

Start here for
Question Number: **7**

$$a). \ddot{x} = 4 \cos 2t$$

$$i). \dot{x} = 2 \sin 2t + 1$$

$$\frac{dt}{dx} = \text{velocity}$$

$$= 2 \sin 2(0) + 1$$

$$= 2 \sin 0 + 1$$

$$= 0 + 1$$

$$\dot{x} = 1$$

$$ii). \cancel{v} v = 0$$

$$\frac{dt}{dx} = 0$$

$$0 = 2 \sin 2t + 1$$

$$1 = 2 \sin 2t$$

$$\frac{1}{2} = \sin 2t$$

~~2 sin 2t~~

$$\frac{1}{2} = t$$

~~2 sin 2~~

$$t = \frac{1}{2}$$

$$2 \sin 2$$

$$= 17 \text{ seconds}$$

~~$$0 = 4 \cos 2t$$~~

4 seconds

$$\text{iii } d = x$$

$$4 \cos 2t$$

$$4 \cos 2(0)$$

$$= 4 \cos 0$$

$$4 \times 1$$

$$d : x = 4.u$$

$$\text{b). i. } y - y_1 = m(x - x_1)$$

$$y - 1 = -1(x - -1) \quad \frac{1}{-1}$$

$$y - 1 = -1(x + 1)$$

$$y - 1 = -x - 1$$

$$y = -x \quad y + x = 0$$

$$\text{ii). } M = \left(\frac{-1+2}{2}, \frac{1+4}{2} \right)$$

$$M_{AB} = \left(\frac{1}{2}, \frac{5}{2} \right)$$

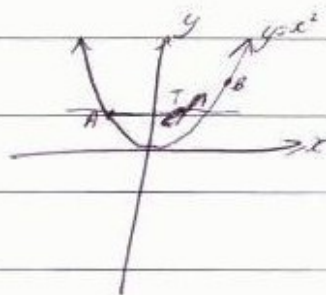
$$\frac{2}{1} \quad \frac{1}{2}$$

$$MC \parallel AB$$

\therefore vertical.



iii BT



$$y - y_1 = m(x - x_1)$$

$$y = -x$$

$$= -x \quad \therefore \text{tangent}$$

Additional writing space on back page.