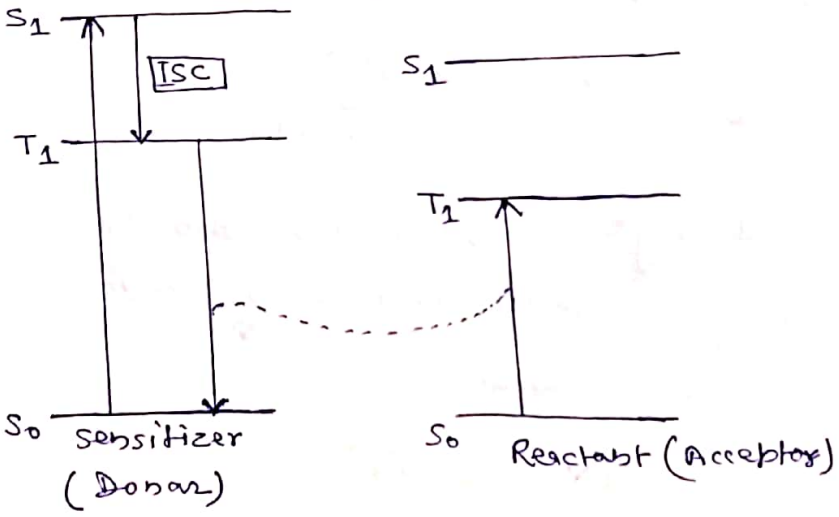
* Photosensitization :-

Some chemical reaction take place not by the absorption of light by one of the reactants but by a third substance which transfers the absorbed energy to the reactants. This third substance which itself doesnot under go any chemical changes is called photosensitizer and this process is called photosensitization.

The common used photosensitizer are mercury, cadmium and zinc and the molecular photosensitizer is benzophenone and SO_2.



Process of photosensitization

Examples :-

(1). The most outstanding examples of photosensitization is the photosynthesis of carbohydrates in plants from CO_2 & H_2O in which chlorophyll, the green colouring matter of plants, acts as a photosensitizer.

$$CO_2 + H_2O + h\nu \xrightarrow{\text{chlorophyll}} \frac{1}{n}(CH_2O)_n + O_2$$

(2). Dissociation of H_2 molecule :-

Irradiation of a mixture of H_2 gas and Hg vapour brings about dissociation of H_2 molecule in H-atom.

$$Hg + h\nu \longrightarrow Hg^*$$

$$Hg^* + H_2 \longrightarrow H_2^* + Hg$$

$$H_2^* \longrightarrow 2H.$$

Here, Hg acts as photosensitizer.

(3). Decomposition of O_3 in to O_2 in presence of Cl_2.

$$Cl_2 + h\nu \longrightarrow Cl_2^*$$

$$Cl_2^* + O_3 \longrightarrow Cl_2 + O_2 + O$$

$$O + O_3 \longrightarrow 2O_2$$

Here, Cl_2 acts as photosensitizer.

(4). Decomposition of Diazomethane (CH_2N_2) in presence of Benzophenone (Bz)

$$Bz + h\nu \longrightarrow Bz^*$$

$$Bz^* + CH_2N_2 \longrightarrow Bz + CH_2N_2^*$$

$$CH_2N_2^* \longrightarrow CH_2 + N_2$$

Here, Benzophenone (Bz) acts as photosensitizer.

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