BHARATI VIDYAPEETH
(DEEMED TO BE UNIVERSITY), PUNE, INDIA
PhD Entrance Test – 2020
SECTION-II: Pharmaceutics - 50 Marks

Section II	
1	**Physical Pharmaceutics covering the following aspects:** **Solids :** Handling of solids, pharmaceutical granulation, compression and compaction properties of binary mixtures, lubricant sensitivity, characterization of granules and compacts. **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. **Pharmaceutical aspects of solubilization** : Solubilization of drugs by following approaches: use of surfactants for solubiliaztion; solid dispersions, cyclodextrin inclusion complexes, cosolvency etc.
2	**Pharmaceutical aspects of solubilization** : Solubilization of drugs by following approaches: use of surfactants for solubiliaztion; solid dispersions, cyclodextrin inclusion complexes, cosolvency etc.
3	**Novel Drug Delivery Systems covering the following aspects:** Design, development, manufacture and evaluation of the following: **Oral Drug Delivery Systems**: Osmotic DDS, Ion exchange controlled DDS, Hydrodynamically balanced DDS **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 evaluationtechniques **Transdermal DDS**: Percutaneous absorption and penetration enhancers, development of transdermal gels, patches with reference to components and evaluation. Iontophoretic and Sonophoretic DDS. **Microspheres:** Methods to obtain microcapsules/ microspheres, their evaluation and applications **Nanoparticulate and Colloidal systems:** Polymeric and lipid nanoparticles, liposomes, niosomes, and polymeric micelles.
4	**Biopharmaceutics and Pharmacokinetics covering the following aspects:** **Absorption, Distribution, Metabolism, Excretion** **Pharmacokinetics** : Pharmacokinetics models, Laplace transformations and concept of compartment modeling. One compartment model : intravenous injection, intravenous infusion, extravascular route **Bio-availability and Bioequivalence:** Study design, protocols and regulatory requirements and statistical consideration in data analysis.

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 Rhodes, 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, CRS press.
10. Robinson, Novel Drug Delivery System, Marcel Dekker.

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