**P3 S5 Exam July 2014 Guide**

|  |  |  |
| --- | --- | --- |
| **QUESTION 1** | | |
| **Code** | **Points to score** | **Marks** |
| A1  A2  A3  A4 | Aim of the experiment as given in the instructions  Time for twenty oscillations for bob A: 16.00 – 19.00 s recoded to 2 dp … 1 + ½  To correctly calculated to 4 decimal places ………………….. ½ + ½  Correctly calculated to 4 decimal places ………………….. ½ + ½ | ½  1½  1  1 |
|  |  | **4** |
| B1  B2  B3  B4  B5  B6 | Columnar table of *x*, time for 20 oscillations, T, T2, and (+ T2) ….. @¼  Correct units for the columns: m, s, s, s2, s2 ……… @¼  Time for 20 oscillations decreasing: 40.00 – 23.00 recorded to 2 dp …. @1  T correctly calculated to 3 decimal places. ……….. @¼  T2 correctly calculated to 3 decimal places. ……….. @¼  (+ T2) correctly calculated to 3 decimal places. ……….. @¼ | 1  1  6  1½  1½  1½ |
|  |  | **12½** |
| C1  C2  C3  C4  C5  C6  C7  C8  C9  C10 | Title of the graph: *A graph of () against x* - no units  Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit ……….. ½ + ½    Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values  indicated ………... ½ + ½  Points correctly plotted: no shading ……….@½  Best fit : awarded if at least 4 points were correctly plotted  Indication of triangle or equivalent for calculating s, covering all points  s correctly calculated if the coordinates were correctly read and  - 4.2≤ s ≤ -3.8 s2 m-1 recorded to 1 or 2 decimal places …….. 1 + ½  Intercept, c, correctly read and is 4.0 – 4.4 to 1 or 2 decimal places …. ½ + ½  γ correctly calculated if correct substitution is available and 9.5 ≤ γ ≤ 10.2 m s-2 , recorded to 1 or 2 decimal places ………….. 1 + ½  λ correctly calculated if correct substitution is available and 1.0 ≤ λ ≤ 1.1 m , recorded to 1 or 2 decimal places ………….. 1 + ½ | ½  1  1  3  ½  ½  1½  1  1½  1½ |
|  |  | **12** |
| D1  D2  D3  D4 | y recorded in metres to 3 decimal places ……………… ½ + ½  Time for 20 oscillations: 28.00 – 36.00 s …………….. 1 + ½  T correctly calculated to 3 decimal places ……………. ½ + ½  γ correctly calculated if correct substitution into **γ =** is available and 9.5 ≤ γ ≤ 10.2 m s-2 | 1½  1½  1  1½ |
|  |  | **5½** |
| ***Total = 34*** | | |

|  |  |  |
| --- | --- | --- |
| **QUESTION 2** | | |
| **Code** | **Points to score** | **Marks** |
| A1  A2  A3 | t measured at at least 3 places  t = 1.80 – 2.20 cm recorded to 2 decimal places in cm ……… 1 + ½  4t2 calculated to 1 decimal place (cm2) …………. ½ + ½ | ½  1½  1 |
|  |  | **3** |
| B1  B2  B3  B4  B5  B6  B7  B8 | Columnar table of: α, *x*, cos α, , *x*2, (*x*2 + 4t2) and y …….. @¼  Correct units for the columns: (º), (cm), \_, (cm), (cm2), (cm2) and (cm) …. @¼  Values of *x* decreasing between 3.7 – 0.7 recorded to 1 decimal place. ….. @2  Values of cos α: 0.940, 0.866, 0.766, 0.643, 0.500, 0.342 ……. @¼  Values of correctly calculated to 1 decimal place. ………… @¼  Values of *x*2 calculated to 0 or 1 decimal place. ………………….@¼  Values of (*x*2 + 4t2) calculated to 1 decimal place. ……………….@¼  Values of y calculated to 2 decimal places. ………………….@¼ | 1½  1½  12  1½  1½  1½  1½  1½ |
|  |  | **22½** |
| C1  C2  C3  C4  C5  C6  C7 | Title of the graph: *A graph of y against*  - no units  Axes: Each drawn with an arrow in the increasing direction, each labeled with quantity and unit ……….. ½ + ½    Scales: Uniform, each spanning at least ½ pg, demarcations marked, starting values  indicated ………... ½ + ½  Points correctly plotted: no shading ……….@½  Best fit : awarded if at least 4 points were correctly plotted  Indication of triangle or equivalent for calculating s, covering all points  s correctly calculated if the coordinates were correctly read and 1.4 ≤ s ≤ 1.6 recorded to 1 or 2 decimal places …….. 1 + ½ | ½  1  1  3  ½  ½  1½ |
|  |  | **7½** |
| ***Total = 33*** | | |
|  |  |  |