Surname	
Other Names	
Candidate Signature	

Centre Number						Candidate Number				

Examiner Comments	

Total Marks

MATHEMATICS

A LEVEL QUESTION COMPILATION

CM

Questions on: Manipulating Rational Expressions

Instructions to candidates:

• In the boxes above, write your centre number, candidate number, your surname, other names and signature.

• Answer ALL of the questions.

• You must write your answer for each question in the spaces provided.

• You may use a calculator.

Information to candidates:

• Full marks may only be obtained for answers to ALL of the questions.

• The marks for individual questions and parts of the questions are shown in round brackets.

• There are 5 questions in this question paper. The total mark for this paper is 25.

Advice to candidates:

• You should ensure your answers to parts of the question are clearly labelled.

• You should show sufficient working to make your workings clear to the Examiner.

• Answers without working may not gain full credit.

1 5 3 3 2 2 2 1 8 0 0 0 4

1 Express

$$\frac{5x^2+3x}{(5x+3)(x-2)}-\frac{6}{x^2-x-2}$$

as a single fraction in its simplest form. **(7)**

Question 1 continued

TOTAL 7 MARKS

2 Express

$$\frac{4x-2}{4x^2-1}-\frac{4}{2x+1}$$

as a single fraction in its simplest form. **(4)**

Question 2 continued

TOTAL 4 MARKS

3 Express $\dfrac{2x+5}{(x+1)(x+2)}$ in partial fractions. **(4)**

Question 3 continued

TOTAL 4 MARKS

4 Given that

$$\frac{4x-1}{(x+2)^2} \equiv \frac{A}{(x+2)} + \frac{B}{(x+2)^2}, \quad x \neq -2$$

find the values of the constants A and B. **(5)**

Question 4 continued

TOTAL 5 MARKS

5 Given that

$$\frac{9x}{(x-3)^2(2x+1)} \equiv \frac{A}{(x-3)} + \frac{B}{(x-3)^2} + \frac{C}{(2x+1)}, \quad x \neq 3, \ -\frac{1}{2}$$

find the values of the constants A, B and C. **(5)**

Question 5 continued

TOTAL 5 MARKS