

BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY), PUNE, INDIA
PhD Entrance Test – 2025
SECTION-II: Pharmaceutics - 35 Marks

Section II	
1	<p>Physical Pharmaceutics covering the following aspects:</p> <p>Solids: Handling of solids, pharmaceutical granulation, compression and compaction properties of binary mixtures, lubricant sensitivity, characterization of granules and compacts.</p> <p>Dissolution: Theory of dissolution, concept of drug release. Dissolution test apparatus: different designs, factors affecting dissolution rate. Dissolution of different dosage forms: solids, suspensions, topicals, suppositories and controlled release systems.</p> <p>Pharmaceutical aspects of solubilization : Solubilization of drugs by following approaches: use of surfactants for solubilization; solid dispersions, cyclodextrin inclusion complexes, cosolvency etc.</p>
2	<p>Pharmaceutical preformulations:</p> <p>Drug Excipient interactions: different methods</p> <p>Drug Stability and Kinetics: General considerations & concepts, half-life determination, Influence of temperature, light, solvent, catalytic species and other factors, Accelerated stability study, expiration dating.</p>
3	<p>Novel Drug Delivery Systems covering the following aspects:</p> <p>Design, development, manufacture and evaluation of the following:</p> <p>Oral Drug Delivery Systems: Osmotic DDS, Ion exchange controlled DDS, Hydrodynamically balanced DDS</p> <p>Mucosal DDS: Physiological basis of mucosal delivery with reference to oral mucosal, nasal, vaginal and rectal routes. Bioadhesion and bioadhesive polymers, DDS for mucosal administration. In-vitro, ex-vivo and in-vivo evaluation techniques</p> <p>Transdermal DDS: Percutaneous absorption and penetration enhancers, development of transdermal gels, patches with reference to components and evaluation. Iontophoretic and Sonophoretic DDS.</p> <p>Microspheres: Methods to obtain microcapsules/ microspheres, their evaluation and applications</p> <p>Nanoparticulate and Colloidal systems: Polymeric and lipid nanoparticles, liposomes, niosomes, and polymeric micelles.</p>
4	<p>Biopharmaceutics and Pharmacokinetics covering the following aspects:</p> <p>Absorption, Distribution, Metabolism, Excretion</p> <p>Pharmacokinetics : Pharmacokinetics models, Laplace transformations and concept of compartment modeling. One compartment model : intravenous injection, intravenous infusion, extravascular route</p> <p>Bio-availability and Bioequivalence: Study design, protocols and regulatory requirements and statistical consideration in data analysis.</p>

References:

1. A.Martin, P.Bustamante and A.H.Chun; Physical Pharmacy;Waverly.
2. N.G.Stanley-Wood, Enlargement and compaction of particle solids; Butterworths.
3. D.M.Parikh, Handbook of Pharmaceutical Granulation Technology; Marcel Dekker.
4. H.G.Brittain; Physical Characterization of Pharmaceutical solids; Marcel Dekker.
5. Lieberman, Rieser and Banker; Pharmaceutical dosage forms; Disperse system; Marcel Dekker.
6. M.N. Rubinstein, Pharmaceutical Technology, Drug Stability, John Wiley and Sons.
7. Martin R hodes, Principles of Powder Technology, John Wiley and Sons.
8. James J. Wells, Pharmaceutical Preformulation, Ellis Horwood Ltd.
- 9.P. H. List and P. C. Schmidt; Pharmaceutical technology, C R Spres.
10. Robinson, Novel Drug Delivery System, Marcel Dekker.
