CAMBRIDGE
INTERNATIONAL EXAMINATIONS

November 2003

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK: 70

SYLLABUS/COMPONENT: 0580/02, 0581/02

MATHEMATICS

Paper 2 (Extended)

UNIVERSITY of CAMBRIDGE
Local Examinations Syndicate

Page 1	Mark Scheme	Syllabus	Paper
	IGCSE EXAMINATIONS – NOVEMBER 2003	0580/0581	2

* indicates that it is necessary to look in the working following a wrong answer

1	0.5 or $\frac{1}{2}$ c.a.o.	1	
2	(-)4504	1	Allow (-)4500
3	**(a)** 121 **(b)** $(n + 1)^2$	1 1	Allow 49, 64, 81, 100, 121 $n^2 + 2n + 1$
4	3/2500, 1/8, 0.00126	2*	**M1** for all 3 evaluated as decimals (or fractions or percentages or stand. form) **SC1** reversed order
5	**(a)** -1, $\sqrt{36}$ (b) $\sqrt{2}$ **,** $\sqrt{30}$	1 1	Allow –1, ± 6 **SC1 (a)** –1 **and (b)** $\sqrt{36}$ **,** $\sqrt{2}$ **,** $\sqrt{30}$
6	l = mr/5	2*	**M1** for $\frac{240 \times r \times m}{100 \ (\times 12)}$ o.e.
7	66.7	2	**M1** for $\frac{2.4}{3.6} \times 100$ o.e.
8	**(a)** -1 **(b)** 5k	1 1	
9	**(a)** 32000 **(b)** 25450 25550	1 1, 1	**SC1** both correct and reversed
10	11.5(2)	3*	**M1** $F = kv^2$ **M1** $k = 18/40^2$ or better
11	**(a)** 3110 **(b)** 322	2* 1 √	**M1** for 1936 ÷ 0.623 or 1936 x 1.61 Allow 3107.54, 3107.5, 3108 or 3107.3 **SC1** 3107 1000000 ÷ **(a)**
12	**(a)** 45, 225 **(b)** 157.5	1, 1 1	Allow 158
13	**(a)** 5.5 or 5½ **(b)** 21.5	1 2*	**M1** 172 ÷ 8
14	**(a)** $\frac{x+3}{x(x+1)}$ **(b)** -3	3* 1 √	**M1** $3(x + 1) - 2x$ **M1** denominator $x(x + 1)$

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15	**(a)** angle bisector of angle P **(b)** radius from T or U	2* 2*	**M1** correct construction method **A1**$\pm 1^o$ **SC1** for accurate line but no arcs **M1** radius drawn, meets **(a)** and O labelled. **A1**$\pm 1^o$
16	**(a)** A(2,0) B(0,-6) **(b)** 6.32 **(c)** (1,-3)	1, 1 2* 1 √	**SC1** correct and reversed **M1** (AB^2) = "$(0-2)$"^{2} + "$(-6-0)$"^{2} from **(a)**
17	**(a)** 20 **(b)** 98 **(c)** 62 **(d)** 124 **(e)** 36	1 1 1 1 1 √	**(b) – (c)**
18	**(a)** 5.8×10^8 **(b)** 98 **(c)** 10200	1 2* 2*	 **M1** figs 58 ÷ figs 59 or figs 9830508 **M1** figs 59 ÷ figs 58 x 10^n or $\frac{1}{\textbf{(b)}} \times 10^n$ n = 3 or 6
19	**(a)** -6 **(b)** **(i)** 0.4 **(ii)** (0.4, 0.2)	2 2 1	**M1** 1 – 2(7/2) **M1** $\frac{5x}{2}$ o.e., 2 - 4x = x or better
20	**(a)** **(i)** $-\frac{2}{3}\mathbf{p} + \mathbf{q}$ **(ii)** $-\frac{3}{4}\mathbf{q} + \mathbf{p}$ **(b)** $\frac{1}{3}\mathbf{p} - \frac{1}{2}\mathbf{q}$	2* 2* 2*	**M1** use of **AQ** = $\pm\frac{2}{3}\mathbf{p} \pm \mathbf{q}$ or **AO** + **OQ** **M1** use of **BQ** = $\pm\frac{3}{4}\mathbf{q} \pm \mathbf{p}$ or **BO** + **OP** **M1** $-\frac{1}{4}\mathbf{q} + \frac{1}{3}\mathbf{BP}$
21	**(a)** $60x + 80y \leq 1200$ seen **(b)** $x \geq y$ **(c)** line y = x line through (20,0) and (0,15) shading out or R labelled **(d)** 20 c.a.o.	1 1 1 2* 1 1	Allow $0.6x + 0.8y \leq 12$ **M1** intention **A1** accurate Dep. on both lines Allow 20, 0 or 20 + 0

Total 70

TOTAL MARKS 70

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