The set of all values of λ for which the system of linear equations :

$$2x_1 - 2x_2 + x_3 = \lambda x_1$$
$$2x_1 - 3x_2 + 2x_3 = \lambda x_2$$
$$-x_1 + 2x_2 = \lambda x_3$$

has a non-trivial solution,

(1) contains two elements.

(2) contains more than two elements.

(3) is an empty set.

(4) is a singleton.

$$\Rightarrow \quad (2-\lambda)x_1 - 2x_2 + x_3 = 0$$
$$2x_1 - (3+\lambda)x_2 + 2x_3 = 0$$
$$-x_1 + 2x_2 - \lambda x_3 = 0$$

Since they have non-trivial solution

$$\Delta = \begin{vmatrix} 2-\lambda & -2 & 1 \\ 2 & -(3+\lambda) & 2 \\ -1 & 2 & -\lambda \end{vmatrix} = 0$$

$$\Rightarrow \quad \lambda^3 + \lambda^2 - 5\lambda + 3 = 0$$

$$\Rightarrow \quad (\lambda - 1)^2 (\lambda + 3) = 0$$

$$\Rightarrow \quad \lambda = 1, 3 \Rightarrow \text{Two elements}$$

$\therefore$ Correct option is (1)