Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

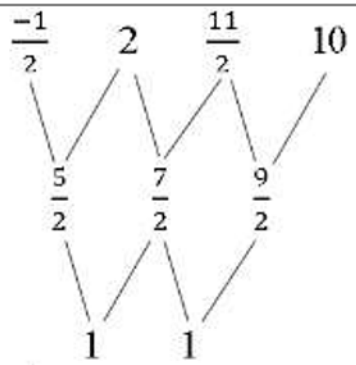
GRADE 12

MARKING GUIDELINE TERM 1 TEST – 2022

MARKS: 50

TIME: 1 HOUR

This marking guideline consists of 6 pages.

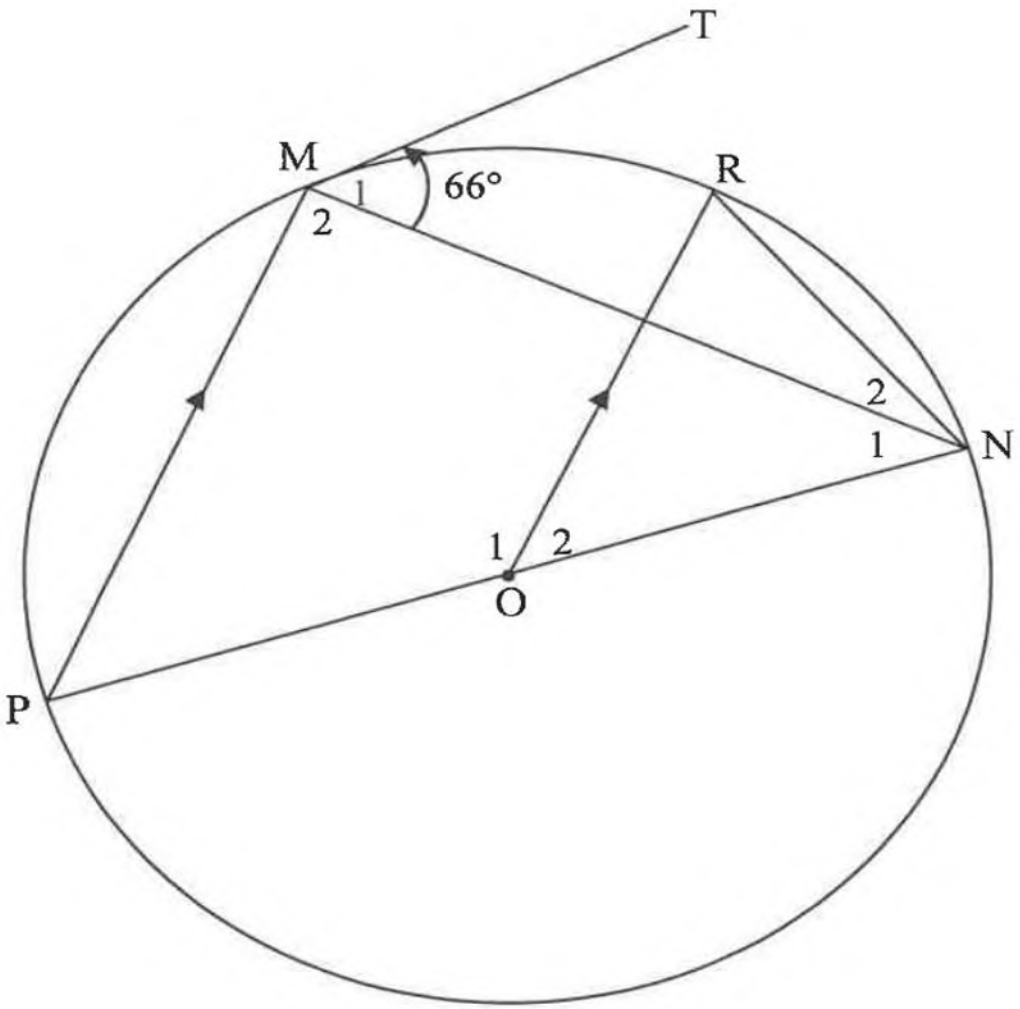
QUESTION 1		
1.1.	$\frac{31}{2}$	✓ answer (1)
1.2.	 $2a = 1$ $a = \frac{1}{2}$ $3\left(\frac{1}{2}\right) + b = \frac{5}{2}$ $b = 1$ $\frac{1}{2} + 1 + c = -\frac{1}{2}$ $c = -2$ $T_n = \frac{1}{2}n^2 + n - 2$	✓ second difference ✓ $a = \frac{1}{2}$ ✓ $b = 1$ ✓ $c = -2$ (4)
1.3.	$T_{75} - T_{74} = \frac{1}{2}(75)^2 + 75 - 2 - [\frac{1}{2}(74)^2 + 74 - 2]$ $= \frac{151}{2}$	✓ correct substitution ✓ answer (2)
		[7]

QUESTION 2		
2.1.	$a = 3$ and $d = 4$ $T_{20} = 3 + (20 - 1)4$ $= 79$	✓ a and d ✓ substitution into correct formula ✓ answer (3)
2.2.	$S_n = \frac{n}{2}[2a + (n-1)d]$ $S_{20} = \frac{20}{2}[2(3) + (20-1)4]$ $= 820$ **OR** $S_{20} = \frac{20}{2}[3 + 79]$ $= 820$	✓ substitution into correct formula ✓ answer (2)
		[5]

QUESTION 3		
3.1	$T_1 = x(x+1)^0 = x$ $T_2 = x(x+1)^1$ $\frac{T_2}{T_1} = \frac{x(x+1)}{x}$ $= x + 1$	✓ substitution of n = 0 and n =1 ✓ $r = x + 1$ (2)
3.2	If a series converges $-1 < r < 1$ $-1 < x + 1 < 1$ $-2 < x < 0$	✓ $-1 < r < 1$ ✓ substitution of r ✓ answer (3)
3.3	$S_\infty = \frac{a}{1 - r}$ $= \frac{x}{1 - (x+1)}$ $= \frac{x}{1-x-1}$ $= -1$	✓ substitution in the correct formula ✓ simplification ✓ answer (3)
3.4	$T_1 = x = 1$ $T_2 = x(x+1) = 1(1+1) = 2$ $T_3 = x(x+1)^2 = 1(1+1)^2 = 4$ $r = 2$ $1 + 2 + 4 + \cdots$	✓ ratio r =2 ✓ series (2)

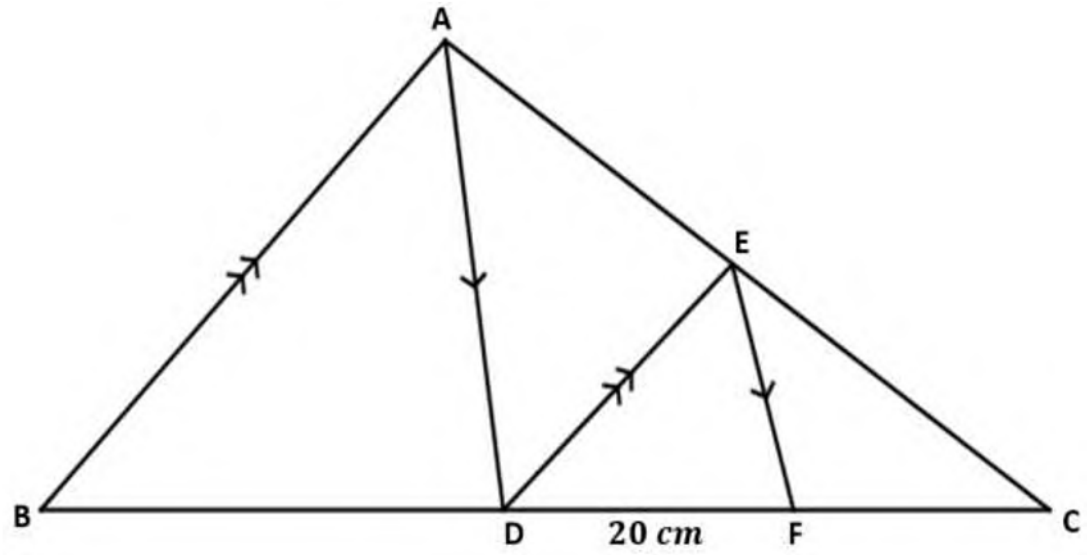
3.5	$S_n = \frac{a(r^n - 1)}{r - 1}$ $S_{25} = \frac{1(2^{25} - 1)}{2 - 1}$ = 33554432 – 1 = 33554431	✓ substitution in the correct formula ✓✓ answer (3)
		[13]

QUESTION 4



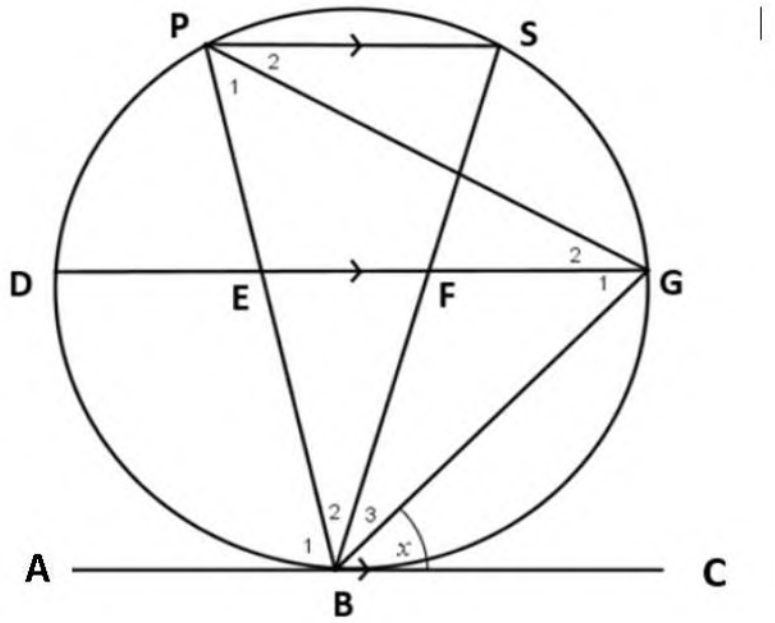
4.1	$\hat{P} = \widehat{M_1} = 60°$ [tan chord theorem]	✓S ✓R (2)
4.2	$\widehat{M_2} = 90°$ [angle in semi-circle]	✓S ✓R (2)
4.3	$\widehat{N_1}$ = 180 ° − (90° + 66°) = 24° [sum of ∡s of Δ MNP]	✓S (1)
		[5]

QUESTION 5



5.1	In $\Delta\ ADC$ $\frac{FC}{DF} = \frac{CE}{EA}$ [prop theorem, EF ∥ AD] $\frac{FC}{20} = \frac{4}{5}$ FC = 16 cm	✓S ✓R ✓ FC = 16 cm (3)
5.2	In $\Delta\ ABC$ $\frac{CD}{DB} = \frac{CE}{EA}$ $[prop\ theorem;\ \ DE \parallel AB]$ CD = 20 + 16 = 36 $\frac{36}{BD} = \frac{4}{5}$ $BD = 45\ cm$	✓ S/R ✓ CD = 36 ✓ BD = 45 (3)
5.3	$\frac{Area\ \Delta\ ECF}{Area\ \Delta\ ABC} = \frac{\frac{1}{2}EC.FC\ Sin\ C}{\frac{1}{2}AC.BC\ SinC}$ $= \frac{\frac{1}{2}(4)(16)Sin\ C}{\frac{1}{2}(9)(81)Sin\ C}$ $= \frac{64}{729}$	✓area rule ✓substitution area $\Delta\ ECF$ ✓area ΔABC ✓ratio (4)
		[10]

QUESTION 6



6.1.	Alt ∡ [DG ‖ AC]	✓R (1)
6.2.1.	$\frac{BE}{BP} = \frac{BF}{BS}$ (Prop theorem EF ‖ PS) $\therefore BE = \frac{BP \times BF}{BS}$	✓S ✓R (2)
6.2.2	In Δ BGP and Δ BEG $\widehat{P_1} = x$ [tan-chord theorem] $= \widehat{G_1}$ …… from 6.1 P$\hat{B}$G = E$\hat{B}$G [common] B$\hat{G}$P = B$\hat{E}$G [sum ∡ of Δ] ∴ Δ BGP ||| Δ BEG [∠,∠,∠]	✓S ✓R ✓S ✓R (4)
6.2.3.	$\frac{BG}{BE} = \frac{BP}{BG}$ [Δ BGP ||| Δ BEG] $\therefore BG^2 = BP \times BE$ $= BP \times \left(\frac{BP \times BF}{BS}\right)$ $= \frac{BP^2 \times BF}{BS}$ $\therefore \frac{BG^2}{BP^2} = \frac{BF}{BS}$	✓ratio ✓substitution of BE ✓ $\frac{BP^2 \times BF}{BS}$ (3)
		[10]
		TOTAL: 50