BRAINWARE UNIVERSITY

Ph.D. Course Work Examinations

Programme – Ph. D. in Management, Ph.D. in Computer Science, Ph.D. in Computer Science and Engineering

Course Name – Research Methodology

Course Code – PHD-RM01

(Semester – 1)

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) Which of the following research designs involves examining the relationship between two variables?

a Correlational research
b Experimental research
c Both (a) and (b)
d None of these

ii) In which type of research design do researchers gather data at different points of time to describe the characteristics of a population or phenomenon?

a Longitudinal research
b Cross-sectional research
c Action research
d None of these

iii) Which of the following is correct about independent variables?

a It is the effects or outcome variable
b It is manipulated by the researcher to know its impacts
c It mediates the relationship between cause and effects
d None of these

iv) Why randomization is used in experimental research?

a To eliminate the biases
b To manipulate the independent variables efficiently
c To enhance the precision of data
d None of these

v) Which of the following group of individuals or entities from which survey respondents are selected?

a Sample
b Frame
c Population
d All of these

vi) Which of the following terms is used to define the degree to which a questionnaire precisely assesses the underlying concept it aims to gauge?

a Validity b Reliability
c Objectivity d Sensitivity

vii) Which of the following terms describes the data that is collected firsthand by the researcher for a specific research study?

a Secondary data b Primary data
c Published data d None of these

viii) In which of the following sampling does the researcher divide the population into strata and take a sample from each stratum?

a Cluster sampling b Random sampling
c Stratified sampling d Convenience sampling

ix) A researcher selects every 5th patient from a hospital's medical records to study disease prevalence. What type of sampling is this?

a Stratified b Convenience
c Systematic d Cluster

x) Which of the following correctly describes ordinal-level data?

a Equal interval between the adjacent score b Data that can be arranged meaningfully by order of magnitude
c A fix zero d None of these

Group – B

(Short Answer Type Questions) 5 x 6 = 30

Answer the following questions :

2. Describe the difference between probability sampling and non-probability sampling by provide scenarios in which each might be appropriate.

3. How does the sample size influence the reliability and generalizability of research findings?

4. Examine the difference between applied and fundamental research with the help of examples.

5. Evaluate the issues that should be addressed by the researcher in formulating the research problem.

6. With the help of examples discuss various assumptions for ANOVA.

7. What do you understand by the degree of freedom in one sample t-test? Explain.

Group – C

(Long Answer Type Questions) 10 x 6 = 60

Answer the following questions :

8. How does the process of thematic analysis help in deriving meaningful insights from qualitative data?

9. With the help of suitable examples, explain the key differences between a true experimental design and a quasi-experimental design.

10. Explain the steps to be followed in SPSS to perform a multiple regression analysis.

11. An online medicine shop asserts that their average delivery time for medicines is less than 120 minutes, with a known standard deviation of 30 minutes. To test this claim, a sample of 49 orders was examined, revealing an average delivery time of 100 minutes. At a significance level of 0.05, is there sufficient evidence to support the shop's claim?

12. A software development team is evaluating three different programming languages (Language A, Language B, and Language C) to determine which one is most preferred for a new project. They surveyed 300 software developers and asked them to choose their preferred programming language for the project. The results are as follows:

    Language A: 90 developers

    Language B: 120 developers

    Language C: 90 developers

    Conduct a Chi-square goodness-of-fit test to determine whether there is a significant difference in the preference of programming languages for the new project among software developers. Use a significance level of $\alpha = 0.05$.

13. In the context of a literature review, discuss the challenges and potential issues that researchers may encounter when attempting to identify research gaps.
