1205E522 Candidate's Seat No :_____

M.Phil (Life Science) Examination
Paper-I : Research Methodology
May-2017

Time : 3 Hours] [Max. Marks : 70

Instructions: All questions carry equal marks
All questions are compulsory
Illustrate your answer with neat diagram whenever necessary

Q1 [14]
(A) Write in brief objectives of research and explain significance of research
OR
(A) How to define a research problem and discuss the key features of good research study design
(B) Explain the process of testing a hypothesis with example
OR
(B) Discuss key components of a research proposal

Q2 [14]
(A) Explain the principle and application of Ultracentrifugation
OR
(A) Explain the principle of Mass spectrometry
(B) Define electrophoresis with special emphasis on Agarose Gel Electrophoresis and its application
OR
(B) Distinguish between Ion exchange and affinity chromatography with reference to protein purification

Q3 [14]
(A) Define PCR and explain various types of PCR with its clinical applications
OR
(A) Distinguish between western and southern blotting. Cite examples
(B) Define PET and its clinical application in oncology
OR
(B) Write in brief the principle of Flow cytometry and its application

Q4 Answer any two [14]
(A) Define database. Cite name of major genomic and proteomic databases
(B) Distinguish between paired and unpaired "t" test
(C) Explain the three measurement of central tendency
(D) Explain variance and co-variance

Q5 Answer any two [14]
(A) Define standard deviation and standard error of mean and their significance
(B) Distinguish between SEM & TEM
(C) Explain the principle of isoelectric focussing and its role in proteomics
(D) Explain confocal microscopy