

**2016
(January)**

Time : 2 hours

Full Marks : 40

The questions are of equal value.

*Answer any **five** questions.*

(BIOPHYSICAL TECHNIQUES)

1. Briefly explain the principle, instrumentation and application of scanning electron microscope in biology ?
2. Write short notes on the following :
 - (a) Numerical aperture in light microscope
 - (b) Ultracentrifugation
3. Write the principle of Nuclear Magnetic Resonance (NMR). Add a note on its application in Biological Sciences ?

4. Write short notes on the following :
 - (a) PKa value
 - (b) MALDI-TOF
5. Briefly explain the principle, instrumentation and application of thin layer chromatography in biotechnology. Add a note on HPTLC.
6. What is the principle behind PCR ? Write, in detail, about three variants of PCR with their respective applications.
7. Differentiate between the following :
 - (a) Southern blotting and Northern blotting
 - (b) Affinity chromatography and Ion exchange chromatography
8. Briefly explain the instrumentation and application of Scintillation Counter.

