$S_n = \{1 + (-1)^n\}$

$$S_n = \begin{cases} 1 + (-1)^2 = 2 & ; \text{when } n \text{ is even} \\ 1 + (-1) = 0 & ; \text{when } n \text{ is odd} \end{cases}$$

hence $S_n = \begin{cases} 2 & ; \text{when 'n' is even} \\ 0 & \text{when } n \text{ is odd} \end{cases}$

$S_n = \{0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2, 0, 2, \text{-----}\}$

$S_1 \; S_2 \; S_3 \; S_4 \; S_5 \; S_6 \; S_7 \; S_8 \; S_9 \; S_{10}$

limit point of sequence $= 0, 2$

Countable set < Any set S is said to be contable set if either it is finite or countably infinite.

So here cardinality of set of limit points $= 2$

$= \text{finite}$

So obtion b is also correct

Range set of seqn S_n

$\{S_n\} = \{S_1, S_2, S_3, S_4, S_5, S_6, S_7, S_8, S_9, S_{10} \text{---}\}$

$= \{0, 2, 0, 2, 0, 2, 0, 2, 0, 2 \text{---}\}$

limit point of Range set $= \{0, 2\}$