CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the October/November 2015 series

4024 MATHEMATICS (SYLLABUS D)

4024/11 Paper 1, maximum raw mark 80

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CAMBRIDGE
International Examinations

Question	Answers	Mark	Part marks
1 (a)	19	1	
(b)	$\frac{8}{45}$ oe	1	
2 (a)	8	1	
(b)	48; or FT $6 \times$ *their(a)*	1 $\surd$	
3 (a)	700	1	
(b)	147; or 3×7^2	1	
4 (a)	320	1	
(b)	150	1	
5	4	2 *	**M1** for $\left(\sqrt{50}\right)^2 - \left(\sqrt{34}\right)^2$
6 (a)	30 700	1	
(b)	(0).538	1	
7	(0).28 oe	2 *	**B1** for (0).4 oe seen
8 (a)	123	1	
(b)	7 WWW	2 *	**M1** for $5a - 2 = 33$ oe
9 (a)	11	1	
(b)	x^2	1	
(c)	8	1	
10 (a)	–8 and 2	1	
(b)	–3	1	
(c)	–2, 0, 2 all three	1	
11 (a)	(0).75	1	
(b)	4.65	2 *	**M1** for 5.5 – (0).85
12 (a)	4 WWW	2 *	**M1** for (3.8×5) soi by 19
(b)	3	1	

13 **(a)**	3	1	
(b)	2.08; or $2\frac{8}{100}$, or better and isw	2 *	**M1** for numerical $\frac{\Sigma fx}{50}$
14 **(a)**	$(\pm)\frac{1}{3}$	1 *	
(b)	999	1	
(c)	4	1	
15	$\frac{17}{16d - c}$	3 *	**M1** for squaring *both* sides **M1** (indep.) for collecting *both their x* terms onto one side and the numerical terms onto the other side
16 **(a)**	7.53×10^{-5}	1	
(b)	6.045×10^{24}	2	**C1** for figs. 6.0(4)5 or for $A \times 10^{24}$ where $1 < A < 10$
17	1 or 5 WWW	3 *	*Either* **M1** for $5 + (3 - t)^2 = 9$ and **M1** for $t^2 - 6t + 5 = 0$; *or* **M1** for $(3 - t)^2 = 4$ and **M1** for $3 - t = \pm 2$
18 **(a)**	21	1	
(b)	$5p + 1$ oe	2	**C1** for $5p + c$; or for $kp + 1$ ($k \neq 0$)
19 **(a)**	295°	1	
(b)	Perpendicular bisectors of *AB* and *BC* with region around *B* shaded	2 *	**B1** for either perpendicular bisector correct
20 **(a)** **(i)**	20	1	
(ii)	40	1	
(b)	300 WWW; or FT $5 \times$ {*their(i)* + *their (ii)*}	2 * √	**M1** for $\frac{1}{2} \times$ (*their 20* + *their 40*) $\times$ 10 oe
21 **(a)**	Pie chart completed accurately, and labelled with Bananas and Oranges	2 *	**M1** for 4×18 (= 72) oe or for 4×32 (= 128) oe
(b)	20	2 *	**M1** for $\frac{72 - 60}{60} \times 100$ oe

22 **(a)**	$16 - 9x$	1	
(b)	$\frac{x+5}{3x-1}$	3 *	**B1** for $(3x+1)(x+5)$ oe **B1** for $(3x+1)(3x-1)$ oe
23 **(a)**	$15a + 12c = 324$ seen	1	
(b)	Correctly equating one set of coefficients Correct method to eliminate one variable Either $a = 16$ or $c = 7$ WWW Both $a = 16$ and $c = 7$ WWW	**M1** **M1** **A1** **A1**	If **A0**, then **C1** for a pair of values that satisfy either original equation.
(c)	99; or FT $(4 \times$ *their* $a + 5 \times$ *their* $c)$ provided both a and c are positive	1 √	
24 **(a)**	112°	2 *	**B1** for $P\hat{R}Q = 31°$; or for $P\hat{R}S = 68°$; or for $P\hat{T}S = 180° -$ *their* $P\hat{R}S$
(b) **(i)**	37.5° WWW	2 *	**M1** for $E\hat{O}D$, or other angle at the centre, $= \frac{360-60}{4}$ $(= 75°)$
(ii)	12.56	2 *	**M1** for $\frac{60}{360} \times 2 \times 3.14 \times 12$ or better
25 **(a)**	Two corresponding pairs of angles equated, with reasons, from $B\hat{A}E = F\hat{C}B$ opp. angles of a parm. $A\hat{B}E = C\hat{F}B$ alternate angles $A\hat{E}B = C\hat{B}F$ alternate angles	2 *	**B1** for any one pair, with correct reason
(b)	7.5 oe	2 *	**M1** for $\frac{BC}{5} = \frac{6}{4}$ oe
(c)	$12x$	2 *	**B1** for seeing $4x$ or $9x$ as ΔABE or ΔBCF respectively