

University of Kerala
Model Question Paper – Ph.D Entrance in Biochemistry 2016

Time: 3 hrs

Total marks: 100

PART A
Research Methodology

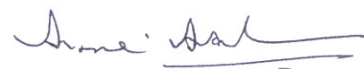
Answer any ten questions. Each question carries 5 marks (10x5=50)

1. Describe briefly the steps involved in doctoral research process.
2. How will you define a research problem?
3. What do you mean by 'Sample Design'? What points should be taken into consideration by a researcher in sample design for any research project?
4. Enumerate the different methods of data collection.
5. Differentiate between survey and experiment.
6. Discuss the role of computer in research.
7. What are the different types of probability distribution curves and explain its significance.
8. Describe in brief the layout of writing a research report.
9. What is analysis of variance? Write briefly the technique of analysis of variance for one-way and two-way classifications.
10. What is a hypothesis? Explain briefly the procedure for testing a hypothesis.
11. Mention the various methods of measures of central tendency.
12. Explain briefly on plagiarism.
13. Determine the mean, median and modal values for the set: {26, 31, 21, 29, 32, 26, 25, 28}.
14. Differentiate between correlation and regression analysis.
15. What is Chi-Square test? Explain its significance in statistical analysis of any research problem.

PART B
Biochemistry

Answer any ten questions. Each question carries 5 marks (10x5=50)

1. Give details of the reaction catalysed by each of the following enzymes -
 - a. Fructokinase
 - b. Glyceraldehyde 3 phosphate dehydrogenase
 - c. Aconitase
 - d. Hexokinase
 - e. Pyruvate dehydrogenase
2. What is cell cycle? Explain the different stages involved in cell cycle?
3. Describe the various antigen-antibody reactions.



4. Differentiate between expression vectors and cloning vectors with example.
5. Explain the role of various enzymes involved in DNA replication.
6. Give an account of the various post transcriptional modifications of eukaryotic mRNA?
7. What are hormones? How are they classified?
8. Discuss the organisation of protein structure?
9. What are coenzymes? Explain the role of coenzymes in enzyme action?
10. Write short note on fattyacid oxidation?
11. Describe briefly the steps involved in calvin cycle?
12. Briefly explain the different types of receptors?
13. Write short note on glycogen storage diseases?
14. Differentiate between substrate level phosphorylation and oxidative phosphorylation with example?
15. Explain how second messengers like calcium and cyclic AMP transmit and amplify an extracellular signal.

Arne Bal