| Question Number | Scheme | Marks |
|---|---|---|
| **5 (a)** | $v = u + at(\uparrow) \Rightarrow 0 = u - g(\frac{25}{14})$<br>$u = 17\frac{1}{2}$ ✱ | M1 M(A)1<br>A1<br>(3) |
| **(b)** | $v^2 = u^2 + 2as(\uparrow) \Rightarrow 0^2 = 17.5^2 - 2gs$<br>$s = 15.6 \quad (\text{m}) \quad$ or 16 (m) | M1<br>A1<br>(2) |
| **(c)** | $s = ut + \frac{1}{2}at^2(\uparrow) \Rightarrow 6.6 = 17.5t - \frac{1}{2}gt^2$<br>$4.9t^2 - 17.5t + 6.6 = 0$<br>$t = \frac{17.5 \pm \sqrt{(17.5^2 - 129.36)}}{9.8} = \frac{17.5 \pm 13.3}{9.8}$<br>$t$ = 3.142.. (22/7) or 0.428…(3/7)<br>$T = t_2 - t_1 = 2.71 \quad (2.7)$ | M1<br>A1<br>DM1<br>A1<br>DM1 A1 (6) |
| | **OR**<br>$v^2 = u^2 + 2as(\uparrow) \Rightarrow v^2 = 17.5^2 - 2g\text{x}6.6$<br>$v = \pm 13.3$<br>$v = u + at(\uparrow) \Rightarrow \pm 13.3 = 17.5 - gt$<br>$t = \frac{17.5 \pm 13.3}{9.8}$<br>= 3.14.. (22/7) or 0.428..(3/7)<br>$T$ = 3.14.. – 0.428.. = 2.71 or 2.7 | M1A1<br>DM1<br>A1<br>DM1 A1 (6) |
| | **OR**<br>$v^2 = u^2 + 2as(\uparrow) \Rightarrow v^2 = 17.5^2 - 2g\text{x}6.6$ or $0^2 = u^2 - 2g\text{x}(15.625 - 6.6)$<br>$v = 13.3$ $\quad$ $u$ = 13.3<br>$v = u + at(\uparrow) \Rightarrow 0 = 13.3 - gt$<br>$t = \frac{13.3}{g}$<br>$T = 2 \text{ x } \frac{13.3}{g} = 2.7$ or 2.71 | M1 A1<br>DM1 A1<br>DM1 A1 (6) |
| | | **11** |