education
Department of
Education
FREE STATE PROVINCE

GRADE 10

MATHEMATICS

GRADE 10

INFORMAL TEST 4

TERM 1

09 FEBRUARY 2024

MARKS: 20

DURATION: 24 MINUTES

This question paper consists of 3 pages.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully before answering the questions.

1.   This question paper consists of two questions.

2.   Answer ALL the questions.

3.   Number the answers correctly according to the numbering system used in this question paper.

4.   Clearly show ALL calculations, diagrams, graphs, etc. which you have used in determining your answers.

5.   Answers only will NOT necessarily be awarded full marks.

6.   You may use an approved scientific calculator (non-programmable and non-graphical), unless otherwise stated.

7.   If necessary, round off answers to TWO decimal places, unless stated otherwise

QUESTION 1

Given the following numbers: $7\sqrt{2}$; $0,4\dot{3}$; $\sqrt{-121}$; π^2 ; $\sqrt[3]{-\dfrac{1}{27}}$

1.1 Write down two rational numbers. (2)

1.2 Write the recurring decimal $0,4\dot{3}$ as a fraction. (4)

1.3 Determine between which two consecutive integers does $7\sqrt{2}$ lie ? (3)

[9]

QUESTION 2

2.1 Expand the following product:

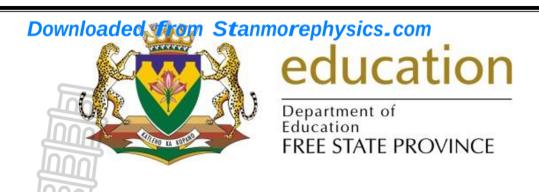$$(2a - 3b)(3a^2 + 2ab - 3b^2)$$ (3)

2.2 Factorise fully:

2.2.1 $3x + 6y - ax - 2ay$ (2)

2.2.2 $3x^2 + 17x - 6$ (2)

2.3 Simplify the following:

$$\frac{p^3 + q^3}{6p^2} \times \frac{3p - 3q}{p^2 - q^2}$$ (4)

[11]

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NATIONAL SENIOR CERTIFICATE

GRADE 10

MATHEMATICS

TERM 1

2024 INFORMAL TEST 4

MARKING GUIDELINE

This marking guideline consists of 2 pages

1

1.1	$0,4\dot{3}$ and $\sqrt[3]{-\dfrac{1}{27}}$	✓ ✓	(2)
1.2	$0,4\dot{3} = 0,433333333$ let $0,4\dot{3} = x$ $4,\dot{3} = 10x$ — — — — — — — (1) $43,\dot{3} = 100x$ — — — — — — (2) $39 = 90x$ $x = \dfrac{13}{30}$	✓ equation 1 ✓ equation 2 ✓ $39 = 90x$ ✓ answer	(4)
1.3	$7\sqrt{2} = \sqrt{98}$ $\sqrt{81} < \sqrt{98} < \sqrt{100}$ $9 < \sqrt{98} < 10$ It lies between 9 and 10	✓ $7\sqrt{2} = \sqrt{98}$ ✓ $\sqrt{81} < \sqrt{98} < \sqrt{100}$ ✓ answer	(3)
			[9]

QUESTION 2

2.1	$(2a - 3b)(3a^2 + 2ab - 3b^2)$ $= 2a(3a^2 + 2ab - 3b^2) - 3b(3a^2 + 2ab - 3b^2)$ $= 6a^3 + 4a^2b - 6ab^2 - 9a^2b - 6ab^2 + 9b^3$ $= 6a^3 - 5a^2b - 12ab^2 + 9b^3$	✓ $6a^3 + 4a^2b - 6ab^2$ ✓ $-9a^2b - 6ab^2 + 9b^3$ ✓ answer (3)
2.2.1	$3x + 6y - ax - 2ay = 3(x + 2y) - a(x + 2y)$ $\qquad\qquad\qquad = (3 - a)(x + 2y)$	✓ factors ✓ answer (2)
2.2.2	$3x^2 + 17x - 6 = (3x - 1)(x + 6)$	✓ ✓ answer (2)
2.3	$\dfrac{p^3 + q^3}{6p^2} \times \dfrac{3p - 3q}{p^2 - q^2} = \dfrac{(p+q)(p^2 - pq + q^2)}{6p^2} \times \dfrac{3(p-q)}{(p-q)(p+q)}$ $\qquad\qquad\qquad = \dfrac{3(p^2 - pq + q^2)}{2p^2}$	✓ factors difference of 2 cubes ✓ common factor ✓ factors difference of 2 squares ✓ answer (4)
		[11]

2

2.1	$(2a-3b)(3a^2+2ab-3b^2)$ $= 2a(3a^2+2ab-3b^2)-3b(3a^2+2ab-3b^2)$ $= 6a^3+4a^2b-6ab^2-9a^2b-6ab^2+9b^3$ $= 6a^3-5a^2b-12ab^2+9b^3$	✓$6a^3+4a^2b-6ab^2$ ✓$-9a^2b-6ab^2+9b^3$ ✓answer (3)
2.2.1	$3x+6y-ax-2ay = 3(x+2y)-a(x+2y)$ $\qquad\qquad\qquad = (x+2y)(3-a)$	✓common factor ✓answer (2)
2.2.2	$3x^2+17x-6 = (3x-1)(x+6)$	✓$(3x-1)$ ✓$(x+6)$ (2)

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