→ Module – 2 – Solution

2. $x(t) = \sqrt{8} \; \dfrac{\sqrt{1-\cos 2t}}{\sqrt{2}}$

   $y(t) = \sqrt{8} \sin(t+90)$

   $z(t) = t$

→ Solution :

   To solve the parametric equations $x(t)$, $y(t)$ and $z(t)$, we will first simplyify them and then calculate the values for each time instance t.

1. $x(t)$:

   $x(t) = \sqrt{8} \left[\dfrac{\sqrt{1-\cos(2t)}}{\sqrt{2}} \right]$

   $= \sqrt{8} . \dfrac{\sqrt{1-\cos 2t}}{\sqrt{2}}$

   $= \sqrt{4}.\sqrt{2} . \dfrac{\sqrt{1-\cos 2t}}{\sqrt{2}}$

   $\therefore x(t) = 2 . \sqrt{1-\cos 2t}$

2. $y(t)$:

   $y(t) = \sqrt{8} \sin(t+90°)$

   $= \sqrt{8} \sin(t + \pi/2)$

   $\therefore y(t) = \sqrt{8} . \cos(t)$

3. $z(t) = t$

So, the simplified equations are:

$$x(t) = 2 \cdot \sqrt{1 - \cos(2t)}$$
$$y(t) = \sqrt{8} \cdot \cos(t)$$
$$z(t) = t$$