| **Question** | **Scheme** | **Marks** |
| --- | --- | --- |
| **1(a)** |  | B1 |
|  | B1 |
|   | M1 |
|  |  |
|   |  |
|   | A1 A1 |
|  |  |  **(5)** |
| **1(b)** |  |  |
|   | M1 |
|   | M1 |
|   | A1 |
|  |  |  **(3)** |
|  |  | **(8 marks)** |
| **2(a)** |   |  |
| **Either**  **or**  | M1 |
|  leading to  | A1 |
|  |  |  **(2)** |
| **2(b)** |   | **Either**  **or**  **or**   | M1 |
| **Either**  **or**   | M1 |
|  |  or 22.5 | A1 |
|  |  |  **(3)** |
|  |  | **(5 marks)** |
| **3** |   | M1 |
|   ,  or  | B1 |
|   *n* not a natural number,  | M1 |
|   ft their  | A1 ft |
|    | A1 |
|   | A1  |
|  |  | **(6 marks)** |
| **4(a)** |   | M1 |
|   , , 2 or equivalent | B1 |
|   | M1 A1ft |
|   or  | A1 |
|   | A1 |
|  |  | **(6)** |
| **4(b)** |   | B1ft |
|  |  | **(1)** |
| **4(c)** |   | M1 A1 |
|   |   |
|  |  | **(2)** |
|  |  | **(9 marks)** |
| **5(a)** |  |  |
| or  | B1 |
|   | M1 A1ft |
|  |  |
|   |  |
|   | A1 A1 |
|  |  | **(5)** |
| **5(b)** |  | M1 |
| *Can be implied by later work even in part (c)*. |  |
| *x* terms:  |  |
| giving,  | A1 |
|  |  | **(2)** |
| **5(c)** | terms:  | M1 |
| So,   |  |
|  or  or  | A1 |
|  |  | **(2)** |
|  |  | **(9 marks)** |
| **6(a)** |  | B1 |
|   | M1 A1 |
|   |  |
|   | M1 A1 |
|  |  | **(5)** |
| **6(b)** |  |  |
|  Coefficient of *x*;  | M1 |
|  Coefficient of;  A1 either correct | M1 A1 |
|  Leading to  | M1 A1 |
|  |  | **(5)** |
| **6(c)** | Coefficient of  is  | M1 A1ft |
|   cao | A1 |
|  |  | **(3)**  |
|  |  | **(13 marks)** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Source paper** | **Question number** | **New spec references** | **Question description** | **New AOs** |
| 1 | C4 June 2014R | 1 | 4.1 | Binomial expansion | 1.1b, 2.1 |
| 2 | C4 June 2014 | 2 | 4.1 | Binomial expansion | 1.1b |
| 3 | C4 2011 | 2 | 4.1 | Binomial expansion | 1.1b |
| 4 | C4 2012 | 3 | 4.1 | Binomial expansion | 1.1b, 2.2a |
| 5 | C4 Jan 2012 | 3 | 4.1 | Binomial expansion | 1.1b, 2.1 |
| 6 | C4 Jan 2011 | 5 | 4.1 | Binomial expansion | 1.1b, 2.2a |