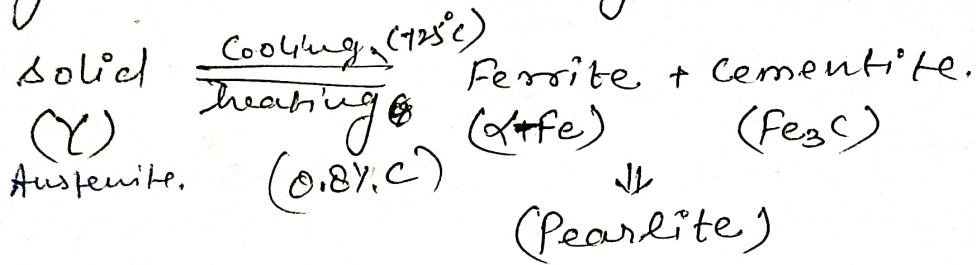


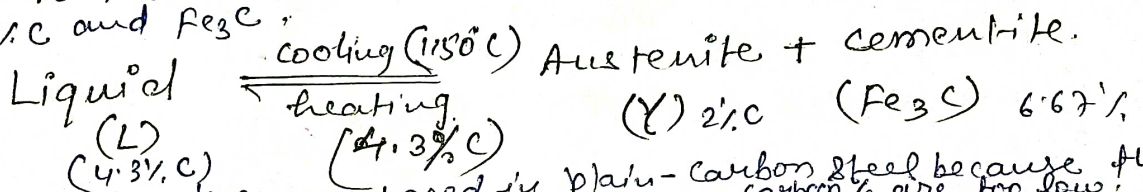
Iron carbon equilibrium diagram indicates the <sup>phase</sup> changes that occur during heating, cooling and amount of structural component that exist at any temp.

\* It contains a eutectoid point, eutectic point and a peritectic point.

\* Eutectoid reaction is represented by horizontal line of  $725^{\circ}\text{C}$ . And it may be written as -



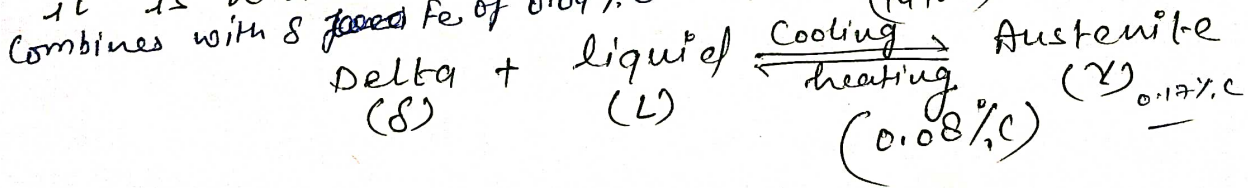
\* Eutectic reaction takes place at  $1150^{\circ}\text{C}$  and it is written as. At this point liquid of  $4.3\% \text{C}$  forms  $\gamma$  of  $2.08\% \text{C}$  and  $\text{Fe}_3\text{C}$ .



This reaction is not encountered in plain-carbon steel because their carbon % are too low.

Eutectic point is at  $4.3\% \text{ Carbon}$ .

\* Peritectic reaction occurs at  $1490^{\circ}\text{C}$  and it is written as - At this point liquid of  $0.53\% \text{C}$  combines with  $\delta$  ~~phase~~  $\text{Fe}$  of  $0.09\% \text{C}$  to form  $\gamma$  (Austenite) ~~of  $0.08\% \text{C}$~~ .



At eutectoid reaction point, solid austenite of  $0.8\% \text{C}$  produces  $\alpha$  ferrite with  $0.02\% \text{C}$  &  $\text{Fe}_3\text{C}$  (Cementite) that contains  $6.67\% \text{C}$ . This reaction occurs at  $723-25^{\circ}\text{C}$ .  
A plain <sup>carbon</sup> steel that contains  $0.8\% \text{C}$  is called ~~as~~ eutectoid steel. If a plain-carbon steel contains less than  $0.8\% \text{C}$  it is termed as hypoeutectoid steel & more than  $0.8\% \text{C}$  it is designated as hypereutectoid steel.