

## UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

### MARK SCHEME for the May/June 2006 question paper

#### **0580 and 0581 MATHEMATICS**

**0580/02 and 0581/02** Paper 2, maximum raw mark 70

These mark schemes are published as an aid to teachers and students, to indicate the requirements of the examination. They show the basis on which Examiners were initially instructed to award marks. They do not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

The minimum marks in these components needed for various grades were previously published with these mark schemes, but are now instead included in the Report on the Examination for this session.

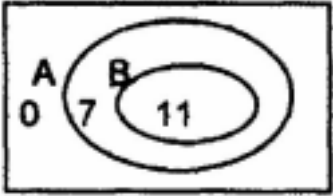
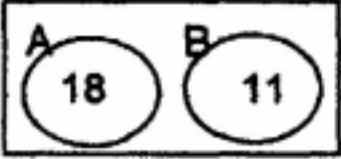
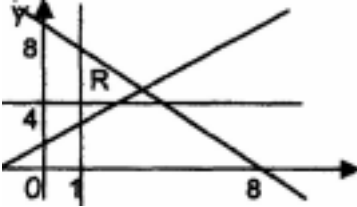
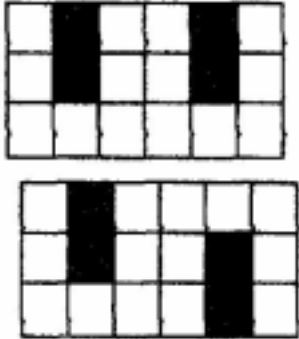
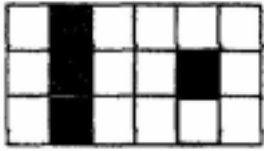
- CIE will not enter into discussion or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the May/June 2006 question papers for most IGCSE and GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

| Page 1 | Mark Scheme           | Syllabus      | Paper |
|--------|-----------------------|---------------|-------|
|        | IGCSE – May/June 2006 | 0580 and 0581 | 02    |

|    |     |  |       |  |
|----|-----|--|-------|--|
| 1  |     | 4.496 x 10 <sup>9</sup>                            | 1     |  |
| 2  |     | 97 cao   | 1     |  |
| 3  | (a) | (-)-590  | 1     |  |
|    | (b) | Neptune  | 1     |  |
| 4  |     | 1.73   | 2*    | Allow $\sqrt{3}$ M1 for 1.15.... or 0.666....  |
| 5  |     | 21.3   | 2*    | M1 $\frac{1}{2} \times 8 \times 12 \times \sin 26.4$ oe                                |
| 6  |     | $\frac{x+5}{x(x+1)}$                               | 2*    | M1 $5(x+1) - 4x$ or better   |
| 7  |     | 20   | 2*    | M1 $2.5 \div 0.125$ oe   |
| 8  |     | $1/\sqrt{2}$ , $\sin 47$ , $\frac{3}{4}$ , $\pi/4$ | 2*    | M1 for correct conversion to decimals<br>0.78(53..) 0.70(71...) 0.75 0.73(13..)        |
| 9  |     | 75000 76200  | 2*    | B1 B1 or M1 6250, 6350 seen  |
| 10 | (a) | $4 + 1\frac{1}{2}n$                                | 2*    | B1 for 4 B1 for $1\frac{1}{2}n$ o.e  |
|    | (b) | 154  | 1 f.t |  |
| 11 | (a) | 13 cao   | 1     |  |
|    | (b) | -4   | 2*    | M1 $3x/4 + 3 = 0$ or $x = x/4 - 3$ or $4(x+3) = x$ or<br>$1 + 3/x = 1/4$ or better WWW |
| 12 |     | $x=10$ $y=3$                                       | 3*    | M1 Multiplying and subtracting consistently<br>or M1 rearrange and substitute          |
| 13 |     | $x = -5.2$   | 3*    | M1 any two steps completed correctly<br>M1 any other two steps completed correctly     |
| 14 | (a) | 55, 40   | 2     | B1 B1  |
|    | (b) | $\frac{16}{25}$                                    | 1     |  |
| 15 | (a) | $500 + 170x$                                       | 1     |  |
|    | (b) | 11   | 2*    | M1 their part (a) = 2370   |
| 16 | (a) | 6000   | 2*    | M1 $7200 \div 1.2$ oe  |
|    | (b) | 12.5   | 2*    | M1 $(8100 - 7200) \div 7200$ oe  |

|        |                       |               |       |
|--------|-----------------------|---------------|-------|
| Page 2 | Mark Scheme           | Syllabus      | Paper |
|        | IGCSE – May/June 2006 | 0580 and 0581 | 02    |

|    |     |   |                         |  |
|----|-----|---|-------------------------|--|
| 17 | (a) |    | 2                       | B1 numbers<br>B1 labels  |
|    | (b) |    | 2                       | B1 numbers<br>B1 labels<br>Allow 0 in an intersection of A and B                               |
| 18 |     | $w = 30$ $x = 22$<br>$y = 30$<br>$z = 52$   | 1,1<br>1 f.t.<br>1 f.t. | $y = w$<br>$w + 22$  |
| 19 | (a) | $(2x - 3)(2x + 3)$  | 1                       |  |
|    | (b) | $x(4x - 9)$   | 1                       |  |
|    | (c) | $(4x - 1)(x - 2)$   | 2                       |  |
| 20 | (a) | $m = -1$ $c = 8$  | 1,1                     |  |
|    | (b) |  | 2*                      |  |
| 21 | (a) |  | 1<br><br>1              | or<br><br> |
|    | (b) | plane of symmetry   | 1                       |  |
|    | (c) | 3   | 1                       |  |

|               |                              |                      |              |
|---------------|------------------------------|----------------------|--------------|
| <b>Page 3</b> | <b>Mark Scheme</b>           | <b>Syllabus</b>      | <b>Paper</b> |
|               | <b>IGCSE – May/June 2006</b> | <b>0580 and 0581</b> | <b>02</b>    |

|           |            |  |                                |   |
|-----------|------------|--|--------------------------------|---|
| <b>22</b> | <b>(a)</b> | $p = 7.2$ $q = 6.4$                                      | <b>2,2*</b>                    |   |
|           | <b>(b)</b> | $2304\pi$  | <b>2*</b>                      | <b>M1</b> for $x$ by vsf 64      allow 7240 for 2 marks                             |
| <b>23</b> | <b>(a)</b> | $a + b, a - b, 3a + b$<br>$1\frac{1}{2}a + \frac{1}{2}b$ | <b>1,1,2*</b><br><b>1 f.t.</b> | <b>M1</b> in (iii) for (i) + $a$ + (ii) + $b$<br><b><math>\frac{1}{2}</math> TP</b> |
|           | <b>(b)</b> | <b>4</b>   | <b>1</b>                       |   |
|           |            | <b>TOTAL</b>   | <b>70</b>                      |   |