Assessment Schedule – 2007

Mathematics: Solve straightforward trigonometric equations (90292)

Evidence Statement

	Assessment Criteria	No.	Evidence	Code	Judgement	Sufficiency
Achievement	Solve straightforward trigonometric equations.	1(a)	53.1^0 , 126.9^0 (0.927, 2.214)	A	Both answers required for each question. Or equivalent.	**Achievement:** TWO A
		1(b)	153.4^0, 333.4^0 (2.678, 5.820)	A	Or equivalent.	Replacement evidence: Any part of qn 2,3,4
		1(c)	2.2, 4.1 (126.9^0,233.1^0)	A	Or equivalent. Degrees or radians accepted throughout.	
Merit	Solve trigonometric equations.	2	Cos x = 0.3 or –0.3 x= **1.3**, 1.9, 4.4, **5.0** (**72.5^0**,107.5^0,252.5^0,**287.5^0**)	A M	Or equivalent **(MEI*** for positive solutions only)	**Achievement with Merit:** Achievement **plus** TWO M
		3	$27.5 = 28 + \cos(\pi t/12)$ t = 8 ANS: time = 8pm	A M	Or equivalent. Accept t = 8 MEI if 8am (**MEI*** if the neg. sign is dropped, ANS: t = 4 or 4pm)	OR ALL M **NS for Merit** if both **MEI*** in Q2 AND Q3
		4	1.23 and 5.05 T = 3.82 hours (3 h 49min)	A M (E)	Or equivalent. (If Achievement gained ans qn 2 and 3 correct with qn5 wrong the mark qn 4 for E.)	

Excellence	Solve multi-step trigonometric problems.	5	A graphical solution: A= 8 (amplitude) and B=19 (vertical shift) $T = 8\sin\left(\frac{\pi t}{12}\right) + 19$ $23 = 8\sin\left(\frac{\pi t}{12}\right) + 19$ $0.5 = \sin\left(\frac{\pi t}{12}\right)$ $\frac{\pi t}{12} = 0.523$ $t = 2$ $\frac{\pi t}{12} = 2.618$ $t = 10$ From 9am until 5pm. 8 hours. An Algebraic Solution Solves for (0,11) and (6,27) to get A = 16 and B = 11 $23 = 16\sin\left(\frac{\pi t}{12}\right) + 11$ $0.75 = \sin\left(\frac{\pi t}{12}\right)$ $\frac{\pi t}{12} = 0.848,\ 2.293$ $t = 3.24.\ 8.76$ From 10:14am to 3:46pm. For 5.52 hours. Variations of model included negative models and models using cosine, periods of 12 hours, horizontal shifts.	A M E A M E	Must have clear explanation of the process being used to solve the problem. Any logical reasoning generating any logical result. (model correctly formed **plus** ONE correct answer) (model correctly formed **plus** ONE correct answer)	**Achievement with Excellence:** Merit **plus** ONE E

Achievement	Achievement with Merit	Achievement with Excellence
Solve straightforward trigonometric equations. $2 \times$ A	***Solve trigonometric equations.*** **Achievement** *plus* $2 \times$ M *or* $3 \times$ M **NS for Merit** if **MEI** in both Q2 AND Q3	Solve multi-step trigonometric problems. **Merit** *plus* $1 \times$ E

The following Mathematics-specific marking conventions may also have been used when marking this paper:

- Errors are circled.
- Omissions are indicated by a caret (^).
- **NS** may have been used when there was not sufficient evidence to award a grade.
- **CON** may have been used to indicate 'consistency' where an answer is obtained using a prior, but incorrect answer and **NC** if the answer is not consistent with wrong working.
- **CAO** is used when the 'correct answer only' is given and the assessment schedule indicates that more evidence was required.
- **#** may have been used when a correct answer is obtained but then further (unnecessary) working results in an incorrect final answer being offered.
- **RAWW** indicates right answer, wrong working.
- **R** for 'rounding error' and **PR** for 'premature rounding' resulting in a significant round-off error in the answer (if the question required evidence for rounding).
- **U** for incorrect or omitted units (if the question required evidence for units).
- **MEI** may have been used to indicate where a minor error has been made and ignored.