

MAHARSHI DAYANAND UNIVERSITY ROHTAK

DEPARTMENT OF ZOOLOGY

M. Sc. ZOOLOGY w.e.f. session 2013-14

Semester-I

Course no.: Zoo-102

MM: 80

Course Title: Techniques in Animal Sciences

Time: 3hrs

Note: There shall be nine questions in total. One question will be compulsory (short answer type) covering the entire syllabus and remaining eight questions will be set two from each unit. Students are required to attempt one from each unit.

Unit I

Microscopy: Principles and applications of light, phase contrast, fluorescence microscopes, scanning and transmission electron microscopes. X-ray diffraction, pH meter, Fixation and staining; cryotechnology and flow cytometry, Confocal Microscopy.

Units II

Spectroscopy: Fluorescence, UV, visible, NMR and ESR spectroscopy; X-ray diffraction. Tracer Biology: Principles and applications of tracer techniques in biology; radioactive isotopes and half-life of isotopes; autoradiography, GCMS spectroscopy.

Unit III

Chromatography: Principles and applications of gel filtration, ion-exchange, affinity, thin layer, gas chromatography and high pressure liquid chromatography (HPLC). Electrophoresis and centrifugation: Principles and applications of agarose and polyacrylamide gel electrophoresis; ultracentrifugation (velocity and buoyant density).

Unit IV

Molecular biology techniques: Sequencing of proteins and nucleic acids; southern, northern and western blotting techniques, polymerase chain reaction (PCR), ELISA, MALDITOF. Methods for measuring nucleic acid and protein interactions, Real time PCR and reverse transcriptase PCR.

Suggested Reading Material

1. Animal Cell Culture - A practical approach, Ed. John R.W. Masters, IRL Press.
2. Introduction to Instrumental analysis, Robert Braun. McGraw Hill International Editions.
3. Shukla and Upadhyaya. Experimental Science
4. Randhir Singh. Practicals in Biochemistry
5. A Biologists Guide to Principles and Techniques of Practical Biochemistry, K. Wilson & K.H. Goulding, ELBS Edn.

