DIRECTORATE FOR QUALITY AND STANDARDS IN EDUCATION
Curriculum Management and eLearning Department
Educational Assessment Unit

Track 3

Annual Examinations for Secondary Schools 2014

FORM 5 MATHEMATICS TRACK 3 MARKING SCHEME

Notes for Marking of Scripts

Types of Marks

- **M**(ethod) marks are awarded for knowing a correct method of solution and attempting to apply it. Method marks cannot be lost for arithmetic mistakes. They can only be awarded if the method used would have led to the correct answer had not an arithmetic mistake been made. In general a correct method is implied by a correct answer and therefore **when a correct answer is given and no work is shown, no method marks are lost**.
- **A**(ccuracy) marks are given for correct answer only (c.a.o.) Incorrect answers, even though nearly correct, score no marks. Accuracy marks are also awarded for incorrect answers which are correctly **followed through** (f.t.) from an incorrect previous answer, **provided that f.t. is indicated in the marking scheme**. No method (M) or accuracy (A) marks are awarded when a wrong method leads to a correct answer.
- **B** marks are accuracy marks awarded for specific results or statements independent of the method used.

Misreading

M marks can still be earned (unless that part of the question is trivialised) but the final A marks are lost.

Crossed out working

An answer or working that is crossed out and not replaced is marked as if it was not crossed out. If the answer or working is replaced, then the crossed out answer or working is ignored and should not be considered for marking.

Units

In general, missing or inaccurate units are not penalised unless otherwise indicated in the marking scheme.

Other

- Incorrect working or statement following a correct answer is ignored.
- Marks are not sub-divisible; no half marks may be awarded.
- Other abbreviations used:
  - o.e. (or equivalent)
  - e.e.o.o. (each error or omission)
- Markers are advised to indicate the M, A or B marks awarded in the body of the script and then write their total in the margin. The total mark for each question should be written in the table included at the top of page 1 of the main paper. This measure facilitates the moderation of papers.

NON CALCULATOR PAPER (20 marks – 1 mark each)

1	2	3	4	5	6	7	8	9	10
22	12	80	$\frac{5}{12}$	21	A $\left(\frac{1}{6}\right)$	1000	24	2	21

11	12	13	14	15	16	17	18	19	20
6	41, 43, 47	36	8	D ($13cm^2$)	30	12	3	$\frac{9}{50}$	64

MAIN PAPER (80 marks)

Que.		Requirements	Mark		Additional Guidance
1	a	Mercury	B1	4	
	b	29	B1		Accept 30
	c	Valid method used 40 000	M1 A1		e.g. uses formula $C = 2\pi r$
2	a	Yes, valid reason given	B1	4	e.g. y-intercept is -2
	b	No, valid reason given	B1		e.g. gradient measures slope
	c	C(1, 1) Valid reason given	B1 B1		For $x = 1$, $y = 1$
3	a	Valid method used 16	M1 A1	6	
	b	Valid method used 249 4.15	M1 M1 A1		f.t. for incorrect answer in (a)
	c	20	B1		
4	a	1531.20 1531.20 × 100/12760 12	M1 M1 A1	6	Seen or implied Accept other valid methods
	b	12760/88 145 × 100 14 500	M1 M1 A1		f.t. for incorrect answer in (a) Accept other valid methods
5	a	AB = CD (opposite sides of ||ogram) ∠APB = ∠CQD = 90° (given) ∠ABP = ∠CDQ (alternate angles) ∴ triangles congruent (AAS)	M1 M1 M1 A1	5	AAS seen o.e.
	b	∠DCQ	B1		
6	a	Line 3 She had to divide by (k + 3)	M1 A1	5	o.e.
	b	$m = \frac{11}{k+3}$	B1		
	c	Correctly substitutes k = 19 in (b) 0.5	M1 A1		o.e.

Que.		Requirements	Mark		Additional Guidance
7	a	16 4^2	B1 B1	5	
	b	2500	B1		
	c	Valid method used 2475	M1 A1		e.g. $50^2 - 5^2$
8	a	$k\sqrt{h}$	B1	6	
	b	Valid method used 3	M1 A1		
	c	4.5, 6, 100	B3		
9	a	Cannot divide by 0	B1		o.e.
	b	1, 1/2, 1/3 (i) as x increases, y decreases (ii) Valid method to find inverse $\frac{2-x}{x}$ (iii) $\frac{2-x}{x} = 3$ $2 = 4x$ ½	B1 B1 M1 A1 M1 M1 A1	8	All correct f.t. for incorrect inverse
10	a	$(z - 3)(z + 1)$	B1	8	o.e.
	b	$x^4 - 2x^2 - 3 = 0$ $(x^2 - 3)(x^2 + 1) = 0$ $x = \pm 1.73$	M1 M1 A1		Accept other valid methods.
	c	$x + y = 2$ $x^2 + y^2 = 34$ } Substituting correctly for x or y Quadratic equation derived 5, –3; –3, 5	B1 M1 M1 A1		Both correct
11	a	(i) Valid method used 21.8 (ii) Valid reason given	M1 A1 B1	8	
	b	Area factor = 2 Scale factor = 1.414… Multiplies length and width by scale factor 21.2 14.8	M1 M1 M1 A1 A1		seen or implied Accept other valid methods

Que.		Requirements	Mark		Additional Guidance
12	a	(i) 28 (±2) (ii) Box plot correctly completed	B1 B3	7	 −1 (e.e.o.o.)
	b	(i) 75 (ii) Yes valid reason given	B1 B1 B1		 e.g. the median for students is greater than that for pensioners
13	a	$(x - 4)(x + 4)$	B1	8	
	b	A graph cuts x-axis at −4 and +4, and has a minimum point	B1 B1 B1		
	c	Substitutes $x = -4$, $y = 0$ and $x = 2$, $y = 0$ $p + 4q = 0$ } $p - 2q = 0$ Valid attempt to solve equations simultaneously 8, 2	M1 M1 M1 A1		