Ques:- Give an example of each of the following
(i) a set which is a nbd of each of its points.
Ex- (0, 1)

The open interval (0, 1) is a nbd of each of its points

(ii) a set which is not a nbd of any of its points.

The finite set {1, 2, 3, 4} is not a nbd of any of its points

(iii) a set which is a nbd of each of its points with the exception of one point.

Ans:- the semi-open interval [2, 3] is a nbd of each of its points except that 3.

(iv) a set which is a nbd of each of its points with the exception of two point.

The semi-open interval [2, 3] is a nbd of each of its points except that 2 & 3.

⇒ **Open Set:-** A set S is said to be open if it is a nbd of each of its points. i.e.
for $x \in S$ ∃ an open interval I $x \in I$ s.t. (or I_x)
$x \in I_x \subseteq S$

⇒ **Interior point of a set:-** Let E be a subset of $\mathbb{R}$. A point p in E is called an interior point of E if there exist a nbd N of p such that $N \subseteq E$.

Evidently, if p is an interior point of E and $E \subset S$, then p is an interior point of S also

⇒ <u>Interior of a set</u> :- Let E be a subset of R. Then the set of all interior points of E is called interior of E. It is denoted by $Int(E)$ or E^i or E°

Evidently, $Int(E) \subseteq E$

(i) $I = [a,b]$
  $Int[a,b] = (a,b)$

(ii) $I = (a,b)$
  $Int(a,b) = (a,b)$

(iii) Interior of a finite set is empty set.

(iv) Null set is a open set.