Binomial Negative & Fractional Difficulty: Medium

Question Paper 2

Level	A Level
Subject	Maths Pure 3
Exam Board	CIE
Topic	Algebra
Sub-Topic	Binomial negative & fractional
Difficulty	Medium
Booklet	Question Paper 2

Time allowed: **59 minutes**

Score: **/42**

Percentage: **/100**

Grade Boundaries:

A*	A	B	C	D	E
>90%	81%	70%	58%	46%	34%

Question 1

When $(1 + 2x)(1 + ax)^{\frac{2}{3}}$, where a is a constant, is expanded in ascending powers of x, the coefficient of the term in x is zero.

(i) Find the value of a. [3]

(ii) When a has this value, find the term in x^3 in the expansion of $(1 + 2x)(1 + ax)^{\frac{2}{3}}$, simplifying the coefficient. [4]

Question 2

(i) Express $\frac{4+5x-x^2}{(1-2x)(2+x)^2}$ in partial fractions. [5]

(ii) Hence obtain the expansion of $\frac{4+5x-x^2}{(1-2x)(2+x)^2}$ in ascending powers of x, up to and including the term in x^2. [5].

(i) Express $\frac{5x - x^2}{(1 + x)(2 + x^2)}$ in partial fractions. [5]

(ii) Hence obtain the expansion of $\frac{5x - x^2}{(1 + x)(2 + x^2)}$ in ascending powers of x, up to and including the term in x^3. [5]

(i) Expand $\frac{1}{\sqrt{(1-4x)}}$ in ascending powers of x, up to and including the term in x^2, simplifying the coefficients. [3]

(ii) Hence find the coefficient of x^2 in the expansion of $\frac{1+2x}{\sqrt{(4-16x)}}$. [2]

Expand $\sqrt{\left(\frac{1-x}{1+x}\right)}$ in ascending powers of x, up to and including the term in x^2, simplifying the coefficients. [5]

Question 6

Express $\frac{7x^2 - 3x + 2}{x(x^2 + 1)}$ in partial fractions. [5]