CAMBRIDGE
INTERNATIONAL EXAMINATIONS

NOVEMBER 2002

INTERNATIONAL GCSE

MARK SCHEME

MAXIMUM MARK : 70

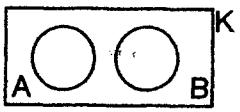
SYLLABUS/COMPONENT : 0580/2; 0581/2

MATHEMATICS

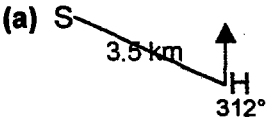
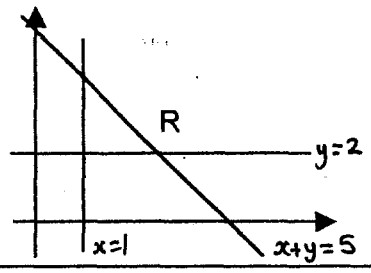
(EXTENDED)

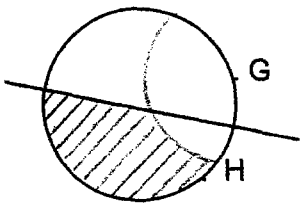
UNIVERSITY of CAMBRIDGE
Local Examinations Syndicate

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

1	**(a)** 4 **(b)** 4.5	1 1	Allow – 4 Allow – 4.5
2	25.8	2*	**M1** for $\frac{16}{62} \times 100$ or $100 - \frac{46}{62} \times 100$
3		2	**B1** for A,B disjoint **B1** for A,B subsets of K

4	512.82 cao	2*	**M1** 500 ÷ 0.975 or 500 × 1.026
5	$\frac{1}{1000}$, 0.11%, 0.0108, $\frac{11}{1000}$	2*	**M1** for conversions into decimals, percentages, SIF or fractions with identical denominators
6	$\frac{-2x^2}{5-x}$	2*	**M1** 2x(5 – x) – 10x or better, brackets essential
7	**(a)** 1/9 **(b)** 1⅓	1 2*	Allow 0.1recurring only **M1** for 16/9 Allow 4/3 or 1.3 recurring only If no marks scored allow **SC1** for 0.111 and 1.33
8	100 cao	3*	**B1** for 385 or 3.85 seen **M1** a distance ÷ a speed
9	**(a)**  **(b)** rectangle	2 1√	**B1** poor quality rectangle must be a quadrilateral
10	**(a)** 8 **(b)** 7.5 **(c)** 6.5	1 1 1	
11	$4.\underline{0} \times 10^7$	3*	**M1** $2 \times \pi \times 6.4 \times 10^6$ **SC1** 2.0×10^7 4.0×10^k, 4.02×10^7, 4×10^7 score **M1A1A0**
12	**(a)** 71° **(b)** 168°	1 2√	**B1** 720 or **M1** for ½("their 720" - 313 – (a)) **M1 A1** √ for ½(**407** – (a))

13	**(a)** 1.6 **(b)** 19	1 2*	Allow – 1.6 **M1** for attempting to find the area under the graph
14	**(a)** 80° **(b)** 67° **(c)** 12°	1 1√ 1√	 147 – (a) 79 – (b)
15	x = 1/4 y = -1/5	4*	**M1** multiplication **M1** add or subtract **A1 A1** or **M1** rearrange **M1** correct substitution
16	**(a)**  **(b)** 2.34	2 2*	-1 each item missing or wrong including the size of the angle (S and H interchanged is one error) **M1** sin 42 = d/3.5 or cos 48 = d/3.5
17		3 1√	**B1** x = 1 **B1** y = 2 **B1** x + y = 5 **B1** R correctly placed for their lines but **B0** if the line x + 5 = 5 is drawn with a positive gradient

18		4	**B1** arc radius 5cm ± 1mm **B1** perp. bisector, dep **B1** with arcs, each correct by eye. **B1** √ shading for a line between G and H and the arc, with boundaries complete
19	**(a)** x < 4.91 **(b)** (0),1,2,3,4	3* 1√	**M1** for 9/2 oe **M1** for 11x/12 www can be implied by 4.9(1) or 54/11 or **M1** multiples of 60 – 8x > 6 + 3x **M1** 11x < 54 if possible

20	**(a)** $f^{-1}(x) = \frac{x+1}{2}$ **(b)** $gf(x) = 4x^2 - 4x$ *oe*	2 2*	 **M1** for $(2x-1)^2 - 1$
21	**(a)** $\begin{pmatrix} -2 & 1 \\ -1 & -1 \end{pmatrix}$ **(b)** $\frac{1}{3}\begin{pmatrix} 1 & 1 \\ -1 & 2 \end{pmatrix}$	2* 3*	-1 eeo or **M1** for subtracting from zero matrix **B1** for each diagonal of the adjoint matrix **B1** for division by 3 or **M1** for $2a - c = 1$ and $a + c = 0$ (or similar) **A1** each column
22	**(a)** 5 **(b)** 133°	2* 3*	**M1** for $\sqrt{(3^2 + 4^2)}$ **B1** for bisecting isosceles triangle **M1** for sin x = 2.75/3 or **M1** $5.5^2 = 3^2 + 3^2 - 2\times3\times3\cos A$ **M1** cos A = - 12.(25)/18
	TOTAL	70	