

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
TEST -2, EXAMINATION- 2024  
M.Sc.-II Semester (BT)

COURSE CODE (CREDITS):20MS1BT216 (3)

MAX. MARKS: 25

COURSE NAME: Research Methodology and Scientific Communications

COURSE INSTRUCTORS: Dr. Gopal Singh Bisht

MAX. TIME: 1 Hour and 30 Minutes

*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. Answer the following questions. [2x7=14]

- Assess the significance of peer review in the publication process of scientific research.
- What ethical considerations should be taken into account when conducting animal research?
- Identify the independent and dependent variables in the following hypothesis: "Increasing the temperature of a gas will decrease its volume, assuming pressure remains constant.
- What are the key characteristics of a well-formulated hypothesis? How does a hypothesis guide research and experimentation?
- What is peer review process in science? Explain ethical responsibility of reviewer.
- Why scientific misconduct occurs? What are its consequences?
- How will you critically assess the discussion section of manuscript?

Q2. Read the following case study carefully then answer the questions. [8]

Case A: *A researcher conducting a study on the health effects of a particular food product fails to disclose that they have received funding from the company that produces the product. The study concludes that the product has numerous health benefits without mentioning the potential conflict of interest.*

Question a: What are the consequences of the researcher's actions, and how can conflicts of interest be managed? [2.5]

Case B: *A PhD student conducting research on the effects of a new drug on cancer cells is struggling to obtain significant results. Under pressure to publish, the student decides to fabricate data, reporting significant reductions in cancer cell proliferation attributed to the drug.*

Question b: What are the consequences of the PhD student's actions, and how can such misconduct be prevented? [2.5]

Case C: *A psychologist wants to conduct a study on the effects of social isolation on mental health. They plan to recruit participants from online forums who self-report experiencing social isolation. The study involves filling out surveys and participating in online interviews.*

Questions C: What ethical considerations should the researcher take into account in this study? [3]

Q3. Design a comprehensive plan outlining the key strategies and techniques for delivering a successful lecture on a complex scientific topic to a diverse audience, considering both content delivery and audience engagement. [3]