

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

M.Tech-I Semester (BT)

COURSE CODE (CREDITS):18M11BT113 (3)

MAX. MARKS: 25

COURSE NAME: Research Methodology and Ethics

COURSE INSTRUCTORS: Prof. Gopal Singh Bisht

MAX. TIME: 1 Hour 30 Minutes

*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	<p>Study the case given below carefully and then answer the following questions.</p> <p>Dr. Rita is conducting a study to explore the impact of physical exercise on reducing stress levels in high school students. She hypothesizes that students who engage in regular physical exercise (30 minutes a day, 5 days a week) will report lower stress levels than those who do not exercise regularly.</p> <p>To test her hypothesis, Dr. Rita gathers two groups of students: Group A, who regularly exercises, and Group B, who does not. Over the course of 6 weeks, she administers a self-reported stress questionnaire to both groups.</p> <p>However, Dr. Rita's colleague, Dr. Patel, points out several potential sources of bias in her study:</p> <ol style="list-style-type: none"> <li>I. <b>Self-report bias:</b> The students may not accurately report their stress levels due to social desirability.</li> <li>II. <b>Selection bias:</b> Students who choose to exercise regularly might already have lower stress levels, affecting the outcomes.</li> <li>III. <b>Confirmation bias:</b> Dr. Rita might subconsciously interpret the data in a way that supports her hypothesis.</li> </ol> <ol style="list-style-type: none"> <li>a) Identify and analyze two other potential sources of bias in Dr. Rita's study</li> <li>b) How could Dr. Rita minimize self-report bias in her study?</li> <li>c) Evaluate whether Dr. Rita's hypothesis is testable, given the biases and issues in her study design.</li> <li>d) Design an alternative study that addresses the biases present in Dr. Rita's current research.</li> </ol>	[2x4=8]
Q2	<ol style="list-style-type: none"> <li>a) Analyze the potential impact of poorly defined research objectives on the overall quality of a manuscript. Evaluate the role of peer review in the process of research manuscript writing and publication.</li> <li>b) Design a checklist that researchers can use to improve the clarity and coherence of their research manuscripts.</li> </ol>	[4] [2]
Q3	Design a sampling strategy using a combination of methods to study the effects of pollution on fish populations in different lakes across a region.	[3]

Q4	<p>Dr. A, a senior researcher at a pharmaceutical company, is conducting a clinical trial to test the effectiveness of a new drug designed to treat chronic pain. Dr. B, a colleague from a renowned university, is collaborating with her on the study. The trial is sponsored by the pharmaceutical company that Dr. A works for, and if the drug proves to be effective, it could result in a significant financial gain for the company, including stock options and bonuses for Dr. A.</p> <p>During the research, Dr. B begins to raise concerns about some of the early results. The data is not as promising as Dr. A's preliminary reports suggested, and there seems to be a pattern of excluding patients whose responses to the drug were less favorable. When Dr. B brings this up to Dr. A, she assures him that these exclusions are justified because of pre-existing conditions in those patients, which would skew the results.</p> <p>Dr. B, however, feels that the exclusions may be driven by the financial interest the pharmaceutical company has in the drug's success, and he is concerned that this could be a conflict of interest for Dr. A. He's unsure how to proceed without jeopardizing their professional relationship or his own career.</p> <ol style="list-style-type: none"><li>How can Dr. B address his concerns about the potential conflict of interest without damaging his professional relationship with Dr. A?</li><li>Analyze how Dr. A's financial incentives could impact the integrity of the research findings.</li><li>Evaluate the ethical implications of Dr. A's actions in light of research integrity standards.</li><li>Design a protocol to prevent conflicts of interest from compromising research integrity in future clinical trials.</li></ol>	[2x4=8]
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