	6		2	2
13	Factorise, Expand brackets	6			
14	Reverse percentages		4		4
15	Sine rule	3			
16	Line and curve	8			
17	Cylinder and sphere			5	
18	Probability		7		
19	Bounds	5			
	TOTAL	49	26	25	21

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