

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**GCE Ordinary Level**

## **MARK SCHEME for the May/June 2014 series**

### **4024 MATHEMATICS (SYLLABUS D)**

**4024/11**

Paper 1, maximum raw mark 80

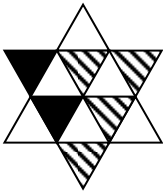
This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

Page 2	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2014	4024	11

Question	Answers	Mark	Part Marks
1 (a)	correct shape	1	
(b)		1	
2 (a)	5.3	1	
(b)	90	1	
3 (a)	29.2	1	
(b)	38.7	1	
4	obtuse angled	2	<b>M1</b> for $5^2 + 7^2 (= 74)$
5 (a)	$\geq 5$ oe	1	
(b)	-2, -1, 0, 1	1	
6 (a)	45 ( $^\circ$ )	1	
(b)	27	1	
7	$a = 10.05$ $b = 14 / 3$ oe	2	<b>B1</b> for either or <b>M1</b> for $\frac{280}{360} \times 2\pi \times 3$
8 (a)	8	2	<b>M1</b> for two of 30, 50, 0.5, 20 seen
(b)	(0).32	1	
9	$\frac{3y+4}{y+1}$	3	<b>M1</b> for $y(3-a) = a-4$ soi and a further <b>M1</b> for $3y+4 = a+ay$ soi
10 (a)	-4	1	
(b) (i)	[0]8 18	1	
(ii)	33	1	
11 (a)	180 [ $^\circ$ ]	1	
(b)	220 [ $^\circ$ ]	1	
(c)	285 [ $^\circ$ ] cao	1	

Page 3	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2014	4024	11

12	(a)	$4n + 3$ oe	1	B1 for either
	(b)	$\frac{5}{29}$	2	
13	(a)	3	1	
	(b) (i)	$x^5$	1	
	(ii)	$\frac{2}{3a}$	1	
14	(a) (i)	15	1	
	(ii)	12	1	
	(b)	Column, F.D. 1.2 width 50 to 65	1	
15	(a)	10 etc.	1	
	(b)	0	1	
	(c)	$\sqrt{50}$ etc.	1	
16	(a)	38 [°]	1	
	(b)	57 [°]	1	
	(c)	85 [°]	1 ft	
17	(a) (i)	$8t + 17$	1	
	(ii)	$2p + 13q$	1	
	(b)	$5x^2y(5xy - 3)$	1	
18	(a)	[0].12	1	M2 for the difference between $\frac{1}{2}60 \times 8$ and $[\frac{1}{2}30 \times 6 + 20 \times 6 + \frac{1}{2}10(6 + 7.2)]$ oe or M1 for using area under graph.
	(b)	Blue 36	3	
19	(a)	$2 \times 10^{-5}$	2	B1 for $2000 \times 10^{-8}$ or M1 for figs $\frac{6}{3}$ soi
	(b)	$2.99 \times 10^{-23}$	2	B1 for figs 299 or better

Page 4	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2014	4024	11

20	(a)	$\frac{7}{-9}$	2	<b>B1</b> for either or <b>M1</b> for using $x^2 - 2ax + a^2 + b$ or $(x - 7)^2 + k$ seen.
	(b)	$\frac{2}{3} - 3$	2	<b>M1</b> for framework $(3x + h)(x + k)$ seen.
21	(a) (i)	(0, 3) (2, 0)	2	<b>B1</b> for either or <b>M1</b> for substituting 0 for either $x$ or $y$
	(ii)	$-\frac{3}{2}$ oe	1	
	(b)	(-1, 9)	1	
22	(a)	Correct triangle	1	
	(b) (i)	Perpendicular bisector of $AC$	1	
	(ii)	Arc centre $A$ radius 4 cm	1	
	(c)	Correct region shaded	1	
23	(a)	17	2	<b>M1</b> for $(1 : 3)^2$ soi
	(b)	$\frac{72}{125}$ oe	3	<b>M1</b> for $y = \frac{k}{x^3}$ and <b>A1</b> for $k = 72$
24	(a)	$\frac{3}{9}, \frac{6}{9}, \frac{4}{9}, \frac{5}{9}$ oe	2	<b>B1</b> for three correct
	(b) (i)	$\frac{12}{90}$ oe	1FT	FT from <i>their</i> tree diagram
	(ii)	$\frac{48}{90}$ oe	2FT	FT from <i>their</i> tree diagram <b>B1</b> for $\frac{24}{90}$ oe FT seen or <b>M1</b> for $\frac{4}{10} \times \frac{6}{9} + \frac{6}{10} \times \frac{4}{9}$ oe FT
25	(a)	$\begin{pmatrix} 4 & -6 \\ -6 & 14 \end{pmatrix}$	2	<b>B1</b> for three elements correct.
	(b)	$\begin{pmatrix} 11 & -7 \\ -14 & 18 \end{pmatrix}$	2	<b>B1</b> for three elements correct

Page 5	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – May/June 2014	4024	11

(c)	$\frac{1}{10} \begin{pmatrix} 4 & 1 \\ 2 & 3 \end{pmatrix}$	2	<p><b>B1</b> for (det A =) 10 seen or implied or</p> <p>For <math>\begin{pmatrix} 4 &amp; 1 \\ 2 &amp; 3 \end{pmatrix}</math> seen</p> <p>or <b>M1</b> for <math>4 \times 3 - (-2 \times -1)</math></p>
-----	---	---	---