

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATIONS- 2025
M.Tech-I Semester (BT)

COURSE CODE (CREDITS):18M11BT113 (3)

MAX. MARKS: 25

COURSE NAME: RESEARCH METHODOLOGY AND ETHICS

COURSE INSTRUCTORS: GSB AND HSD

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	Marks
Q1	Read Case study carefully. Answer the following questions. Use examples and critical reasoning where relevant. A research lab plans to test a new cancer drug in mice before moving to human trials. The proposed protocol involves implanting tumors in mice and testing different drug dosages. Critics argue it causes suffering, while researchers claim it is essential for translational science. a) Suggest how the 3Rs principle can be applied in this study. b) Compare ethical arguments for and against using tumor-bearing mice in this research. c) Judge whether this research is ethically justified. Provide reasoning.	[1.5+2+2.5]
Q2.	A biotechnology research team at a university is conducting CRISPR-Cas9 gene editing to develop drought-resistant rice. The project is funded by a national funding agency and involves collaboration with a private seed company. Conflicts arise when ➤ One junior researcher claims that the PI is taking undue credit for their experimental design and data. ➤ The private company pressures the team to withhold negative results to favor marketable strains. ➤ There is disagreement among team members about the ethical implications of gene editing and potential environmental impacts. The research involves lab experiments (gene editing, plant transformation), field trials, and molecular analyses. The team is also considering submitting patents for the modified rice variety. a) Explain why withholding negative results from research can be ethically problematic. b) Analyze the differences between academic and industrial priorities in collaborative biotechnology research and how these can lead to conflict. c) Propose a conflict resolution framework for this research team that ensures ethical integrity, proper authorship credit, and responsible collaboration with industry.	[1+2.5+2.5]

Q3.	How do ethical principles help in decision-making under the mentioned case study, where intranasal vaccine trials for COVID-19 are to be carried out on children of 12-16 years of age, adults, and elderly people to check their efficacy? What decision model would you like to use under the prevailing conditions for COVID-19?	[3+3]
Q4	How can you adhere to the professional standards for following research ethics? How does data manipulation and plagiarism threaten the status of research? Explain with an example.	[4]
Q5	Conceptualize any scientific idea and follow the ethical considerations for its proper implementation as a project at the institutional level.	[3]

JUIT TEST-2 EXAMINATION-OCT-2020