c. **[2marks]**

- Effective dose is used to assess the potential for long-term effects that might occur in the future.
- Effective dose: The quantity of effective dose helps us take into account sensitivity.

28. Give/Fill-in the equivalent: **[4marks]**
a. 1Gray= …… rads
b. 1Sievert = ….. rems

Ans.
a. 100 **[2marks]**
b. 100**[2marks]**

29. What are the physical units of the following physical quantities? **[6marks]**
a. 1 roentgen
b. 1 becquerel
c. 1 curie

Ans.
a. C/kg **[2marks]**
b. disintegration per second/ activities per second/ events per second**[2marks]**
c. disintegrations per second/ activities per second/ events per second **[2marks]**

30. In the Bohr model of the hydrogen atom, let r_1 and r_2 be the radii of the n = 1 and n = 2 orbital shells, respectively. What is the ratio r_2/r_1? **[5marks]**

Ans.
We know that the radius of an orbit in a hydrogen atom is directly proportional to n^2. From Page 15, Caption of Figure 1.8

The radius of the circular orbit r is given by

$$r = n^2 \times 0.53A$$ **[2marks]**

Where $1Å=10^{-8}$cm
So the ratio
$\frac{r_2}{r_1} = \frac{n_2^2}{n_1^2} = \frac{2^2}{1^2} = \frac{4}{1} = 4$ **[2marks]**
Since $n_2=2$, $n_1=1$. **[1mark]**