MARKING GUIDELINE

MARKS	DURATION	QUESTIONS
36	55 minutes	3

Name: _____ Class: _____

Date: _____

MARK _____ / 36

INSTRUCTIONS AND INFORMATION

1. Answer **ALL** the questions in this question paper.
2. Answer QUESTION 1 by **circling** the letter (A–D) in the answer grid at the end of that section.
3. Show **ALL** calculations clearly.
4. Show all units where applicable.
5. Number the answers correctly according to the numbering system used in this question paper.
6. A non-programmable calculator may be used, unless stated otherwise.
7. Write neatly and legibly.

QUESTION 1 [10 MARKS]

Four options are given as possible answers to the following questions. Choose the correct answer and circle the letter (A–D) in the grid at the end of this section. If you want to change your choice, put a cross through the wrong letter and circle your new choice.

1.1 How many TERMS are there in $5x^2 - 3x + 8$? (1)

A) 4 **B)** 1

C) 2 **D)** 3 ✓

Answer: D — Terms are separated by + and − signs.

- **A** — counted the signs as well
- **B** — that would be a single product
- **C** — missed the constant term

1.2 The coefficient of x in $8 - x$ is ... (1)

A) 1 **B)** 0

C) -1 ✓ **D)** 8

Answer: C — A lone x means $1x$, and the minus sign in front belongs to that term.

- **A** — dropped the minus sign
- **B** — the term is present, so it is not 0
- **D** — that is the constant term

1.3 Which pair are LIKE terms? (1)

A) $4x$ and $4y$ **B)** $2x^2$ and $2y^2$

C) $3x$ and $3x^2$ **D)** $5ab$ and $-2ab$ ✓

Answer: D — Like terms have the same variables raised to the same exponents.

- **A** — the variables differ
- **B** — the variables differ
- **C** — the exponents differ

1.4 Simplify: $9m - 4m + 2m$ (1)

A) $7m^3$ **B)** $15m$

C) $7m$ ✓ **D)** $3m$

> **Answer: C** — All three are like terms: $9 - 4 + 2 = 7$.
>
> - **A** — the exponent must not change
> - **B** — added all three coefficients
> - **D** — did the addition before the subtraction

1.5 Simplify: $3x + 4x^2$ (1)

A) it cannot be simplified ✓ **B)** $7x^2$

C) $12x^3$ **D)** $7x^3$

> **Answer: A** — They are UNLIKE terms — the exponents differ, so nothing can be collected.
>
> - **B** — added the coefficients
> - **C** — multiplied instead of adding
> - **D** — added the coefficients and the exponents

1.6 The DEGREE of $5x^3 - 2x + 7$ is ... (1)

A) 10 **B)** 3 ✓

C) 5 **D)** 7

> **Answer: B** — The degree is the highest exponent of the variable.
>
> - **A** — added the exponents
> - **C** — that is a coefficient
> - **D** — that is the constant term

1.7 A rectangle has length $2x$ and breadth $(x + 3)$. Its PERIMETER is ... (1)

A) $2x^2 + 6x$ **B)** $6x + 6$ ✓

C) $3x + 3$ **D)** $2x^2 + 3$

> **Answer: B** — $P = 2(2x) + 2(x + 3) = 4x + 2x + 6$.
>
> - **A** — that is the AREA, not the perimeter
> - **C** — added the two sides only once
> - **D** — multiplied the sides and added 3

1.8 If $x = 3$, the value of $2x^2$ is ... (1)

A) 36 **B)** 9

C) 12 **D)** 18 ✓

> **Answer: D** — Square FIRST, then multiply: $2 \times 9 = 18$.
>
> - **A** — multiplied by 2 before squaring
> - **B** — forgot the coefficient
> - **C** — multiplied 2 by 3 and then by 2

1.9 Simplify: $8 + 3k - 5 + k$ (1)

A) $7k$ **B)** $3 + 3k$

C) $3 + 4k$ ✓ **D)** $4k + 13$

> **Answer: C** — Collect the constants $(8 - 5 = 3)$ and the k terms $(3k + k = 4k)$ separately.
> - **A** — collected unlike terms together
> - **B** — left out the lone k — it is $1k$
> - **D** — added the constants instead of subtracting

1.10 Which one of the following is a MONOMIAL? (1)

A) $7ab$ ✓ **B)** $x + 2$

C) $x^2 - 1$ **D)** $3x + 2y - 5$

> **Answer: A** — A monomial has exactly ONE term.
> - **B** — two terms — a binomial
> - **C** — two terms — a binomial
> - **D** — three terms — a trinomial

ANSWER GRID — MARKING GUIDELINE

1.1	A	B	C	(D)
1.2	A	B	(C)	D
1.3	A	B	C	(D)
1.4	A	B	(C)	D
1.5	(A)	B	C	D
1.6	A	(B)	C	D
1.7	A	(B)	C	D
1.8	A	B	C	(D)
1.9	A	B	(C)	D
1.10	(A)	B	C	D

QUESTION 2 [15 MARKS]

Consider the expression $5x^2 - 3x + 8$.

2.1 Write down the number of terms in the expression, and state its degree with a reason. (3)

> There are **3** terms — $5x^2$, $-3x$ and 8 *(1)*
> The degree is **2** *(1)*
> The degree is the HIGHEST exponent of the variable in the expression *(1)*

2.2 Write down the coefficient of x in $9x - 4$, and the coefficient of x in $8 - x$. (3)

> In $9x - 4$ the coefficient is **9** *(1)*
> In $8 - x$ the coefficient is **−1** *(1)*
> A lone x means $1x$, and the minus sign in front of it belongs to that term *(1)*

2.3 Write down the constant term in $2y + 7$, and explain why $2y$ is NOT a constant. (3)

> The constant term is **7** *(1)*
> $2y$ changes in value whenever y changes *(1)*
> A constant has a FIXED value that does not depend on the variable *(1)*

2.4 Simplify: $11n - 6n + 2n - n^2$ **(3)**

> $11n - 6n + 2n = 7n$ *(1)*
> n^2 is NOT a like term, so it cannot be collected with the n-terms *(1)*
> $= \mathbf{7n - n^2}$ *(1)*

2.5 Simplify: $5x + 3y + 2x - y$ **(3)**

> Collect the x-terms: $5x + 2x = 7x$ *(1)*
> Collect the y-terms: $3y - y = 2y$ *(1)*
> $= \mathbf{7x + 2y}$ *(1)*

QUESTION 3 [11 MARKS]

Answer the questions below.

3.1 Simplify: $4p^2 + 3p - 2p^2 + p$ **(3)**

> $4p^2 - 2p^2 = 2p^2$ *(1)*
> $3p + p = 4p$ *(1)*
> $= \mathbf{2p^2 + 4p}$ *(1)*

3.2 Simplify: $12 + 5k - 7 + 2k$ **(3)**

> $12 - 7 = 5$ *(1)*
> $5k + 2k = 7k$ *(1)*
> $= \mathbf{7k + 5}$ *(1)*

3.3 Explain why $3x$ and $3x^2$ are NOT like terms. **(2)**

> Like terms must have the same variable AND the same exponent *(1)*; here the exponents differ *(1)*

3.4 A rectangle has a length of $2x$ and a breadth of $(x + 3)$. Write down a simplified expression for its perimeter. **(3)**

> $P = 2(2x) + 2(x + 3)$ *(1)*
> $= 4x + 2x + 6$ *(1)*
> $= \mathbf{6x + 6}$ *(1)*

TOTAL: 36 marks

This question paper consists of 3 questions.

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