

PAST YEARS EXAMINATION QUESTIONS

- 1 Find the first three terms in the expansion, in ascending powers of x , of $(2 + x)^6$ and hence obtain the coefficient of x^2 in the expansion of $(2 + x - x^2)^6$.

[4]

N2002/II/2

- 2 Find the term independent of x in the expansion of

$$\left(3x^2 + \frac{1}{x}\right)^9.$$

N2003/II/4 (AO Maths)

- 3 Obtain

- (i) the first 3 terms in the expansion, in descending powers of x , of $(3x - 1)^5$. [3]

- (ii) the coefficient of x^4 in the expansion of

$$(3x - 1)^5(2x + 1). \quad [2]$$

N2003/II/5

- 4 Given that the expansion of $(a + x)(1 - 2x)^n$ in ascending powers of x is $3 - 41x + bx^2 + \dots$, find the values of the constants a , n and b . [6]

N2004/II/5

The coefficient of x in the expansion of $(2 + ax)^6$ is 48.

- (i) Find the value of a .
 (ii) Using this value of a , find the coefficient of x^2 and of x^3 in the expansion of $(2 + ax)^6$.

N2004/II/8 (AO Maths)

Expand $(1 + y)^8$ in ascending powers of y , up to and including the term in y^3 .

In the expansion of $(1 + x + kx^2)^8$ in ascending powers of x , the coefficient of y^3 is zero. Find the value of the constant k .

N2004/II/11(a) (Maths C)

Find the coefficient of x^4 in the expansion of

$$(1 + 2x)\left(3 - \frac{x}{3}\right)^4.$$

N2005/II/5 (AO Maths)

- 8 (a) The coefficient of x^7 in the expansion of $(1 + ax)^7$ is $\frac{792}{128}$. Find the value of a .

- (b) Find the term which is independent of x in the expansion of $\left(2x - \frac{1}{x^2}\right)^9$.

N2005/II/10 (AO Maths)

- 9 The binomial expansion of $(1 + px)^n$, where $n > 0$, in ascending powers of x is

$$1 - 12x + 28p^2x^2 + qx^3 + \dots$$

Find the value of n , of p and of q . [6]

N2005/II/5

- 10 Given that the coefficient of x^2 in the expansion of

$$(k + x)\left(2 - \frac{x}{2}\right)^6$$

is 84, find the value of the constant k . [6]

N2006/II/6

- 11 (a) Find the term independent of x in the expansion of $\left(2x^2 + \frac{1}{x}\right)^6$.

- (b) Find the coefficient of x^3 in the expansion of $(1 + 3x)(1 - x)^{10}$.

N2006/II/12 (AO Maths)

- 12 (i) Find the first three terms of the expansion of $\left(2 - \frac{x}{2}\right)^7$ in ascending powers of x .

- (ii) Hence find the coefficient of x^2 in the expansion of $(3 + x)\left(2 - \frac{x}{2}\right)^7$.

N2007/II/5 (AO Maths)

- 13 Find the coefficient of x^3 in the binomial expansion of

(i) $(1 - 2x)^7$, [2]

(ii) $(1 - 7x^2)(1 - 2x)^7$. [3]

N2007/II/4

- 14 (i) In the binomial expansion of $\left(x - \frac{k}{x^2}\right)^7$, where k is a positive integer, the coefficient of x is 336. Find the value of k . [4]

- (ii) Using your value of k , find the coefficient of x in the expansion of $\left(1 + \frac{10}{x^3}\right)\left(x - \frac{k}{x^2}\right)^7$. [3]

N2008/II/5 (Syll. 4018)