Centre No.					Pape	er Refer	ence			Surname	Initial(s)
Candidate No.			6	6	6	3	/	0	1	Signature	

6663/01

Edexcel GCE

Core Mathematics C1 Advanced Subsidiary

Monday 22 May 2006 - Morning

Time: 1 hour 30 minutes



Materials required for examination Items included with question papers

Mathematical Formulae (Green)

Calculators may NOT be used in this examination.

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname, initial(s) and

Check that you have the correct question paper.

You must write your answer for each question in the space following the question.

Information for Candidates

A booklet 'Mathematical Formulae and Statistical Tables' is provided.

Full marks may be obtained for answers to ALL questions.

The marks for individual questions and the parts of questions are shown in round brackets: e.g. (2).

There are 11 questions in this question paper. The total mark for this paper is 75.

There are 24 pages in this question paper. Any blank pages are indicated.

Advice to Candidates

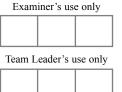
You must ensure that your answers to parts of questions are clearly labelled.

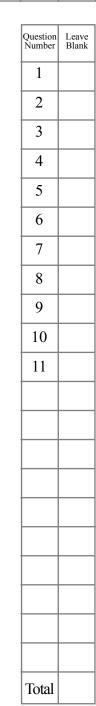
You must show sufficient working to make your methods clear to the examiner. Answers without working may gain no credit.

is publication may be reproduced only in accordance with

W850/R6663/57570 3/3/3/3/3/53,900







Turn over



1. Find $\int (6x^2 + 2 + x^{-\frac{1}{2}}) dx$, giving each term in its simplest form. (4)	a)
(4	i)
	´
	_
	_
	_
	_
	_
	_
	_
	_
	_
	_
	_
	_
	_
	_
	_
	_
	_
	_
	_
	_
	-
	_
	_
	_
	_
	Q1
(Total 4 marks	a)

Find the set of values of x for which		
$x^2 - 7x - 18 > 0.$	(4)	
	(4)	
		Q2

Lagra
Leave
blowle
пинк

- 3. On separate diagrams, sketch the graphs of
 - (a) $y = (x+3)^2$,

(3)

(b) $y = (x + 3)^2 + k$, where k is a positive constant.

(2)

Show on each sketch the coordinates of each point at which the graph meets the axes.

Question 3 continued	Leave blank
(Total 5 marks	Q3

A sequence a_1 , a_2	a_2, a_3, \ldots is defined by	
	$a_1 = 3$,	
	$a_{n+1}=3a_n-5, n\geqslant 1.$	
(a) Find the value	ue of a_2 and the value of a_3 .	
(a) This the vari	te of u ₂ and the value of u ₃ .	(2)
(b) Calculate the	e value of $\sum_{r=1}^{5} a_r$.	(3)

nestion 4 continued	
	_

Differentiate with respect to x	
(a) $x^4 + 6\sqrt{x}$,	(2)
	(3)
$(x \mid A)^2$	
(b) $\frac{(x+4)^2}{x}$.	
	(4)
	(+)

	Leave blank
Question 5 continued	
	Q5
(Total 7 marks)	

	1
Leave	
Leave	
blank	

(b) Express $\frac{26}{4+\sqrt{3}}$ in the form $a+b\sqrt{3}$, where a and b are integers.	(2)
	(2)

Question 6 continued	

•	An athlete prepares for a race by completing a practice run on each of 11 consecutive days. On each day after the first day, he runs further than he ran on the previous day. The lengths of his 11 practice runs form an arithmetic sequence with first term a km and common difference d km.
	He runs 9 km on the 11th day, and he runs a total of 77 km over the 11 day period.
	Find the value of a and the value of d . (7)
	(1)

uestion 7 continued	

(b) For this value of p , solve the equation $x^2 + 2px + (3p + 4) = 0$.	(4) (2)
(b) For this value of p , solve the equation $x^2 + 2px + (3p + 4) = 0$.	(2)
	()

uestion 8 continued	
lestion o continued	

9.	Given that $f(x) = (x^2 - 6x)(x - 2) + 3x$,	
	(a) express $f(x)$ in the form $x(ax^2 + bx + c)$, where a, b and c are constants.	
		(3)
	(b) Hence factorise $f(x)$ completely.	
		(2)
	(c) Sketch the graph of $y = f(x)$, showing the coordinates of each point at which the graph	ıph
	meets the axes.	(3)
		(3)

	Leave blank
Question 9 continued	
	-
	-
	-
	-
	_
	_
	-
	-
	-
	-
	-
	-
	_
	_
	-
	_
	-
	-
	Q9
(Total 8 marks)	,

10. The curve C with equation $y = f(x)$, $x \ne 0$, passes through the point $(3, 7\frac{1}{2})$.	
Given that $f'(x) = 2x + \frac{3}{x^2}$,	
(a) find $f(x)$.	-\
	5)
(b) Verify that $f(-2) = 5$.	1\
(1)
(c) Find an equation for the tangent to C at the point $(-2, 5)$, giving your answer in the form $ax + by + c = 0$, where a , b and c are integers.	ıe
(4	4)
	_
	_
	_
	_

		Lea
Question 10 continued		
		Q
	(Total 10 marks)	

ntersect at the point S . (b) Calculate the coordinates of S . (c) Show that the length of RS is $3\sqrt{5}$. (d) Hence, or otherwise, find the exact area of triangle PQR .) Calculate the coordinates of S . (5)) Show that the length of RS is $3\sqrt{5}$.	(a) Find an equation for l_1 in the form $y = mx + c$, where m and c are constants	(4)
(c) Show that the length of RS is $3\sqrt{5}$. (d) Hence, or otherwise, find the exact area of triangle PQR .	 (5) Show that the length of RS is 3√5. (2) Hence, or otherwise, find the exact area of triangle PQR. 	The line l_2 passes through the point $R(10, 0)$ and is perpendicular to l_1 . The lines intersect at the point S .	s l_1 and l_2
(c) Show that the length of RS is $3\sqrt{5}$. (d) Hence, or otherwise, find the exact area of triangle PQR .) Show that the length of RS is $3\sqrt{5}$. (2) Hence, or otherwise, find the exact area of triangle PQR .	(b) Calculate the coordinates of <i>S</i> .	(5)
(d) Hence, or otherwise, find the exact area of triangle <i>PQR</i> .) Hence, or otherwise, find the exact area of triangle <i>PQR</i> .	(a) Charachtachtachtachtachtachtachtachtachtacht	(5)
		c) Show that the length of RS is 3 vs.	(2)
		(d) Hence, or otherwise, find the exact area of triangle <i>PQR</i> .	(4)

	Leave blank
Question 11 continued	blank
Quossia 11 Vallerius	

Question 11 continued		blar
		Q
	(Total 15 marks)	

