

**Pre. Ph.D. Course Work (2017 Course) : (Common For
Chemistry/Biotechnology) : SUMMER - 2019**

**SUBJECT: PAPER-I RESEARCH METHODOLOGY
(CHEMISTRY/ BIOTECHNOLOGY)**

Day: Monday
Date: 22/04/2019

Time: 10.00 AM TO 1.00 PM
Max. Marks: 100

S-2019-5300

N.B.:

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.

Q.1 Attempt **ANY FOUR** of the following: **(20)**

- a) Define plagiarism? Give an account of different forms of plagiarism.
- b) Describe the importance of graphical representation of scientific data.
- c) State the basic assumptions of the analysis of variance.
- d) What are the various methods of collecting primary data? Discuss any one method in detail.
- e) Clearly explain the difference between collection of data through questionnaires and schedules.

Q.2 Attempt **ANY FOUR** of the following: **(20)**

- a) Explain the salient features of each component of IMRAD.
- b) Elaborate a concept of ethics in research.
- c) What is patent? Discuss the process of writing patent in detail.
- d) Discuss in detail about literature survey in research.
- e) Discuss any research proposal with reference to its preparation and submission to a funding agency.

Q.3 Attempt **ANY FOUR** of the following: **(20)**

- a) What do you mean by multivariate analysis? Explain their significance in context of research studies.
- b) Write a note on types of research.
- c) Discuss in brief about poster presentation in conference.
- d) Describe the role of ICT in research, innovation and knowledge management.
- e) Discuss in detail about need of protection of intellectual property.

Q.4 Attempt **ANY FOUR** of the following: **(20)**

- a) Discuss biosafety guidelines with respect to laboratory, chemicals, fire and electrical safety.
- b) Write a note on submission of manuscript for publication.
- c) Give an account of various databases.
- d) Discuss importance of writing acknowledgement in the manuscript.
- e) Write a short note on consequences of plagiarism.

Q.5 Attempt **ANY FOUR** of the following: **(20)**

- a) Explain the terms and their significance with reference to correlation coefficient and coefficient of variation.
- b) Describe the precautions that the researcher should take while interpreting his findings.
- c) Write a brief note on different types of analysis of data pointing out the significance of each.
- d) Write a note on environmental ethics with respect to current issues in environment.
- e) Discuss the importance of tabulation in research.

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