| **Question** | **Scheme** | **Marks** |
| --- | --- | --- |
| **1** | , …… | M1 |
|   | B1 A1 A1 |
|  |  | (4 marks) |
| **2** |   |  |
|  |  |
| First term of 243 | B1 |
|  | M1 |
|   | A1 |
|  | A1 |
|  |  | **(4 marks)** |
| **3** |  |  |
|  | M1 |
|  |  | B1 A1 A1 |
|  |  | **(4 marks)** |
| **4** |  |  |
|  | B1 |
|  | M1 |
|   | A1A1 |
|  |  | **(4 marks)** |
| **5(a)** |  | 243 as a constant term seen | B1 |
|  | B1 |
|  or   | M1 |
|  or  | A1 |
|  |  |  | **(4)** |
| **5(b)** |  | Establishes an equation from their coefficients Condone 2 on the wrong side of the equation | M1 |
| So,  | (Ignore  if seen) | A1 |
|  |  |  | **(2)** |
|  |  | **(6 marks)** |
| **6(a)** | , …… | B1 |
|   | M1 A1 |
|   or  | A1 |
|  |  | **(4)** |
| **6(b)** |  States or implies that *x* = 0.1  | B1 |
| Substitutes their value of *x* (provided it is <1) into series obtained in (a)  | M1 |
| i.e. 1 + 0.2 + 0.0175 + 0.000875, = 1.2184 | A1 cao |
|  |  | **(3)** |
|  |  | **(7 marks)** |
| **7(a)** |  | B1 |
|  | M1 |
|  | A1A1 |
|  |   | **(4)** |
| **7(b)** |  or  or  or or are fine. | M1 |
|  | A1A1 |
|  |  | **(3)** |
|  |  | **(7 marks)** |
| **8(a)** |  = ; (1 + *x*)*n* coefficients of *x4* and *x*5 are *p* and *q* respectively*b* = 36Candidates should usually “identify” two terms as their *p* and *q* respectively | B1 |
|  |  | **(1)** |
| **8(b)** | Term 1:  or  or  or  or 91390Term 2:  or  or  or  or 658008Hence,  |  |
| Any one of Term 1 or Term 2 correct (Ignore the label of *p* and/or *q*) | M1 |
| Both of them correct. (Ignore the label of *p* and/or *q*) | A1 |
|  oe | A1 oe cso |
|  |  | **(3)** |
|  |  | **(4 marks)** |
| **9(a)** |  |  |
| First term of 16 in their final series | B1 |
| At least one of  | M1 |
|   | A1 A1 |
|  |  | **(4)** |
| **9(b)** |  | B1ft |
|  |  | **(1)** |
| **9(c)** |  | M1 |
| *x* terms:  |  |
| giving,  | A1 |
|  |  | **(2)** |
| **9(d)** | terms:  |  |
|  | So,   | M1 A1 |
|  |  | **(2)** |
|  |  | **(9 marks)** |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Source paper** | **Question number** | **New spec references** | **Question description** | **New AOs** |
| 1 | C2 2012 | 1 | 4.1 | Binomial expansion | 1.1b |
| 2 | C2 2017 | 1 | 4.1 | Binomial expansion | 1.1b |
| 3 | C2 2015 | 1 | 4.1 | Binomial expansion | 1.1b |
| 4 | C2 June 2014R | 1 | 4.1 | Binomial expansion | 1.1b |
| 5 | C2 2011 | Q2 | 4.1 | Binomial expansion | 1.1b |
| 6 | C2 Jan 2012 | Q3 | 4.1 | Binomial expansion | 1.1b, 2.2a |
| 7 | C2 2014 | 3 | 4.1 | Binomial expansion | 1.1b |
| 8 | C2 Jan 2011 | 5 | 4.1 | Binomial expansion | 1.1a, 1.1b |
| 9 | C2 2016 | 5 | 4.1 | Binomial expansion | 1.1b |