

Question	1	2	3	4	5	Total
Marks						
Max Marks	6	8	8	7	9	38

COMPLETE THE FOLLOWING QUESTIONS UNDER EXAM CONDITIONS

TIME ALLOWED: 50 MINUTES

CHECK AND CORRECT USING THE MARK SCHEME

Q1 (EDEXCEL C2 JAN 2006 Q2)

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(a) Find the first 3 terms, in ascending powers of  $x$ , of the binomial expansion of

$$(1 + px)^9,$$

where  $p$  is a constant.

(2)

These first 3 terms are  $1$ ,  $36x$  and  $qx^2$ , where  $q$  is a constant.

(b) Find the value of  $p$  and the value of  $q$ .

(4)

Q2 (EDEXCEL C2 JUN 2006 Q4)

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$$f(x) = 2x^3 + 3x^2 - 29x - 60.$$

(a) Find the remainder when  $f(x)$  is divided by  $(x + 2)$ .

(2)

(b) Use the factor theorem to show that  $(x + 3)$  is a factor of  $f(x)$ .

(2)

(c) Factorise  $f(x)$  completely.

(4)

Q3 (EDEXCEL C1 JUNE 2005 Q6)

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Find the set of values of  $x$  for which

(a)  $3(2x + 1) > 5 - 2x,$

(2)

(b)  $2x^2 - 7x + 3 > 0,$

(4)

(c) **both**  $3(2x + 1) > 5 - 2x$  **and**  $2x^2 - 7x + 3 > 0.$

(2)

Q4 (EDEXCEL C2 JUN 2014 Q8)

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(a) Sketch the graph of

$$y = 3^x, \quad x \in \mathbb{R}$$

showing the coordinates of any points at which the graph crosses the axes.

(2)

(b) Use algebra to solve the equation

$$3^{2x} - 9(3^x) + 18 = 0$$

giving your answers to 2 decimal places where appropriate.

(5)

Q5 (EDEXCEL C1 JUNE 2009 Q10)

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(a) Factorise completely  $x^3 - 6x^2 + 9x$

(3)

(b) Sketch the curve with equation

$$y = x^3 - 6x^2 + 9x$$

showing the coordinates of the points at which the curve meets the x-axis.

(4)

Using your answer to part (b), or otherwise,

(c) sketch, on a separate diagram, the curve with equation

$$y = (x - 2)^3 - 6(x - 2)^2 + 9(x - 2)$$

showing the coordinates of the points at which the curve meets the x-axis.

(2)

**(Total 9 marks)**