NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2011

MATHEMATICAL LITERACY: PAPER II

MARKING GUIDELINES

Time: 3 hours | 150 marks

These marking guidelines were used as the basis for the official IEB marking session. They were prepared for use by examiners and sub-examiners, all of whom were required to attend a rigorous standardisation meeting to ensure that the guidelines were consistently and fairly interpreted and applied in the marking of candidates' scripts.

At standardisation meetings, decisions are taken regarding the allocation of marks in the interests of fairness to all candidates in the context of an entirely summative assessment.

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, and different interpretations of the application thereof. Hence, the specific mark allocations have been omitted.

QUESTION 1

1.1 % Discount $= \dfrac{R60}{R549,00} \times 100$

$= 10,92\% \ldots$

$= \underline{10,9\%}$ (5)

1.2 Cost $= R50 + (R39 \times 30)$

$= R50 + R1\ 170$

$= \underline{R1\ 220}$ (4)

1.3.1 E $= P \times t$

$= \left(700 \div 1\ 000\right) \times \left(\dfrac{45}{60}\right)$

$= 0,7$ kw $\times 0,75$ hours

$= \underline{0,525 \text{ kwh}}$ (4)

1.3.2 Cost $= 0,525$ kwh $\times 93,31$ c

$= 48,98775$ c

$= \underline{R0,49}$ (3)

1.4 $A = P(1 + i)^n$

$= R2\ 900\left(1 + \dfrac{0,035}{12}\right)^{12}$

$= R3\ 003,14$

$= R3\ 003,14 + R960,00$

$= R3\ 963,14$

She will not be able to afford the kitchen cabinet. (6)

1.5 Tax Payable $= \dfrac{18}{100} \times R120\ 000,00$

$= R21\ 600,00$

Less Rebate $= R21\ 600,00 - R10\ 755,00 - R6\ 012,00$

Annual Tax $= R4\ 833,00$ (5)

[27]

QUESTION 2

2.1.1 $\text{Mean} = \dfrac{\text{Total}}{\text{No. of tests}}$

$$60\% = \frac{[\text{Test 1} + 65\% + 23\% + 76\% + 89\% + 62\%]}{6}$$

$$60\% = \frac{\text{Test 1} + 315\%}{6}$$

$$360\% = \text{Test 1} + 315\%$$

$$45\% = \text{Test 1}$$

OR

Test total $= 60\% \times 6$

$= 360\%$

Test 1 $= 360\% - [65\% + 23\% + 76\% + 89\% + 62\%]$

$= 360\% - 315\%$

$= 45\%$ (5)

2.1.2 23% 62% 65% 76% 89%

Median = 65% (2)

2.2 $80\% = (\text{Exam} \times 0{,}75) + (68\% \times 0{,}25)$

$80\% = 0{,}75\ \text{Exam} + 17\%$

$63\% = 0{,}75\ \text{Exam}$

$84\% = \text{Exam}$ (6)

[13]

QUESTION 3

3.1.1 Distance = 22 km + 8 km

= 30 km (2)

3.1.2 B (3,75 hours) (2)

3.1.3 17:30 + 0:30

= 18:00 (6 p.m.) OR 18H00 (2)

3.1.4 (a) Speed $= \dfrac{\text{Distance}}{\text{Time}}$

Time $= \dfrac{\text{Distance}}{\text{Speed}}$

$= \dfrac{30\text{ km}}{50\text{ km/hr}}$

= 0,6 hours

= 0,6 × 60 minutes

= 36 minutes (4)

(b) 5:15 p.m. + 0:36

= 5:51 p.m. – 5:30 p.m.

= 21 minutes late (2)

(c) Speed $= \dfrac{\text{Distance}}{\text{Time}}$

$= \dfrac{30\text{ km}}{0{,}25\text{ hours}}$

= 120 km/hr (3)

3.1.5 (a)

$5 \text{ cm} = 42 \text{ km}$

$5 \text{ cm} = 42 \text{ km} \times 100\ 000$

$5 \text{ cm} = 4\ 200\ 000$

$1 \text{ cm} = \underline{840\ 000 \text{ cm}}$ (3)

(b) 1 : <u>840 000</u> (1)

3.2.1 Stage 1 = Graph C
Stage 2 = Graph B
Stage 3 = Graph A (6)

3.2.2 (a) Time (1)
(b) Speed (1)

3.2.3

(6)

3.3.1 $(\text{Satara Camp to Orpen Gate})^2 = (\text{Orpen to Olifants})^2 - (\text{Olifants} - \text{Satara})^2$

$= (60 \text{ km})^2 - (45 \text{ km})^2$

$= 3\ 600 \text{ km}^2 - 2\ 025 \text{ km}^2$

$= 1\ 575 \text{ km}^2$

Satara to Orpen $= \sqrt{1575 \text{ km}^2}$

$= 39{,}68 \ldots \text{ km}$

$= \underline{40 \text{ km}}$ (6)

3.3.2 Area $= \frac{1}{2} \times 40 \text{ km} \times 45 \text{ km}$

$= \underline{900 \text{ km}^2}$ (4)

[43]

QUESTION 4

4.1.1 No. There are completely different rainfall patterns (2)

4.1.2 Range for city 2 = 120 mm – 0 mm

= 120 mm (3)

4.1.3 Mean for city 1 = $\frac{100 \text{ mm} + 110 \text{ mm} + 80 \text{ mm}}{3}$

$= \frac{290 \text{ mm}}{3}$

= 96,67 mm (3)

4.1.4 Mode for city 1 = 20 mm (2)

4.1.5 Median for city 2 = 0 10 10 20 40 50 80 80 100 110 120 120

$= \frac{50 + 80}{2}$ mm

= 65 mm (5)

4.1.6 15 mm – 24 mm (24,9 mm) or Range 24 mm – 15 mm = 9 mm (2)

4.1.7 (a) City 2 – July (2)

(b) No. The city could get up to 4 (4,9) mm (which has been rounded down to 0 mm (2)

4.2.1 P(5) = $\frac{1}{6}$ (2)

4.2.2

	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

or

(1,1) (2,1)
(1,2) (2,2)
(1,3) (2,3)
(1,4) (2,4)
(1,5) (2,5)
(1,6) (2,6) etc.

P(5) = $\frac{4}{36} = \frac{1}{9}$ (4)

4.2.3 P(1) = 0 The minimum two dice will add to is '2'. 1 + 1 = 2 (2)

[29]

QUESTION 5

5.1 Area of grass $= (\text{Area of circle}) - 2 \times \left(\frac{1}{12} \times \text{Area of tiled area}\right)$

$= \left(\pi \times r^2\right) - 2 \times \left(\frac{1}{12} \times \pi \times r^2\right)$

$= (3{,}14 \times (5\text{m})^2) - 2 \times \left(\frac{1}{12} \times 3{,}14 \times (1{,}5m)^2\right)$

$= 78{,}5\text{ m}^2 - 2 \times \left(\frac{1}{12} \times 7{,}065\text{ m}^2\right)$

$= 78{,}5\text{ m}^2 - 2 \times 0{,}58875\text{ m}^2$

$= 78{,}5\text{ m}^2 - 1{,}1775\text{ m}^2$

$= 77{,}3225\text{ m}^2$

No. of trays $= 77{,}3225\text{ m}^2 \div 6\text{ m}^2$

$= 12{,}88 \ldots$

$= 13$

Cost $= 13 \times \text{R}70{,}40$

$= \underline{\text{R}915{,}20}$ (14)

5.2 Number of 26 cm planks required =

[4,66 m – (2 × 50 cm) – 2 cm] ÷ (26 cm + 2 cm)

= [4,66 m – 1 m – 0,02 m] ÷ (0,28 m)

= 3,64 m ÷ 0,28 m

= <u>13</u> (6)

[20]

QUESTION 6

6.1 Pharmacist Cost $= \text{R}51 + \left[\dfrac{15}{100} \times \text{R}699{,}99\right]$

$= \text{R}51 + \text{R}104{,}9985 \ldots$

$= \text{R}51 + \text{R}105$

$= \text{R}156$

Total Cost = Cost of medication and pharmacist cost

$= \text{R}699{,}99 + \text{R}156$

$= \underline{\text{R}855{,}99}$ (6)

6.2 If no medication is bought, there cannot be a charge; however, any medication bought for even R1 will have a minimum charge of R6 + 46% of SEP. (2)

[8]

QUESTION 7

7.1 A – 37 $\left(36\frac{1}{2}\right)$

B – 20

C – 6

D – 3 (4)

7.2 $\text{BMI} = \dfrac{\text{mass (kg)}}{\left(\text{height (m)}\right)^2}$

$= \dfrac{92\text{ kg}}{(1{,}71\text{ m})^2}$

$= \dfrac{92\text{ kg}}{2{,}9241\text{ m}^2}$

$= \underline{31{,}46}$ (6)

[10]

Total: 150 marks