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ST BENEDICT'S

SUBJECT	Mathematics	PAPER	Algebra Part B
GRADE	12	DATE	4 February 2022
EXAMINER	Miss A Balzer	MARKS	39
NAME		MODERATOR	Gr 12 Teachers
TEACHER		DURATION	45min

QUESTION NO	DESCRIPTION	MAXIMUM MARK	ACTUAL MARK
1	Quadratic Equation	8	
2	Simultaneous Equations	6	
3	Factor and Remainder Theorem	12	
4	Cubic Equations	13	
TOTAL		39	

INSTRUCTIONS:

1. This paper consists of 4 questions and 6 pages.
2. Read the questions carefully.
3. Answer all questions in the spaces provided.
4. You may use an approved non-programmable and non-graphical calculator, unless otherwise stated.
5. Round off your answers to **one decimal digit** where necessary.
6. All necessary working details must be shown. Answers only, without the relevant calculations will not be given marks. Equations may not be solved solely with a calculator.
7. It is in your interest to write legibly and present your work neatly.

QUESTION 1**8 MARKS**

a) Solve for k in the following equation:

$$k - 1 + \frac{18}{k+1} = 9 \quad (4)$$

b) Hence, solve for x in the following equation:

$$x^2 + 2 - 1 + \frac{18}{x^2+2x+1} = 9 \quad (4)$$

QUESTION 2**6 MARKS**

Solve for x and y for the following equations: $x - y = 1$ and $x^2 + y^2 = 25$

QUESTION 3**12 MARKS**

a) Calculate the remainder when $x^3 - 2x^2 - x + 2$ is divided by $x - 4$. (2)

b) If the expression $2x^3 + ax^2 - 4x + 6$ is divided by $x - 1$ the remainder is 1.
Calculate the value of a . (3)

- c) If the expression $3x^3 + 8x^2 + ax + b$ has factors $(x + 2)$ and $(x - 1)$, find the value of a and b .

(7)

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QUESTION 4**13 MARKS**Solve for x in the following equations:

a) $8x^3 + 27 = 0$ (2)

b) $2x^3 - 9x^2 = -10x$ (5)

c) $2x^3 + 5x^2 + x - 2 = 0.$ (6)