education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

PROVINCIAL ASSESSMENT

GRADE 10

TECHNICAL MATHEMATICS P2

JUNE 2024

MARKING GUIDELINES

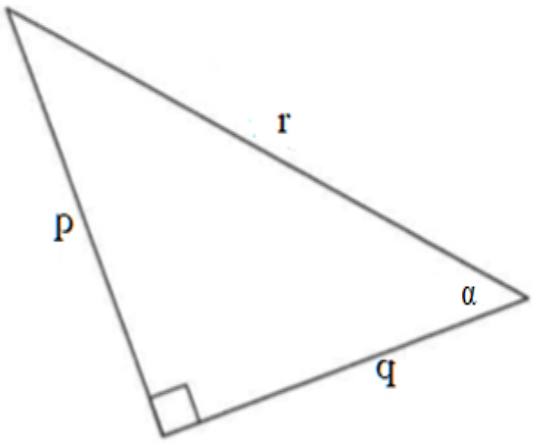
MARKS: 50

These marking guidelines consist of 7 pages.

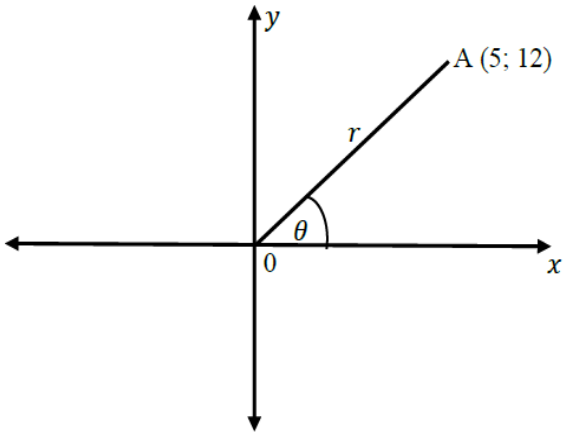
NOTE:

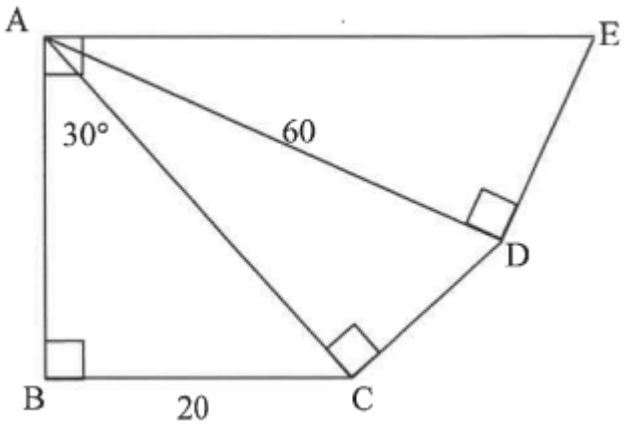
- If the learner answered the question TWICE, mark the FIRST attempt ONLY.
- If the learner crossed out an attempt of a question and did not REDO, the question, mark the crossed out question.

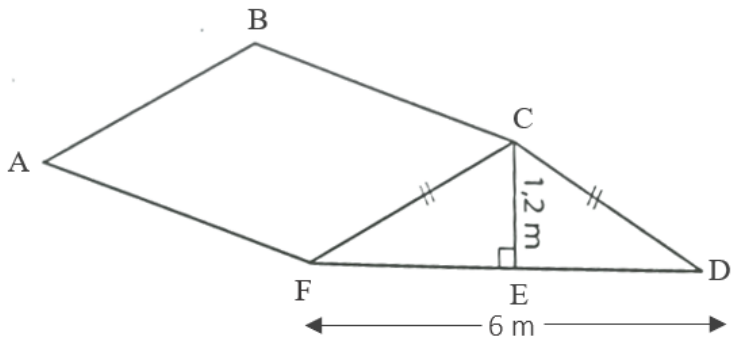
- Consistent Accuracy (CA) applies in all aspects of memorandum

QUESTION 1		
1.1		
1.1.1 (a)	$\sin\alpha = \frac{p}{r}$	✓ $\frac{p}{r}$ (1)
(b)	$\cot\alpha = \frac{1}{\tan\alpha}$ $= 1 \div \frac{p}{q}$ $= 1 \times \frac{q}{p}$ $= \frac{q}{p}$	✓ $1 \div \tan\alpha$ ✓ $\frac{q}{p}$ **Answer only, full marks** (2)
1.1.2	$\tan 55^\circ = \frac{p}{q}$ $\tan 55^\circ = \frac{7}{q}$ $q \tan 55^\circ = 7$ $q = \frac{7}{\tan 55^\circ}$ $\therefore q = 4{,}901452767$ $= 5$	✓ correct ratio ✓ substitution ✓ correct rounding (3) **Penalize for incorrect rounding.**

1.2	$\cos\left(\frac{\alpha}{2}\right).\sin\beta$ $=\cos\left(\frac{48^\circ}{2}\right).\sin 32^\circ$ $=\ 0{,}48$	✓ Substitution ✓ Answer (2)
1.3		
1.3.1	$\sin\theta = 0{,}4$ $\theta = \sin^{-1}(0{,}4)$ $\therefore \theta = 23{,}58^\circ$	✓ $23{,}58^\circ$ (1)
1.3.2	$\tan 2\theta = 1{,}19$ $2\theta = \tan^{-1}(1{,}19)$ $2\theta = 49{,}95845092$ $\theta = 24{,}98^\circ$	✓ $\tan^{-1}$ ✓ Dividing by 2 ✓ Answer (3)
1.3.3	$\cos(\theta - 20^\circ) = 0{,}67$ $\theta - 20^\circ = \cos^{-1}(0{,}67)$ $\theta - 20^\circ = 47{,}9329352^\circ$ $\theta = 47{,}9329352^\circ + 20$ $\theta = 67{,}93^\circ$	✓ $\theta - 20^\circ = 47{,}9329352^\circ$ ✓ simplifying ✓ Answer (3)
		[15]

QUESTION 2		
		
2.1	$r^2 = x^2 + y^2$.....*Pythagoras* $r^2 = (5)^2 + (12)^2$ $= 25 + 144$ $= 169$ $\therefore r = 13$	✓ S/R ✓Substitution ✓ Answer (3)
2.2	$\sin\theta = \frac{12}{13}$	✓ Answer (1)
2.3	$\cos\theta \times \sec\theta$ $= \frac{5}{13} \times \frac{13}{5}$ $= 1$	✓ ✓Substitution ✓ Answer (3)
2.4	$\tan\theta = \frac{12}{5}$ $\therefore \theta = \tan^{-1}\left(\frac{12}{5}\right)$ $\theta = 67{,}38^\circ$	✓ Correct ratio ✓ Substitution ✓ Answer **Learners may also use sin & cos ratio, credit them.** (3)
		[10]

QUESTION 3		
		
3.1.1	In ΔABC $\sin 30^\circ = \frac{20}{AC}$ $AC = \frac{20}{\sin 30^\circ}$ $AC = 40$ units	✓ Correct ratio ✓ Answer (2)
3.1.2	$\cos C\hat{A}D = \frac{40}{60}$ $C\hat{A}D = \cos^{-1}\left(\frac{40}{60}\right)$ $\therefore C\hat{A}D = 48{,}19^\circ$	✓ Correct ratio ✓ Answer (2)
3.1.3	$D\hat{A}E = 90^\circ - 30^\circ - 48{,}19^\circ$ $= 11{,}81^\circ$ $\tan 11{,}81^\circ = \frac{DE}{60}$ $DE = 60\tan 11{,}81^\circ$ $DE = 12{,}55$ units	✓ Calculating $D\hat{A}E$ ✓ Correct ratio ✓ Answer (3)

3.2		
3.2.1	$FE = 3m$	✓ Answer (1)
3.2.2	$\tan C\hat{F}E = \frac{CE}{FE}$ $\tan^{-1}\left(\frac{1,2}{3}\right)$ $= 21,80140140949^\circ$ $= 21,8^\circ$	✓Correct ratio ✓ Substitution ✓ Answer (3)
3.2.3	No, $C\hat{F}E > 21^\circ$	✓ Answer ✓ Justification (2)
		[13]
QUESTION 4		
4.1.1	$a = 2$	✓ $a = 2$ (1)
4.1.2	360°	✓ Answer (1)
4.1.3	$0^\circ \leq y \leq 2$ **OR** $y \in [0^\circ; 2]$	✓ end points ✓ Notation **OR** ✓✓ $y \in [0^\circ; 2]$ (2)
4.1.4	$h(x) = \cos x$	✓✓ Answer (2)

<table>
<tr>
<td>4.2.1</td>
<td>
<table>
<tr><td>x</td><td>0°</td><td>45°</td><td>90°</td><td>135°</td><td>180°</td><td>225°</td><td>270°</td><td>315°</td><td>360°</td></tr>
<tr><td>$f(x)$</td><td>0</td><td>1</td><td>undefined</td><td>-1</td><td>0</td><td>1</td><td>undefined</td><td>-1</td><td>0</td></tr>
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</td>
<td>✓ the first 4 values

✓ the remaining values

(2)</td>
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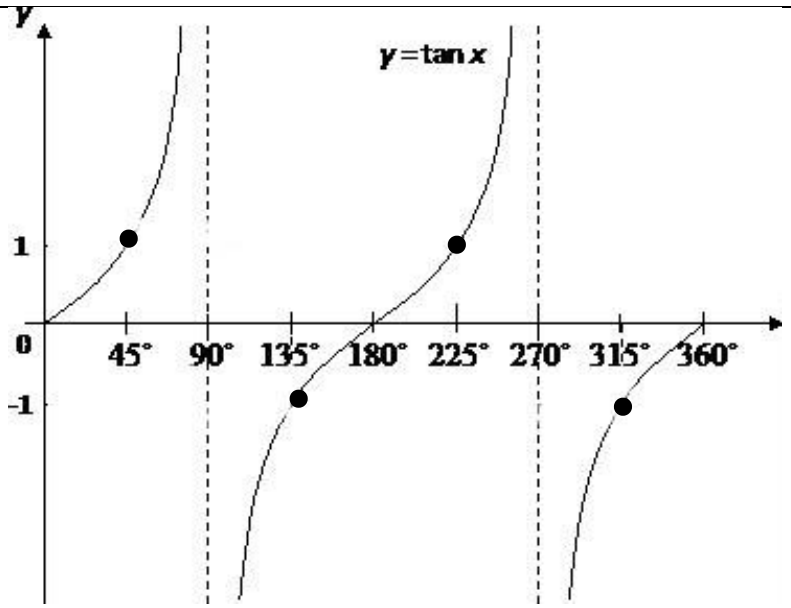
<tr>
<td>4.2.2</td>
<td> 
</td>
<td>✓ Shape

✓ Asymptotes

✓ Intercepts

✓ Any correct point

(4)</td>
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<td></td>
<td>**[12]**</td>
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TOTAL: 50