Ans 3 # Different methods of Drug excipient interactions:-

:- In Pharmaceutical dosage forms the active pharmaceutical ingredients are in intimate contact with excipient which are greater quantity. excipient and drugs may have certain incompatibility which lead to drug excipient interaction.

:- They are following types.

① Physical interactions.
② Chemical interactions.
③ Biopharmaceutical interactions
④ Excipient - Excipient interactions

① Physical Interactions:-

They alter the rate of dissolution, dosage uniformity, etc.

:- Physical interactions don't involves chemical changes. thus permiting the molecules in the formulation to retain their molecular structure.

:- Physical interactions are difficult to detect.

∴ Interaction Complexation:

I) Usually binds reversibly with drugs to form complex.

II) Insoluble complexes are formed which lead to slower dissolution.

III) Decreased absorption of drug.

∴ Beneficial effect examples:

∴ → Cyclodextrin → Improve bioavalibility of poorly water soluble drugs.

∴ other example ∴

∴ Tetracycline formed insoluble complex with calcium carbonate leading to slower dissolution & decreased absorption.

② Chemical Interaction:

∴ Active pharmaceutical ingredients and exiepients react with each other to form unstable compounds.

:→ Stability under high humidity condations

⊢ In presence of moisture, many drug substances hydrolyze react with other excipients or oxidize.

:- These tests are performed by exposing the drug to different relative humidity conditions

:- Preformulation data of this type is helpful in determining if the material should be protected and stored in a controlled low-humidity environment or if aqueous based granulation should be avoided.

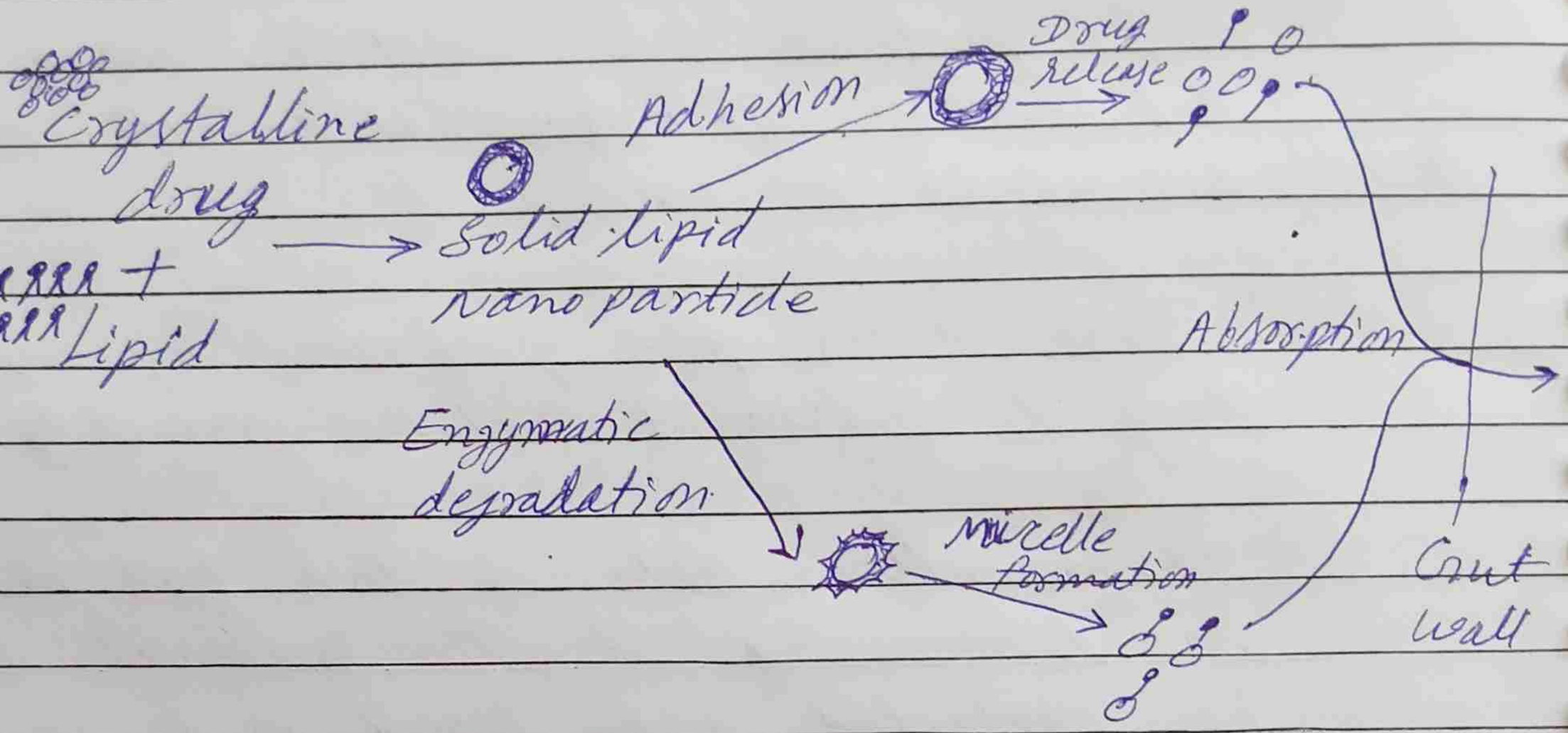
:→ oxidation and the role of excipients ⊢

:- oxidation always occurs with reduction, so called Redox reaction couple.

:- It can be defined as the loss of an electron positive atom, radical or electon, or the addition of an electronegative moiety.

:- oxidation reaction can be catalysed heavy metals, light, leading to free radical formation. free radicals then react with oxygen to form peroxy radicals.

(3) Biopharmaceutical Interactions



(4) Excipient – Excipient Interaction

:- It occurs between two or more excipients in a drug molecule.

:- Example:- In proper addition of electrolyte such as Ca^{+2} or Mg^{+2} ion in Suspension containing NaCMC which will cause formation of Ca/Mg CMC.

:- The Suspending agents will be destroyed and can not perform it's function.