NATIONAL SENIOR CERTIFICATE EXAMINATION
SUPPLEMENTARY 2014

MATHEMATICAL LITERACY: PAPER II

MARKING GUIDELINES

Time: 3 hours 150 marks

These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

Key: ✓^{a} accuracy
✓^{m} method
✓^{ca} continuous accuracy

QUESTION 1

1.1 $R3\,000 \times \frac{100}{114}$ ✓m ✓m

= R2 631,58 ✓a (3)

OR

$\frac{R3\,000}{1{,}14}$ ✓m ✓m

= R2 631,58 ✓a

1.2 R199,00 – R99,00

= R100 ✓a × 24 months ✓m

= R2 400 ✓a (3)

1.3 In Answer Booklet. (14)

1.4 1.4.1 (a) B ✓✓ (2)

(b) At 4,9c per second, 60 seconds is just less than R3,00 ✓✓ (2)

1.4.2 In Answer Booklet. (4)

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QUESTION 2

2.1 650 km = 55 ℓ

650 km = 55 ℓ × R10,85/ℓ ✓^{m}

650 km = R596,75 ✓^{a}

1 km = R596,75 ÷ 650 ✓^{m}

1 km = R0,91807 … ✓^{ca}

1 km = R0,92 ✓^{ca}

OR

650 km = 55 ℓ

1 km = 55 ÷ 650 km/ℓ ✓^{m}

$= \frac{11}{150}\ \ell$ ✓^{a} × R10,85 per litre ✓^{m}

= R0,9180 … ✓^{ca}

= R0,92 ✓^{ca}

OR

650 km = 55 ℓ

1 km = 55 ÷ 650 km/ℓ ✓^{m}

= 0,08 ✓^{a} × R10,85 ✓^{m}

= R0,868 ✓^{ca}

= R0,87 ✓^{ca} (5)

2.2 $55\ \ell \overset{✓^{m}}{\times} \frac{30}{100} = 16{,}5\ \ell$

55 ℓ = 650 km

$1\ \ell = \frac{650}{55}$

$16{,}5\ \ell = \frac{650}{55} \times 16{,}5$ ✓^{m}

16,5 ℓ = 195 km ✓^{a}

∴ Distance travelled $= 195\text{ km} \overset{✓^{m}}{\times} \frac{80}{100}$

= 156 km ✓^{ca}

OR

$\checkmark^{m}$

650 km × 30% = 195 km $\checkmark^{a}$

$\checkmark^{a}$

195 km × 80% = 156 km $\checkmark^{ca}$ (5)

$\checkmark^{m}$

2.3 2.3.1 Probability is 0 ✓ because the car can only travel 650 km with a tank of petrol so the driver has to stop for petrol. ✓✓ (3)

2.3.2 Average Speed = $\frac{\text{Distance}}{\text{Time}}$

$= \frac{855 \text{ km}}{8 \text{ hrs } 42 \text{ min}}$ $\checkmark^{sub}$

$= \frac{855 \text{ km}}{8\frac{42}{60} \text{ hrs}}$ $\checkmark^{m}$

= 98,275 … $\checkmark^{a}$ (3)

2.3.3 $720 \text{ km} \div \overset{\checkmark^{m}}{100} \text{ km/h}$

$= 7{,}2 \text{ hrs } \checkmark^{a}$

$= 7 \text{ hrs } 12 \text{ min } \checkmark^{a} + 32 \text{ min } \checkmark^{m}$

$= 7 \text{ hrs } 44 \text{ min } \checkmark^{ca}$ (5)

2.3.4 $29 \text{ mm} : 200 \text{ km } \checkmark^{a}$

$1 \text{ mm} : \frac{200}{29} \checkmark^{m}$

$73 \text{ mm } \checkmark^{a} : \frac{200}{29} \times 73 \checkmark^{m}$

$: 503{,}4482 \ldots$

$: 503 \text{ km } \checkmark^{a}$

Allow a range of 3 mm either side (26 – 32 mm) and (70 – 76 mm)

Therefore, 437,5 km to 584,6 km (5)

2.3.5 $1 \text{ mm} : \frac{200}{29} \checkmark^{m}$

$1 \text{ mm} : 6{,}896551724 \text{ km } \checkmark^{a}$

$1 \text{ mm} : 6{,}896551724 \times 1\,000\,000 \checkmark^{m}$

$1 : 6\,900\,000 \checkmark^{a}\checkmark^{m}$

OR

$73 \text{ mm} : 503 \text{ km } \checkmark^{m}$

$73 \text{ mm} : 503 \text{ km} \times \overset{\checkmark^{m}}{1\,000\,000}$

$73 \text{ mm} : 503\,000\,000$

$1 \text{ mm} : 503\,000\,000 \div 73 \checkmark^{m}$

$1 \text{ mm} : 6\,890\,410{,}959 \checkmark^{a}$

$1 : 6\,890\,000 \checkmark^{ca}$

Allow a range of 3 mm (26 – 32 mm)

Therefore, 6 250 000 to 7 690 000 (5)

2.4 $\text{R}19\,728 \times 12 \text{ months } \checkmark^{m}$

$= \text{R}236\,736 \checkmark^{a}$

$\therefore \text{ R}35\,450 \checkmark^{a}$

The R26 450 is for people over 75 years. ✓ (4)

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QUESTION 3

3.1 3.1.1 Jordan:

- divided by 450 instead of multiplying ✓[a]
- multiplied by kg, instead of dividing ✓[a]
- used 100 kg instead of 1 000 kg ✓[a] (3)

3.1.2 51 000 × 450 g

= 22 950 000 g ÷ 1 000 kg ✓[m]

= 22 950 kg ✓[a] (2)

3.2 Area = $\pi \times r^2$

= 314 × (1 984,65 cm^2) ✓

= 1 236,79 …

= 1 237 m^2 ✓

d = 131 feet

r = 65,6 feet ✓

= 65,6 feet × 30,3 cm

= 1 984,65 cm ✓

= 1 984,65 cm ÷ 100

= 19,8465 m

OR

Area = $\pi \times r^2$

= 314 × (1 984,65 cm^2)

= 12 367 943,85 cm^2

= 12 367 943,85 cm^2 ÷ 100 ✓[m] ÷ 100

= 1 236,79 … m^2 ✓[a]

= 1 237 m^2 ✓[ca] (5)

d = 131 feet

r = 65,6 feet ✓[m]

= 65,6 feet × 30,3 cm ✓[m]

= 1 984,65 cm

3.3 3.3.1 Diameter = 131 feet × 30,3 cm

= 3 969,3 cm ✓[a]

Surface Area = (3 969,3 cm × 3 969,3 cm ✓ × 2) ✓ + (3 969,3 cm × 11 ✓ cm × 4) ✓

= 31 510 684,98 cm^2 + 174 649,2 cm^2

= 31 685 334,18 cm^2 ✓

∴ Jordan is correct (6)

3.3.2 $31\ 685\ 334{,}18\ cm^2 \div 100 \overset{\checkmark^m}{\div} 100$

$= 3\ 168{,}53\ \ldots$

$= 3\ 169\ m^2\ \checkmark^a \times R3{,}25/m^2\ \checkmark^m$

$= R10\ 299{,}25\ \checkmark^{ca}$ (4)

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QUESTION 4

4.1 $\text{Probability} = \dfrac{\text{Number of passengers killed}}{\text{Number of passengers travelled}} \times 100$

$= \dfrac{72\ \checkmark^a}{169\ 725\ 000 \times 70\ \checkmark^m} \times 100$

$= \dfrac{72}{11\ 880\ 750\ 000\ \checkmark^a} \times 100$

$= 0{,}0000006\%\ \checkmark^{ca}$

$\therefore$ Thembi will fly $\checkmark^{ca}$ (5)

4.2 In Answer Booklet. (7)

4.3 4.3.1 $100\% \overset{\checkmark^m}{-} (12\% + 20\% + 10\% + 8\% + 14\%)$

$= 100\% - 64\%\ \checkmark^a$

$= 36\%\ \checkmark^a$

$= \dfrac{36}{100}$ (3)

4.3.2 One cannot get 6,12 of an accident. There is no such thing as part of an accident. $\checkmark\checkmark^a$ (2)

4.3.3 $\dfrac{36\ \checkmark^a}{100} \times 360° \ \checkmark^m$

$= 129{,}6° = 130°\ \checkmark^a$ (3)

4.4 4.4.1 $\text{Mean} = \dfrac{\text{Total Passengers}}{\text{Number of airports}}$

$68\ 020\ 753{,}3 = \dfrac{\text{Atlanta} \checkmark^{a} + 81{,}929\ 359 \checkmark^{m} + 70\ 037\ 417 + \ldots}{10 \checkmark^{a}}$

$68\ 020\ 753{,}3 \times 10 = \text{Atlanta} + 584\ 744\ 666 \checkmark^{a}$

$580\ 207\ 533 - 584\ 744\ 666 = \text{Atlanta}$

$95\ 462\ 867 = \text{Atlanta} \checkmark$ (6)

4.4.2 $57\ 684\ 550 \div 3{,}39 \checkmark^{m}$

$= 17\ 016\ 091{,}45 \checkmark^{a} \div 95 \checkmark^{m}$ planes

$= 179\ 116{,}75 \ldots$

$= 179\ 117$ planes $\checkmark^{a}$ OR 179 116 planes (4)

4.5 4.5.1 $\dfrac{7 \checkmark^{a}}{16} \times 80 \checkmark^{m}$

$= 35$ (2)

4.5.2 (a) B $\checkmark\checkmark^{a}$ (both Bryce and Justin had the incorrect answer) (2)

(b) Bryce – added instead of multiplying $\checkmark^{a}$

– used $\dfrac{40}{100}$ instead of $\dfrac{40}{80}$ $\checkmark^{a}$

Justin – multiplied by 2 instead of by ½. (3)

[37]

QUESTION 5

5.1 5.1.1 (a) Graph A = Package 2 ✓
Graph B = Package 3 ✓ (2)

(b) On Answer Booklet. (7)

(c) On Answer Booklet (5)

5.1.2 Package 1 = R30 000 ✓^{a}

Package 2 = R200 × 141 ✓^{m}

= R28 200 ✓^{a}

Package 3 = R6 000 + (R150 ✓^{m} × 141)

= R27 150 ✓^{a}

∴ Package 3 is most economomical ✓^{ca} (6)

5.2 5.2.1 $A = P(1 + i)^n$

$= R35\,000 \overset{\checkmark}{\left(1 + \frac{0,056}{\checkmark 12}\right)^{39}} \checkmark$

= R41 968,73 ✓ (5)

5.2.2 (a) R35 000 ✓^{a} (1)

(b) D: 3,25 years ✓^{a} (1)

(c) R41 968,73 ✓^{ca}

OR

The final amount with interest (1)

5.2.3 A straight line would indicate a constant interest increase, which is simple and not compound interest. ✓✓ (2)

[30]

Total: 150 marks