| **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 |