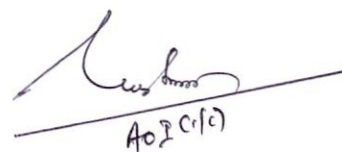


Syllabus – MFCP of Scientific Assistant (Instruments) to Sr. Scientific Assistant (Instruments) – Division of Polymeric Medical Devices

- Materials classification: metals, polymers, ceramics and composites, General awareness on polymeric medical devices and testing, Applications of natural and synthetic polymers, copolymers, polymer composites and blends in medical applications
- Chemistry of Polymerization- Polymer synthesis - bulk, solution, suspension and emulsion, interfacial polymerization, Structure property relationships in polymers, glass transition temperature, viscoelasticity, tacticity, crystallinity in polymers
- Compounding and processing of polymeric biomaterials: Polymer additives and compounding, vulcanization process; processing such as compression moulding, injection moulding, extrusion, electrospinning, 3D printing
- Characterization and testing of polymers - molecular weight determination, mechanical testing: tensile, compression, 3-point bending, creep, stress relaxation, impact strength etc.; thermal analysis, dynamic mechanical analysis
- Polymers in medical devices, medical device classification, implantable polymers, degradable polymers in medical devices, concept of biocompatibility, Sterilization and packaging of medical devices.

References:

1. Biomaterials Science: An Introduction to Materials in Medicine, Second Edition by Buddy D. Ratner, Allan S. Hoffman, Frederick J. Schoen and Jack E. Lemons, Eds., Elsevier Academic Press, London, 2004.
2. Text book of Polymer Science III Edn. by F.W. Billmeyer Jr. Wiley Interscience Publishers, Canada 1984.
3. Seymour/Carraher's Polymer Chemistry VI Edn., by, Charles E. Carraher, Jr. Ed. Marcel Dekker, Inc., USA, 2003.
4. Handbook of Polymer Testing: Physical Methods (Plastics Engineering) by Roger Brown Ed., Marcel Dekker, Inc., USA, 1999.



Handwritten signature and date: 10/10/17