

Output Calculation :-

Coefficients : $\{16'd1, 16'd2, 16'd3, 16'd4\}$

$$X_n = \{100, 200, -50, 25, 0\}$$

16 bit Decimal Representation for our understanding
clock y_n

$$\square \rightarrow 100(1) + 0(2) + 0(3) + 0(4) = 100$$

$$\square \rightarrow 200(1) + 100(2) + 0(3) + 0(4) = 400$$

$$\square \rightarrow -50(1) + 200(2) + 100(3) + 0(4) = 650$$

$$\square \rightarrow 25(1) + (-50)(2) + 200(3) + 100(4) = 925$$

$$\square \rightarrow 0(1) + (25)(2) + (-50)(3) + 200(4) = 700$$

$$\square \rightarrow 0(1) + 0(2) + (25)(3) + (-50)(4) = -125$$

$$\square \rightarrow 0(1) + 0(2) + 0(3) + 25(4) = 100$$

$$\square \rightarrow 0(1) + 0(2) + 0(3) + 0(4) = 0$$

$$\therefore y_n = \{16'd100, 16'd400, 16'd650, 16'd925, 16'd700, \\ 16'd-125, 16'd100, 16'd0, \dots\}$$