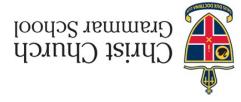
NUIT TEST 1



Year 12 MATHEMATICS 3CD Section One: Calculator-free

ection 2 minutes 3 minutes 15 marks	orking time for this section:
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	Student name

Materials required/recommended for this section To be provided by the supervisor This Question/Answer Booklet

Formula Sheet

To be provided by the candidate

Standard items: pens (blue/black preferred), pencils (including coloured), sharpener, correction fluid/tape, eraser, ruler, highlighters

Special items: ni

Important note to candidates

No other items may be taken into the examination room. It is **your** responsibility to ensure that you do not have any unauthorised notes or other items of a non-personal nature in the examination room. If you have any unauthorised material with you, hand it to the supervisor **before** reading any further.

Instructions to candidates

- 1. Write your answers in this Question/Answer Booklet.
- 2. Answer all questions.
- 3. Show all your working clearly. Your working should be in sufficient detail to allow your answers to be checked readily and for marks to be awarded for reasoning. Incorrect answers given without supporting reasoning cannot be allocated any marks. For any question or part question worth more than two marks, valid working or justification is required to receive full marks. If you repeat an answer to any question, ensure that you cancel the answer you do not wish to have marked.
- 4. It is recommended that **you do not use pencil**, except in diagrams.

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CALCULATOR-FREE

(4 marks)

Question 1

(1 mark)

(a) Simplify using factorial notation the term $\,^{3}\mathrm{G}_{3}\,$.

(1 mark)

(b) Evaluate the value of $\,^5P_3\,$.

(1 mark)

(c) Evaluate the value of $\frac{3!8!}{0!10!}$.

(1 mark)

 $\cdot \frac{\mathrm{i}(\mathrm{t} + n)}{\mathrm{i}(\mathrm{t} - n)(\mathrm{t} + n)}$ noissendre and n for small n (b)

Question 2 (7 marks)

Determine $\frac{dy}{dx}$ in each of the following. Do not simplify your answers.

(i)
$$y = \frac{5x^4}{2x-3}$$
. (2 marks)

(ii)
$$y = (x^2 - 4)^3$$
. (2 marks)

(b) Find the coordinates of the points on the curve $y = x^3 - 2x^2 - 5x + 1$ where $\frac{d^2y}{dx^2} = 2$. (3 m (3 marks)

5 Question 3 (4 marks)

y = x + 1 is a tangent to the curve $y = ax^2 + bx$ at the point (1, 2). Find the value of aand of b.

CALCULATOR-FREE