(b) Sol: 1.

$$F = \frac{GmM}{R^2} \Rightarrow F = \frac{GmM}{(R+h)^2}$$

$$\Rightarrow F = \frac{6.67\times10^{-11}\times 6\times10^{24}\times 3500}{(4200+6400)^2\times10^3}$$

$$= \frac{6.67\times 6\times 10^{13}\times 3500}{10600\times 10600\times 10^3}$$

$$= \frac{6.67\times6\times35\times10^{13-3-2}}{106\times106}$$

$$= \frac{6.67\times6\times35\times10^{8}}{106\times106} = 12500N \ (2)$$

Q2. The value of g is maximum –

Sol: (1) at poles of earth

Q3. A stone is thrown vertically upwards and caught at the point of projection after 10 seconds. The time taken by the stone to reach

→ the highest point is —

Sol (1) 5 sec

Q4. The period of a satellite in a circular ~~orb~~ orbit of radius ~~R is~~ R is T, the period of another satellite in a circular orbit of radius 4R is —

Sol:- $T^2 \propto R^3$

$$\frac{T_1^2}{T_2^2} = \frac{R_1^3}{R_2^3} \Rightarrow \frac{T^2}{T_2^2} = \frac{R^3}{(4R)^3}$$

$$\Rightarrow \frac{T^2}{T_2^2} = \frac{R^3}{64R^3} \Rightarrow T_2^2 = T^2 64$$

$$\Rightarrow T_2 = \sqrt{T^2 8^2} = 8T \quad (3)$$