



TITLE

Date: / /

Mo Tu We Th Fr Sa Su

Fluorescence and phosphorescence

The substance which absorbs photo energy and emits a part of it ~~and~~ immediately at a greater wave length (λ) with a shorter time (≈ 10 sec and less) is called Fluorescent substance and this phenomenon is called Fluorescence.

This process is instantaneous and starts immediately after the absorption of light and stops the moment the radiation is cut off.

for eg - the green colour of chlorophyll is due to fluorescence.

The different substance show the phenomenon of fluorescence with different wave length.

eg - Fluorespar show fluorescence in blue ~~color~~ light.

chlorophyll show fluorescence in red light,



TITLE

Date: / /

Mo Tu We Th Fr Sa Su

phosphorescence:-

In this process it absorb light energy raises the electron to a higher level and the excited electron returns back to the original state after some time lag and the absorb light is emitted after some time.

In this phenomenon, the emission of light of different wave lengths continues even after the source of radiation has been cut off.

eg -

Alkali chloride ($KCl, NaCl$)
trace of heavy metals (ZnS, MgS)
(BaS) Such mixture is generally used for painting watch dials, electric switches etc.

The Concept of Fluorescence & phosphorescence may be shown by Jablonski diagram -

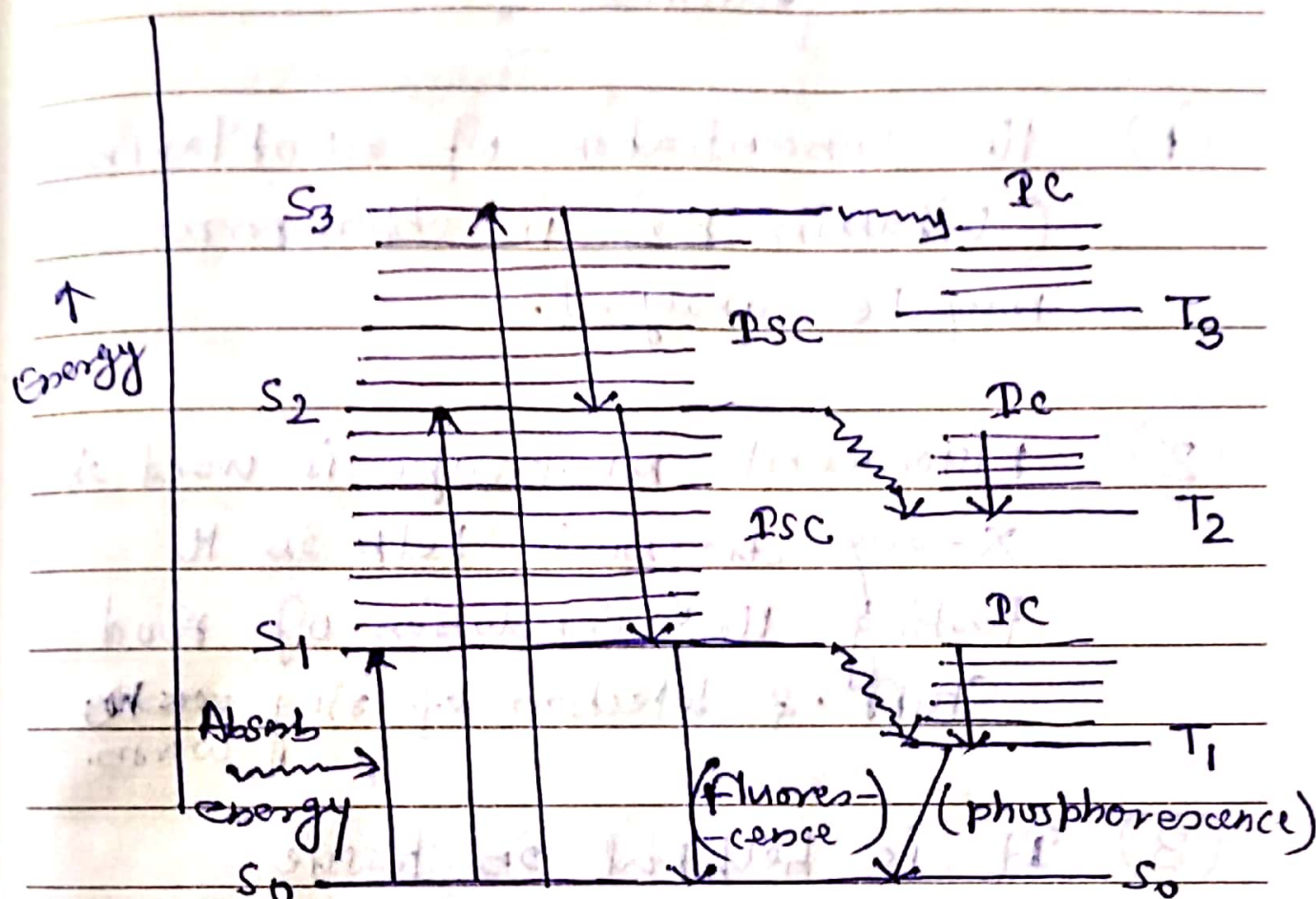


TITLE

Date: / /

Mo Tu We Th Fr Sa Su

Jablonski diagram



ISC $\Rightarrow$ Inter system crossing

IC $\Rightarrow$ Internal Conversion



TITLE

Date: / /

Mo Tu We Th Fr Sa Su

Applications:- of Fluorescence in medicines. :-

- ① The Concentration of riboflavin (Vitamin B₂) in chloroform may be analysed.
- ② Fluorescent microscope is used in X-ray diagnosis help in the testing the condition of food stuff & detection of ring ~~worms~~ worms.
- ③ It is helpful in tissue characterisation and diagnosis. ~~of head & neck tumors~~
- ④ It is helpful for the diagnosis of ^{cancer of} skin, head, brain, neck etc.
- ⑤ Auto fluorescence technique has been used in the treatment of primary brain tumors.