BBI

BRAINWARE UNIVERSITY

Ph.D. Course Work Examinations, September - 2026

Programme – Ph.D. in Pharmaceutical Sciences, Ph.D. in Engineering (Computer Science and Engineering), Ph.D. in Science (Computer Science), Ph.D. in Science (Biotechnology), Ph.D. in Management, Ph.D. in Mathematics

Course Name – Research Methodology

Course Code – PHD-RM01

(Semester – 1)

Full Marks: 100 **Time: 4 hours**

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group –A

(Multiple Choice Type Questions) 1 x 10 = 10

1. Choose the correct alternative from the following :

i) Cite which sampling method gives each member of the population an equal chance of being selected?

a) Convenience sampling b) Purposive sampling
c) Random sampling d) Snowball sampling

ii) Identify which of the following is NOT a qualitative research method?

a) Grounded theory b) Case study
c) Focus group d) Regression analysis

iii) Illustrate -in research ethics, what does "voluntary participation" imply?

a) Participants must be paid to participate. b) Participants agree to join without coercion.
c) Participants cannot withdraw after starting. d) Participants must sign a consent form.

iv) Write - which section of a research paper typically presents the findings?

a) Introduction b) Literature review
c) Results d) Discussion

v) Evaluate the most ethical response when a researcher discovers an error in their already published research article.

a) Ignore the error since the article is already published b) Inform the journal editor and request a correction or retraction if necessary
c) Retract the entire paper immediately without review d) Publish the corrected data in a separate unrelated journal

vi) In an experiment, the results show a strong correlation between two variables. Write how should the researcher evaluate the relationship between these variables?

a) The variables have a causal relationship. b) The correlation proves one variable causes the other.
c) The correlation is irrelevant to the study. d) The correlation does not indicate a causal relationship, further study is needed.

vii) A researcher wants to design a new model for predicting consumer behavior using machine learning techniques. Infer which step should the researcher take first to ensure the model's accuracy and effectiveness?

a) Collect a large dataset of consumer behavior and prepare the data for analysis.
b) Immediately start building the machine learning algorithm using random data.
c) Ignore potential biases in the data since they are not relevant to the model.
d) Focus on creating the most complex model possible, regardless of its suitability.

viii) Recommend which of the following methods is most appropriate for analyzing survey data collected on a Likert scale to examine the relationship between respondents' age and their attitudes toward a product?

a) Descriptive statistics (mean, median, mode)
b) Regression analysis
c) Factor analysis
d) T-test for independent samples

ix) Select which of the following sampling methods is non-random?

a) Stratified sampling
b) Systematic sampling
c) Convenience sampling
d) Simple random sampling

x) Select which of the following is a qualitative research method?

a) Experiment
b) Survey
c) Ethnography
d) Statistical analysis

Group – B

(Short Answer Type Questions) 5 x 6 = 30

Answer the following questions :

2. Explain the role of peer review in ensuring quality and credibility of scholarly publications.
3. Simulate the significance of research gap identification.
4. Estimate a mixed-methods research approach for studying a social phenomenon.
5. Contrast on the similarities and differences between primary and secondary data collection methods.
6. Evaluate the characteristics of a secondary literature source.
7. Predict a comprehensive framework for conducting business research.

Group – C

(Long Answer Type Questions) 10 x 6 = 60

Answer the following questions :

8. Describe the process of developing a research question.
9. Evaluate the ethical considerations involved in conducting research with human subjects and how they influence the research design.
10. Critique a published research article in terms of its research design, data collection methods, and ethical considerations.
11. Recommend a set of guidelines for conducting pilot studies in various research contexts.
12. Illustrate different types of bias in sampling.
13. Create a strategy to validate the reliability of data collected through online surveys in the context of global research collaborations.
