

2 MOD number, $= 2^6 = 64$

(i) frequency at the last flip-flop will equal the input clock frequency divided by mod number

$$\Rightarrow \text{frequency at } Q_5 = \frac{1}{64} \text{ MHz} = 15625 \text{ kHz}$$

(ii) The counter will count from 000000 to 111111 (a total of 64 states)

(iii) Since it is a MOD-64 counter, every 64 pulses will bring the counter back to its initial state. Therefore, after 128 pulses the counter is back to 000000 and after the 129th pulse, it brings the counter to 000001 state.