Section A

Multiple Choice — 30 Marks

On the Multiple choice question answer section provided in your answer booklet, make a cross (X) over the alternative (a – d) that you have chosen for each question. There is only one right answer. There is no negative marking.

Question 1

Which two integers is $\sqrt{116}$ between?

a. 11 and 12

b. 10 and 11

c. 9 and 10

d. 12 and 13

(2)

Question 2

What is the negative square root of 100?

a. 10000

b. 10

c. -10

d. Unreal

(2)

Question 3

Which property of real number is shown below?

$3 \times 1 = 1 \times 3$

a. Commutative property for multiplication

b. Associative property for multiplication

c. Inverse property for multiplication

d. Identity property for multiplication

(2)

Question 4

Solve for m if: $10^m = 1{,}00$

a. $m = 1$

b. $m = 0$

c. $m = 10$

d. $None\ of\ the\ above$

(2)

Question 5

What is the degree for this following monomial? $3^2 s^6 t u^2$

a. $11\ degree$

b. $10\ degree$

c. $9\ degree$

d. $8\ degree$

(2)

Question 6

Mimi bought a poster priced at R38,00; shipping and handling cost an additional 30% of the price. What was the total cost of the poster including shipping and handling?

a. $R8{,}00$

b. $R39{,}14$

c. $R26{,}60$

d. $R49{,}40$

(2)

Question 7

Brenda has 26 sweets. Kai has b more sweets than Brenda. Choose the expression that shows how many sweets Kai has.

a. $26 + b$

b. $b - 26$

c. 26

d. b

(2)

Question 8

Which of the following expression(s) are equivalent to $a^{-5}.a$:

i. a^{-4}

ii. a^{-5}

iii. $\frac{1}{a^{-5}}$

iv. $\frac{1}{a^4}$

a. Only iii.

b. i. and iv.

c. Only iv.

d. Only ii.

(2)

Question 9

Which of the following is equivalent to $\frac{1}{(\sqrt[5]{x})^{-3}}$?

a. $x^{-\frac{5}{3}}$

b. $x^{-\frac{3}{5}}$

c. $x^{\frac{3}{5}}$

d. $x^{\frac{5}{3}}$

(2)

Question 10

Simplify the radical: $\sqrt[3]{88x^3y^6z^5}$.

a. $2xy^2z^2\sqrt{11z^2}$

b. $\frac{88}{3}xy^2z\sqrt[2]{z^2}$

c. $x^2y^3\sqrt[3]{22xz^2}$

d. $2xy^2z\sqrt[3]{11z^2}$

(2)

Question 11

The lowest temperature on Mars was $-10℃$. Later that same day the temperature reached a high of $32℃$, by how many degrees Celsius did the temperature increase?

a. 12^oC

b. 22^oC

c. 42^oC

d. 32^oC

(2)

Question 12

Which of the following is a factor of $x^2 - 6x + 5$?

a. $(x + 1)$

b. $(x - 5)$

c. $(x - 4)$

d. $(x - 2)$

(2)

Question 13

What is $\frac{6x^2 - 3xy}{-4x^2y + 2xy^2}$ reduced to lowest terms?

a. $-\frac{3}{2y}$

b. $\frac{3}{y}$

c. $-\frac{2}{3}$

d. $-\frac{y}{3y}$

(2)

Question 14

How many term(s) are in this algebraic expression?

$$\frac{-a^2b}{6} + x^3y^2 - 2x\sqrt{f}$$

a. Binomial

b. Trinomial

c. Multinomial

d. Quadnomial

(2)

Question 15

Find the product of $(s-5)^2$.

a. s^2+25

b. $(s+5)(s-5)$

c. $s^2-10s+25$

d. $s^2-5s+25$

(2)

(15 x 2 Marks)

End of Section A

Section B

Calculation Questions — 70 Marks

Question 1

Divide the following algebraic expression:

$$\frac{4n^3 - 6n^2 + n + 12}{n + 2}$$

(5 Marks)

Question 2

Divide the following algebraic expression:

$$\frac{-48m^4+36m^3-54m^2+4}{-6m}$$

(4 Marks)

Question 3

Find the product of the following algebraic expressions:

3.1 $(2u^2 - 6)(u^2 - 5)$

(3 Marks)

3.2 $(2a + e)^3$

(5 Marks)

3.3 $-8a(-a + 3b + ab) - 6b(-3a - 3a^2 - 2ab)$

(4 Marks)

3.4 $(y^2 - 8y - 6)^2$

(4 Marks)

Question 4

Match Column A with Column B by stating the question number and the letter e.g. 4.7 i.

Column A	Column B
4.1 $2;\ 6;\ -8;\ 0$	a. Irrational number
4.2 $\sqrt{2};\ \pi;\ \sqrt{3}\ and\ \sqrt{99}$	b. Square number
4.3 $\sqrt{-5};\frac{5}{0}$	c. Integers
4.4 $12;9;6;3;0$	d. Unreal number
4.5 $\frac{-5}{4};-0{,}185;\ 0.\overline{369};\ 6\frac{1}{5}\ and\ \sqrt{9}$	e. Prime number
4.6 $17;19;23;29$	f. Rational number
	g. Natural number
	h. Whole number

(6 Marks)

Question 5

Subtract the algebraic expression, collect and add like terms:

$$(-11m^2on - 8omn^2 + 4o^2nm) - (3on^2m + 6m^2no - 2mo^2n) - (-6n^2mo + 2m^2no - 2mno^2) - (mno^2 - 5n^2om - 3m^2no)$$

(5 Marks)

Question 6

Factorise the following:

6.1 $a^8 - 1$

(4 Marks)

6.2 $d^2 - d - 56$

(3 Marks)

Question 7

Evaluate the following expressions:

7.1 $\frac{2^{8x}.3^{4y}.7^{-2z}}{7^{-4z}.3} \times \frac{7^{-2z}.2^{x}}{2^{6x}.3^{y}}$

(4 Marks)

7.2 $\left(\frac{32r^9s^{-2}t^6}{4s^{-5}t^9}\right)^{\frac{1}{3}}$

(4 Marks)

Question 8

8.1 An outlet store receives a shipment of fancy watches that will be offered at a discounted price of $R396$ a piece. The fancy watches were originally sold for $R900$ each. What is the discount, as a percentage? (2 Marks)

8.2 The last time Pearson bakery placed an order for ingredient, they ordered 7880 kilograms of flour at $R32{,}99$. This time, the bakery has increase the order by 35%.

a. How many kilograms did the bakery order this time? (2 Marks)

b. How much will the new order cost? (1 Mark)

8.3 Busi brought a pair of shoes at the 25% sale in Dr. Newton. She paid $R2062{,}50$. What was the original price of the pair of shoes? (2 Marks)

Question 9

Rationalise the denominators in the following radicals without a calculator.

9.1 $\frac{3}{\sqrt{8}+7}$

(4 Marks)

9.2 $\frac{5}{\sqrt{2}+2\sqrt{3}}$

(4 Marks)

Question 10

Solve for f:

$$\frac{3f+5}{2} = \frac{5-3f}{3}$$

(4 Marks)

End of Section B