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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Mathematics 3302

Specification B

Module 5 Paper 1 Tier I 33005/I1

THREE TIER

Mark Scheme

2007 examination - June series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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Dr Michael Cresswell Director General

The following abbreviations are used on the mark scheme:

M	Method marks awarded for a correct method.
A	Accuracy marks awarded when following on from a correct method. It is not necessary always to see the method. This can be implied.
B	Marks awarded independent of method.
M dep	A method mark which is dependent on a previous method mark being awarded.
ft	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
SC	Special Case. Marks awarded for a common misinterpretation which has some mathematical worth.
oe	Or equivalent.
eeoo	Each error or omission.

MODULE 5 INTERMEDIATE TIER 33005/I1

1(a)	$3x - x = 2x$	B1	
	$3x \times x = 3x^2$	B1	
	$3(x + 1) = 3x + 3$	B1	
	$x \times x \times x = x^3$	B1	
1(b)	$4p + 3q$	B2	B1 for each term
1(c)	$2x$	B1	

2(a)	One correct point plotted other than (0, 0)	B1	$\pm\frac{1}{2}$ square tolerance
	Straight line drawn through correct points	B1	$\pm\frac{1}{2}$ square tolerance
2(b)	Reading from 10 pints	M1	
	eg 5.7	A1 ft	ft tolerance ± 0.2
2(c)	Reading from 3 litres	M1	
	eg 5.25	A1 ft	ft tolerance ± 0.2

3(a)	110 + 180 or 360 – 70	M1	oe [108, 112], [68, 72]
	290	A1	[288, 292]
3(b)	their 4.5 × 3	M1	[4.4, 4.6]
	13.5	A1 ft	[13.2, 13.8]

4(a)	180 – 145	M1	
	35	A1	
4(b)(i)	35	B1 ft	their (a)
4(b)(ii)	Valid reason	B1	eg (Vertically) opposite Angles are equal

5(a)	3	B1	oe
5(b)	40	B1	
5(c)	10 ÷ 0.5	M1	oe Allow 10 ÷ 30 Do not allow 10 ÷ 0.3(0)
	20	A1	

6(a)	$6y = 21$	M1	$21 \div 6$, 3 r 3
	3.5	A1	oe $\frac{21}{6}$ or $\frac{7}{2}$
6(b)	$5 \times 4 - 6$	M1	oe
	14	A1	

7(a)	34	B1	
7(b)	$\div 5$ or -12 or $\times 0.2$ or $\times \frac{1}{5}$	B1	
7(c)	eg $+2+2$	B1	Correct combination

8(a)	$4(x + 2)$	B1	
8(b)	$4x(x + 2)$	B2	B1 for partial factorisation $4(x^2 + 2x)$ or $2(2x^2 + 4x)$ or $x(4x + 8)$ or $2x(2x + 4)$ Note: If answer to (a) is $2(2x + 4)$ award B2 for $2x(2x + 4)$ SC1 for eg $4(x + 8)$ in (a) followed by $4x(x + 8)$ in (b)

9	$\frac{15}{5}$ (≤) $\frac{5n}{5}$ (<) $\frac{30}{5}$	M1	Attempt at division by 5
	$3 \leq n < 6$	A1	3, 4, 5, 6 or 4, 5
	3, 4, 5	A1	

10(a)	$x = 5$	B1	
10(b)	5 0	B1	
10(c)	180º	B1	
	(5, 2.5)	B1	

11(a)	$5^2 = 4^2 + h^2$	M1	
	$\sqrt{5^2 - 4^2}$	M1 dep	
	3	A1	
11(b)	$\frac{1}{2} \times 8 \times$ their 3	M1	
	12	A1 ft	
	cm^2	B1	UNITS mark

12(a)	Valid explanation	B1	eg $-\times-=+$ and $+\times+=+$ Lowest value on curve is zero
12(b)	At least 4 correct values	M1	Could be plotted on diagram $\pm\frac{1}{2}$ square tolerance
	7 correct plots and smooth curve	A1	$\pm\frac{1}{2}$ square tolerance
12(c)	[1.7, 1.8]	B1 ft	$\pm$ 0.1 tolerance

13(a)	180 – 90 – 20	M1	oe
	70	A1	
13(b) (i)	4	B1	
13(b) (ii)	Valid explanation	B1	Equal to *RS* Tangent from same point (are equal) Tangents symmetrical Tangents equal Congruent triangles
13(b) (iii)	36.9	B1	
13(b) (iv)	90 – their 36.9 or their 36.9 × 2 or 90 + their 36.9	M1	
	2 × (90 – their 36.9) or (180 – their (90 + 36.9)) × 2	M1 dep	oe
	106.2	A1 ft	Note: ft from (b)(iii) 41.4 → 97.2 and 48.6 → 82.8

14(a)	(Side =) 10 cm	B1	
	(Area of face =) 10 × 10	M1	
	50	A1	
14(b)	750 or 0.75 (litre) or 0.2 (litre) seen	B1	
	550 seen	B1	
	0.55	B1	

15(a)	Volume	B1	
	None	B1	
	Area	B1	
15(b)	Valid explanation	B1	eg area + length