higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE

NOVEMBER EXAMINATION

MATHEMATICS N1

14 NOVEMBER 2013

This marking guideline consists of 7 pages.

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QUESTION 1

1.1 3 ✓

1.2 432 km/h✓

1.3 -2 ✓

1.4 1 & 3 ✓

1.5 $\frac{\Delta y}{\Delta x}$ ✓

1.6 III ✓

1.7 $87{,}614^0$ ✓

1.8 $x^2 - 2x - 63$ ✓

1.9 6 ✓

1.10 14%✓

(10×1) **[10]**

QUESTION 2

2.1 2.1.1

$$\begin{aligned}&\left(8^o y^o - 4x^o\right)^3\\ &= \left(1 \cdot 1 - 4.1\right)^3 \quad ✓✓\\ &= (-3)^3\\ &= -27\end{aligned}$$

(2)

2.1.2

$$\begin{aligned}&\frac{9x^4y^4}{27x^3y^2}\\ &= \frac{3^2x^4y^4}{3^3x^3y^2}\\ &= 3^{2-3}x^{4-3}y^{4-2} \quad ✓✓✓\\ &= 3^{-1}x^1y^2\\ &= \frac{xy^2}{3}\end{aligned}$$

(3)

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2.2 2.2.1 $\log 900 - \log 9 + \log_2 80 - \log_2 5$

$= \log \frac{900}{9} + \log_2 \frac{80}{5}$

$= \log 100 + \log_2 16$ ✓✓✓✓✓✓

$= \log_{10} 10^2 + \log_2 2^4$

$= 2(1) + 4(1)$

$= 6$ (6)

2.2.2 $\log_2 64 - 6\log_e \sqrt{e}$

$= \log_2 {}^{2^6} - 6 \times \frac{1}{2} \log_e {}^{e}$ ✓✓✓

$= 6(1) - 3(1)$

$= 3$ (3)

2.3 $x = \frac{\sqrt[4]{168,56}}{6,58} \bullet \sqrt[3]{14,3}$

$\ln x = \ln 168,56^{\frac{1}{4}} - \ln 6,58 + \ln 14,3^{\frac{1}{3}}$ or $\log x = 0,557 - 0,818 + 0,385$

$= \frac{1}{4}\ln 168,56 - \ln 6,58 + \frac{1}{3}\ln 14,3$

$= 1,282 - 1,884 + 0,887$ ✓✓✓✓✓

$\ln x = 0,285$ $\log x = 0,124$

$x = e^{0,285}$

$x = 1,329$ $x = 1,330$ (5)

[19]

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QUESTION 3

3.1 $4x^2y + 3xy^2$
$-3\,x^2y + 2\,xy^2$
$5\,x^2y - xy^2$

6 x2y + 4 xy2✓ ✓ ✓ one mark per term & one mark for grouping. (3)

3.2 $V^2 + 7V + 12$ ✓ ✓ ✓ one mark per term

$V + 1 \;\overline{)\; V^3 + 8V^2 + 19V + 12}$

$V^3 + V^2$✓

$7V^2 + 19V$✓

$7V^2 + 7V$

$12V + 12$ ✓

$12V + 12$

$0 \quad 0$

$(V + 1)(V^2 + 7V + 12)$ (6)

3.3 3.3.1

$$\frac{2x^2y - 3(xy + xy^2)}{xy}$$

$$= \frac{2x^2y - 3xy - 3xy^2}{xy}$$ ✓ ✓ ✓

$$= \frac{xy(2x - 3 - 3y)}{xy}$$

$$= 2x - 3 - 3y$$ (3)

3.3.2

$$\frac{32p^2 - 96p^3}{6p} \div \frac{18p - 54p^2}{108p^2}$$

$$= \frac{32p^2 - 96p^3}{6p} \times \frac{108p^2}{18p - 54p^2}$$ ✓ ✓ ✓ ✓

$$= \frac{32p^2(1 - 3p)}{6p} \times \frac{108p^2}{18p(1 - 3p)}$$

$$= 32p^2$$ (4)

3.4 $30x^2y^4 = 5 \times 3 \times 2\,x^2y^4$

$50x^5y^2 = 5 \times 5 \times 2\,x^5y^2$ ✓ for all correct prime factor

$70xy = 5 \times 7 \times 2\,xy$

LCM $= 5 \times 5 \times 3 \times 7 \times 2\,x^5y^4$

$= 1050\,x^5y^4$✓ ✓

HCF $= 10xy$ ✓ (4)

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3.5 $4(y-3)-(6y-6)+3=0$

$4y-3-6y+6+3=0$ ✓

$-2y+6=0$ ✓

$-2y=-6$ ✓

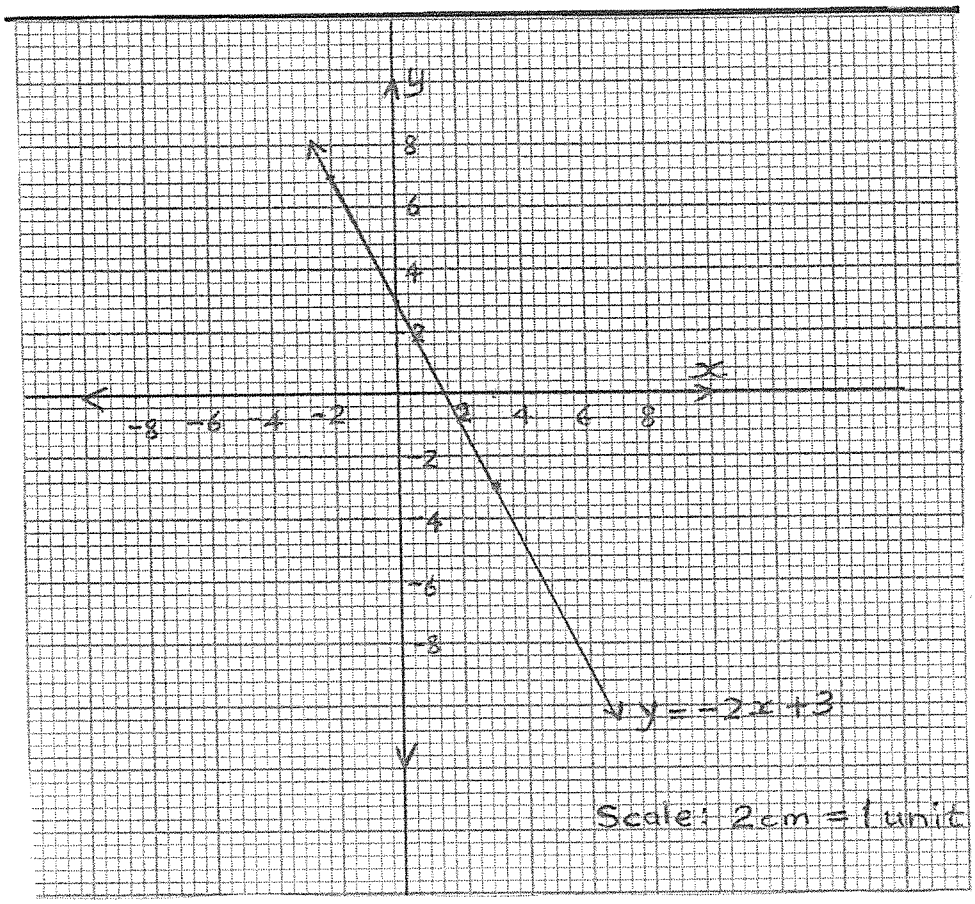
✓ (4)

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QUESTION 4

4.1

x	-2	-1	0	1	2	3
y		5	3	1	-1	-3



2 marks for correct scale on both axis , 6 marks for plotting correct points, 1 mark for indicating x and y –axis (9)

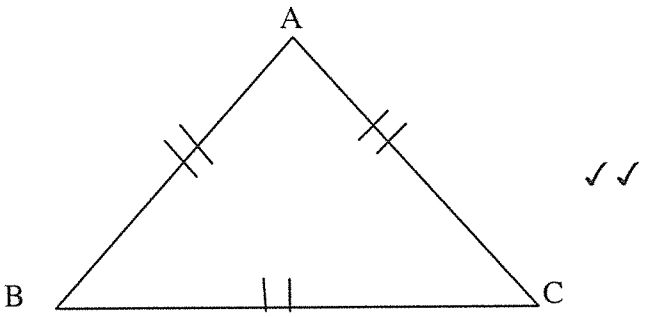
4.2 Straight line graph✓ (1)

[10]

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QUESTION 5

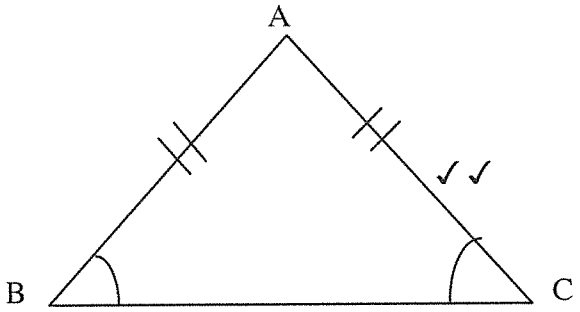
5.1 5.1.1 An Equilateral triangle is a triangle of which all three the sides are equal then the angles are also equal) ✓✓ (600 + 600 + 600 = 1 800)



✓✓

(4)

5.1.2 Isosceles triangles is when: any two sides of a triangle are equal in length base angles are equal✓✓



✓✓

(4)

5.2 $\hat{A}+\hat{B}=110^0$ exterior $\angle$ = sum of interior $\angle$

$\therefore x=110^0-88^0$ ✓✓✓

$x=22^0$ (3)

5.3 5.3.1 $D\hat{C}E=58^0$ opposite angles

$\hat{C}+\hat{D}+\hat{E}=180^0$ interior angles of triangle

$58^0+\hat{D}+37^0=180^0$ ✓✓✓✓✓

$\hat{D}=180^0-95^0$

$\hat{D}=85^0$ (5)

5.3.2 $In\Delta ABC$

$\hat{A}+\hat{B}+\hat{C}=180^0$ interior angle of triangle

$\hat{A}+55^0+58^0=180^0$ ✓✓✓

$\hat{A}=180^0-113^0$

$\hat{A}=67^0$ (3)

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5.4 $\sqrt{3}\cos 60^0(\sin 45^0)+\sin 90^0$

$= 1{,}732 \times 0{,}5(0{,}707)+1$

$= 0{,}866(0{,}707)+1$ ✓✓✓

$= 0{,}612+1$

$= 1{,}612$ (3)

[22]

QUESTION 6

6.1 $V = L \times B \times H$✓

$= 75 \times 65 \times 85$✓

$= 414\,375\ mm^3$✓ (3)

6.2 $r = \frac{D}{2}$ ✓ for radius

$= \frac{7}{2} = 3{,}5$

Area $= 2\pi r\,(h + r)$ ✓ formula

$= 2\pi\,(3{,}5)(5+3{,}5)$ ✓ substitution

$= 186{,}925\ m^2$✓ answer (4)

6.3 $\frac{8231}{1000} mm^3$

$= 8{,}231\ cm^3$✓ (1)

6.4 $\frac{13}{92} \times 100$ ✓ substitution

$= 14{,}130\ \%$✓ rounded off to 3 decimals. (2)

[10]

QUESTION 7

7.1 True ✓
7.2 True ✓
7.3 False ✓
7.4 False ✓
7.5 True ✓

(5 x 1) **[5]**

TOTAL: 100

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