1. (4)

From equation of motion. we have

$v^2 - u^2 = 2as$

Given $v' = \frac{80}{100}v, u = 0, a = g,$

$\therefore h' = \left(\frac{80}{100}\right)^2 \frac{v^2}{2g}$

$h' = 0.64\,h$

2. (4)

$v^2 = u^2 + 2as$

$a = \frac{v^2 - u^2}{2s}$

3. (2) $P = \frac{mgh}{t}$

4. (4)

Since, $e^n = \left(\frac{h_n}{h_0}\right)^{1/2}$

$\therefore h_n = e^{2n}\ h_0 = e^2 \times e^2 h = e^4 h$

5. (2)

Rotational kinetic energy $= \frac{1}{2} I\omega^2 = 8J$

$\Rightarrow \frac{1}{2} \times \frac{1}{2} mr^2\omega^2 = 8$

or $\frac{1}{4} \times 2 \times (1)^2 \omega^2 = 8$

or $\omega^2 = 16,$ or $\omega = 4\,rad\,s^{-1}$

Angular momentum $L = I\omega$

$= \frac{1}{2} mr^2\omega = \frac{1}{2} \times 2 \times (1)^2 \times 4 = 4Js.$

6. (4)

7. (1)

By using kepler's third law

$\left[\frac{T}{365}\right]^2 = \left[\frac{1}{2}\right]^3$

$\therefore \quad T = \frac{365}{(2)^{3/2}} = 129\,days$

8. (4)

9. (1)

Orbital angular momentum= $\sqrt{l(l+1)}\,\frac{h}{2\pi}$

10. (4)

11. (3)

$\Delta n = +\frac{1}{2}$ $\qquad \Delta G = \Delta H - T\Delta S$

$\therefore \Delta S = +ve \qquad = -ve - (+ve) = -ve$

$\Delta H = -ve(exo)$

12. (4)

$K_P = \frac{\left(P'_{CO_2}\right)}{\left(P'_{CH_4}\right)\left(P'_{O_2}\right)}$

13. (4)

$pH = pK_a + \log \frac{[conjugate\ base]}{[Acid]}$

$pK_w - PK_b + \log \frac{[conjugate\ base]}{[Acid]}$

14. (1) 15. (1) 16. (3)
17. (2) 18. (3) 19. (4)
20. (3) 21. (4) 22. (2)
23. (4) 24. (3) 25. (1)