COURSE CODE (CREDITS):18M11BT113                         MAX. MARKS: 15
COURSE NAME: RESEARCH METHODOLOGY AND ETHICS
COURSE INSTRUCTORS:  Dr. GOPAL SINGH BISHT              MAX. TIME: 1 Hour

*Note: (a) All questions are compulsory.*
*(b)Marks are indicated against each question in square brackets.*
*(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems*

Q1. Study the given below cases and answer the following questions.

Case study 1

Dr. XYZ, a senior researcher at a prestigious university, is working on a groundbreaking study in cancer research. Under pressure to publish quickly, Dr. XYZ fabricates data to support his hypothesis, believing that he can eventually collect real data to back up his claims. [3]

 a) What is research misconduct, and how does this case exemplify it?
 b) What are the potential consequences of fabricating data in research?
 c) How should the university handle the situation once they discover the fabrication?

Case study 2

A research student miss X, is conducting a study on the effects of a new drug on blood pressure. During data analysis, she notices that the results do not support her hypothesis. To align the results with her expectations, she selectively alters some data points, ignoring outliers and adjusting figures. [3]

 a) How does falsification differ from fabrication, and which type of misconduct is demonstrated in this case?
 b) What are the ethical implications of falsifying data in research?
 c) What steps should be taken if a colleague suspects falsification in Lisa's research?

Q2.a) Analyze the steps involved in formulating a research problem and discuss how omitting any step might impact the quality of the research. [3]

b) Given a broad topic like "Antimicrobial resistance," apply the steps of research problem formulation to develop a specific research problem. [3]

Q3. How a literature matrix can help in synthesizing research findings. What are the key elements that should be included in an effective literature matrix? [3]