| **Question** | **Scheme** | | | **Marks** |
| --- | --- | --- | --- | --- |
| **1(a)** |  | | | M1  A1 |
|  |  | | | **(2)** |
| **1(b)** |  | | | M1  A1  M1 A1  A1 |
|  |  | | | **(5)** |
| **1(c)** | triangle, *drawn on the diagram*, with base coinciding with base of | | | B1 |
| trapezium, top vertex above line *v* = 30 and meeting trapezium at least once | | | dB1 |
|  |  | | | **(2)** |
| **1(d)** | *V* marked correctly | | | M1  A1  A1  M1 A1  A1 |
| (oe) or 42 (or better) | | |  |
|  |  | | | **(6)** |
|  |  | | | **(15 marks)** |
| **2(a)** |  | | | M1 M(A)1 |
| *u =* 17 ½ 🞸 | | | A1 |
|  |  | | | **(3)** |
| **2(b)** |  | | | M1 |
|  | | | A1 |
|  |  | | | **(2)** |
| **2(c)** |  | | | M1 |
|  | | | A1 |
|  | | | dM1 |
| *t* = 3.142.. (22/7) or 0.428…(3/7) | | | A1 |
|  | | | dM1A1 |
|  |  | | | **(6)** |
|  |  | | | **(11 marks)** |
| **3(a)(i)** |  | | 1st section correct | B1 |
| 2nd & 3rd sections correct | B1 |
| Numbers and *v* marked correctly on the axes | dB1 |
|  |  | | | **(3)** |
| **3(a)(ii)** |  | 1st section correct | | B1 |
| 2nd section correct | | B1 |
| 3rd section correct and no “extras” on the sketch | | B1 |
|  |  | | | **(3)** |
| **3(b)** |  | | | M1A1 |
|  | | | dM1A1 |
|  |  | | | **(4)** |
|  |  | | | **(10 marks)** |
| **4(a)** |  | | | M1A2  A1 |
|  |  | | | **(4)** |
| **4(b)** | Finding *u* ( = 6 ) | | | M1  M1  A1  DM1  A1 |
|  |  | | | **(5)** |
|  |  | | | **(9 marks)** |
| **5(a)** |  | | | M1 |
|  | | | A1 |
|  |  | | | **(2)** |
| **5(b)** |  | | |  |
| Shape | | | B1 |
| 15, *T* | | | B1 |
|  |  | | | **(2)** |
| **5(c)** | ft their 6 | | | M1 A1ft |
|  | | |  |
|  | | | M1 A1 |
|  |  | | | **(4)** |
| **5(d)** | ,0.9375, 0.938, 0.94 | | | M1 A1 |
|  |  | | | **(2)** |
| **5(e)** | 3 horizontal lines | | | B1 |
| Correctly placed;no cts vert line | | | B1 |
| , ft their | | | B1 |
|  |  | | | **(3)** |
|  |  | | | **(13 marks)** |
| **6(a)** | *V* | | | B1 (shape)  B1 (*V*) |
|  |  | | | **(2)** |
| **6(b)** |  | | | M1A1A1  M1A1 |
|  |  | | | **(5)** |
| **6(c)** |  | | | M1 A1 ft  A1  M1 A1  A1 |
|  |  | | | **(6)** |
|  |  | | | **(13 marks)** |
| **7(a)** |  | | | M1 A1 |
| Leading to  🞹 cso | | | A1 |
|  |  | | | **(3)** |
| **7(b)** |  | | | M1A1 |
|  | | |  |
| *t* = 2.99 or 3.0  *t* = 1.30 or 1.3 | | | dM1A1  A1 |
|  |  | | | **(5)** |
| **7(c)** | N2L | | | M1A1 |
|  | | |  |
|  | | |  |
| Leading to  or 0.32 | | | M1A1 |
|  |  | | | **(4)** |
|  |  | | | **(12 marks)** |
|  |  | | |  |
| **8(a)** | 4 N  1 N  2 N  *T* N  *T* N | | |  |
| For system N2L | | | M1 A1 |
| , 1.3 | | | A1 |
|  |  | | | **(3)** |
| **8(b)** |  | | | M1 A1 |
|  |  | | | **(2)** |
| **8(c)** | For *P* N2L  ft their *a* | | | M1 A1ft |
| 1.38, 1.4 | | | A1 |
| **OR** For *Q* N2L 4 – 2 – *T* = 0.5 × 1.25 | | |  |
| 1 N  2 N | | |  |
|  |  | | | **(3)** |
| **8(d)** | For system N2L | | | M1 A1 |
|  | | | M1 |
|  | | | A1 |
|  |  | | | **(4)** |
| **8(e)** | For *P* N2L | | | M1 A1 |
| , 0.13 | | | A1 |
|  |  | | | **(3)** |
|  |  | | | **(15 marks)** |

|  |  |  |  |  |  |
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|  | **Source paper** | **Question number** | **New spec references** | **Question description** | **New AOs** |
| 1 | M1 Jan 2013 | 5 |  | Kinematics of a particle moving in a straight line | 1.1a, 1.1b, 2.2a, 3.1b |
| 2 | M1 Jan 2012 | 5 |  | Kinematics of a particle moving in a straight line | 1.1b, 2.2a, 3.1b |
| 3 | M1 Jan 2011 | 5 |  | Kinematics of a particle moving in a straight line | 1.1a, 1.1b, 2.2a, 3.1b |
| 4 | M1 2017 | 6 |  | Kinematics of a particle moving in a straight line | 1.1b, 3.1b |
| 5 | M1 Jan 2012 | 6 |  | Kinematics of a particle moving in a straight line | 1.1b, 2.2a, 3.1b |
| 6 | M1 2015 | 7 |  | Kinematics of a particle moving in a straight line | 1.1a, 1.1b, 2.1a, 2.2, 3.1b, 3.3 |
| 7 | M1 2012 | 5 |  | Kinematics of a particle moving in a straight line, Dynamics of a particle moving in a straight line or plane | 1.1b, 3.1b, 3.3, 3.4 |
| 8 | M1 2012 | 7 |  | Kinematics of a particle moving in a straight line, Dynamics of a particle moving in a straight line or plane | 1.1b, 2.2a, 3.1b, 3.4 |