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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Mathematics 3302

Specification B

Module 3 Tier I 33003I THREE TIER

Mark Scheme

2007 examination - March 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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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 3 INTERMEDIATE TIER 33003I

1	$\frac{28}{100} \times 32$	M1	oe eg 0.28×32
	8.96	A1	

2	$\frac{600}{4}$ (= 150)	M1	Alt $\frac{1}{4} + \frac{5}{8}$ (intention to add)
	$\frac{600}{8} \times 5$ (= 375)	M1	$= \frac{2}{8} + \frac{5}{8}$ (correct, but if 16ths, 24ths etc one numerator correct)
	600 – (their 150 + 375)	M1 dep	1 – their $\frac{7}{8}$ as long as at least one previous method mark obtained
	$\frac{75}{600} (= \frac{1}{8})$	A1	$\frac{1}{8}$

3	42 ÷ 3 or 70 ÷ 5	M1	
	14	A1	

4	455 ÷ 1.5	M1	
	303.3(33…)	A1	
	303.33	A1	Accept 303 or 303.34

5(a)	4.25×5	M1	Alt $4 \times 5 + \frac{1}{4} \times 5$ M1
	21.25	A1	
5(b)	Shelley is paid £7.50 per hour	B1	
	$\frac{£48.75}{\textit{their}£7.50}$	M1	their £7.50 must be £5 or more Build up must be completely correct method.
	= 6.5	A1 ft	ft their division to 1dp or better
	= 6 hours 30 minutes	B1 ft	ft their decimal time correctly converted to minutes. Allow rounding to nearest minute. Must not be exact number of hours. 6 hours 50 minutes or 6 hours 5 minutes no working SC2

6(a)	0.76×68	M1	oe
	51.68	A1	
6(b)	$50 \div 400$	M1	$\frac{3.5(0)}{4} \times 100$ or $1 - \frac{3.5}{4}$
	$\times 100$	M1 dep	100 – above or above × 100
	12.5	A1	SC1 87.5
6(c)	least 19.5	B1	
	greatest 20.5	B1	accept $20.49(9\ldots9)\ldots$ or $20.4\dot{9}$ 2 correct answers reversed SC1

7(a)	1.3659795…	B1	
7(b)	1.37	B1 ft	Their (a) to 3 significant figures

8	Attempts the correct prime factorisation for at least 1 of the numbers	M1	$24 = 2^3 \times 3$ $60 = 2^2 \times 3 \times 5$ $108 = 2^2 \times 3^3$
	At least 2 prime factorisations correct in any form	M1	
	12	A1	6 SC2 3 or 4 SC1

Alt 8	Attempts to list all the factors for at least 1 of the numbers (at least four factors)	M1	24 – 1, 2, 3, 4, 6, 8, 12, 24 60 – 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60 108 – 1, 2, 3, 4, 6, 9, 12, 18, 27, 36, 54, 108
	Lists all factors correctly for at least 2 out of 3 (allow 1 and number itself omitted)	M1	
	12	A1	6 SC2 3 or 4 SC1

9(a)	3.8×10^{-7}	B1	
9(b)	Their (a) × 100	M1	0.000038 implies M1
	3.8×10^{-5}	A1 ft	

10(a)	sight of 87.5% or 88%	B1	or 0.875 or 0.88
	so $\frac{7}{8}$ is larger	B1 dep	
10(b)	$\frac{6}{72}$	B1	oe eg $\frac{3}{36}$, $\frac{1}{12}$

11	sight of 8	M1	
	64	A1	Accept 60 ≤ answer ≤ 64 integers or 1dp.

12(a)	1000	B1	
12(b)	1.76	B1	
12(c)	either of 16 or 9 seen	M1	
	144	A1	
12(d)	40	B1	

13(a)	Explains a factor or factors correctly other than 1 or 45	B1	eg $5 \times 9 = 45$
13(b)	41 or 43 or 47	B1	

14(a)	80 ÷ 20	M1	Scaling method - suitable method to get 10, 5, 4 or 2 hours
	4	A1	
14(b)	Their 4 × 24	M1	80 + 4 × their 4
	96	A1 ft	

15(a)	189 720	B1	
15(b)	3720	B1	
15(c)	37 944	B1	

16	8000 ÷ (5 + 3 + 2)	M1	
	their 800 × 5 (or ×3 or ×2)	M1	oe
	4000, 2400, 1600	A1	all required

17	28 000 – 5000 (= 23 000)	M1	
	0.2 × their 23 000	M1 dep	oe
	4600	A1	

18	Intention to divide 15 by $1\frac{1}{5}$	M1	
	$= 15 \times \frac{5}{6}$	M1	
	= 12.5	A1	oe assume working is in hours unless written otherwise

19(a)	7.18×10^7	B1	
19(b)	6×10^{10}	B3	B1 sight of 0.6 or 6 B1 sight of 10^{11}