June 2004

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK: 70
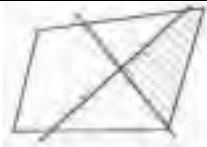
SYLLABUS/COMPONENT: 0580/02, 0581/02

MATHEMATICS

Paper 2 (Extended)

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Question Number		Mark Scheme		Notes
1		3h 20m	1	
2		10.9	1	
3		$0.5^3 < 0.5^2 < \sqrt{0.5}$	2*	**M1** for 0.25, 0.7.... and 0.125 seen matched
4		$\frac{1}{2}p^{20}$	2	**B1** $\frac{1}{2}$ or p^{20}
5		24	2*	**M1** $x/4 = 6$ or $x - 32 = -8$ seen
6		6375 6385	1, 1	**B1** correct but reversed
7		7	2*	**B1** for one of -7/8, -1/8, -14/16, -2/16, -0.875, -0.125
8	(a)	4	1	
	(b)	4	1	Not 90 or $\frac{1}{4}$ turn
9		450	2*	**M1** for 3000 x 7.5 x 2/100
10	(a)	80000	1	8×10^4
	(b)	8×10^4	1 √	
11		$x = 8$ $y = 1$	3*	**M1** double and add/subtract consistently **A1** **A1 or M1** rearrange and substitute correctly
12		50, 5, 3	1, 1, 1	
13		$\sqrt{\left(\frac{c-e}{k}\right)}$	3*	**R1**, **R1** for any 2 correct steps moving e, k or $\sqrt{}$ Allow $d^2 = (c - e)/k$ to score **R2** as a single step
14	(a)		1	Arc must not continue outside rectangle. Radius of arc 4 cm $\pm$ 1 mm. Ignore shading
	(b)	12.6	2*	**M1** for $\frac{1}{4}$ x π x 4^2
15		4	3*	**M1** Area factor or ratio 9 **M1** LSF 3
16	(a)	$a + c$	1	
	(b)	$a - c$ or $-c + a$	1	
	(c)	$-\frac{1}{2}a - \frac{1}{2}c$ or $-\frac{1}{2}(a + c)$	2*	**M1 A0** for answers simplifying to these seen
17			2* 2* 1	**M1 2** arcs centre B and D, line drawn **A1** **M1** construction arcs on AD and CD and centre these for the bisector, line drawn **A1** Dependent on at least 1 + 1 in part **(a)** **SC1**, **SC1** If accurate and no construction arcs
18	(a)	114	2*	**M1** $78^2 + 83^2$
	(b)	(0)47 cao	3*	**M1** for finding one angle by trigonometry correctly **M1** for clearly identifying bearing angle Scale drawing and answers with no working score zero
19	(a)	11	1	
	(b)	$x + 2$	2*	**M1** $\frac{2(x+1)}{2} + 1$
	(c)	3	2*	**M1** for explicit $g(1)$ or $g^{-1}(x) = \frac{x-1}{2}$
20	(a)	$3(2x - y)(2x + y)$	2	**B1** $(6x - 3y)(2x + y)$ o.e.
	(b)	**(i)** $x^2 - 6x + 9$	2*	**M1** correct method
		(ii) $p = 3$ $q = 1$	2	**B1**, **B1**

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21	(a)	1.8	2	**M1** convincing gradient calculation or use of $a = (v - u)/t$
	(b)	450	2*	**M1** for 20 x 18 + $\frac{1}{2}$ x 10 x 18
	(c)	13	3*	**M1** for finding total area under graph ((**b**) + 135) dep **M1** for ÷ 45 If the vertical scale is consistently misread then **M4 A0** is available
22	(a)	BA or **(iii)**	2*	**M1** checking order of all 4 matrices correctly
	(b)	$\begin{pmatrix} 38 & 0 \\ 0 & 38 \end{pmatrix}$	2	**M1** either column or row correct
	(c)	$\frac{1}{38}\begin{pmatrix} 4 & 6 \\ 5 & -2 \end{pmatrix}$ or $\begin{pmatrix} 4/38 & 6/38 \\ 5/38 & -2/38 \end{pmatrix}$	1	$\begin{pmatrix} 2/19 & 3/19 \\ 5/38 & -1/19 \end{pmatrix}$ or $\begin{pmatrix} 0.105 & 0.158 \\ 0.132 & -0.0526 \end{pmatrix}$
		TOTAL	70	