BRAINWARE UNIVERSITY

Term End Examination 2024-2025
Programme – M.Tech.(CSE)-AIML-2022/M.Tech.(CSE)-AIML-2023
Course Name – Research Methodology
Course Code - PCC-MCSM301
(Semester III)

Full Marks : 60 **Time : 2:30 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 Question) 1 x 15=15

1. *Choose the correct alternative from the following :*

(i) Identify the correct approach used in inductive theory.
   a) Starts with a hypothesis
   b) Tests a pre-existing theory
   c) Develops theories based on observations
   d) Applies existing theories to new situations

(ii) Select the correct explanation of a "dependent variable".
   a) A variable that is constant
   b) A variable that is manipulated
   c) A variable that is measured and affected by other variables
   d) A variable that controls the research process

(iii) Select the correct explanation of the term 'control group' in an experimental study.
   a) The group exposed to the independent variable
   b) The group that does not receive the treatment
   c) The group that receives an unknown treatment
   d) The group that receives multiple treatments simultaneously

(iv) Examine the utility of a theory in practical applications.
   a) It offers a framework for understanding and predicting phenomena
   b) It only provides historical data
   c) It serves as a placeholder for future research
   d) It acts as an artistic expression

(v) Define the primary purpose of a problem definition in research.
   a) To collect data
   b) To identify a clear research gap
   c) To analyze data
   d) To test a hypothesis

(vi) Identify the type of hypothesis that suggests no relationship between variables.
   a) Alternative hypothesis
   b) Null hypothesis
   c) Research hypothesis
   d) Predictive hypothesis

(vii) Cite an example of a null hypothesis.
   a) There is a positive relationship between X and Y
   b) There is no relationship between X and Y

c) X influences Y negatively
d) Y always depends on X

(viii) Identify the role of the p-value in hypothesis testing.

a) It determines the validity of the hypothesis
b) It measures the strength of evidence against the null hypothesis
c) It is used to prove the hypothesis
d) It is irrelevant to hypothesis testing

(ix) Choose the feature that enhances the reliability of research.

a) Precise measurement
b) Biased sampling
c) Vague hypothesis
d) Personal interpretation

(x) Choose the type of data most commonly used in exploratory research.

a) Qualitative data
b) Quantitative data
c) Mixed-methods data
d) Longitudinal data

(xi) Select the term that describes the process of repeating a study to confirm results.

a) Causality
b) Generalization
c) Replication
d) Experimentation

(xii) Evaluate the key requirement for establishing causality in research.

a) Temporal precedence (cause before effect)
b) Random sampling
c) Descriptive analysis
d) Correlation between variables

(xiii) Select the characteristic that defines a good sample.

a) Small and biased
b) Representative of the population
c) Chosen based on convenience
d) Based on non-random selection

(xiv) Evaluate what the Impact Factor of a journal indicates.

a) The number of articles published in a journal
b) The journal's influence based on citation count
c) The length of articles published in the journal
d) The number of times a journal is downloaded

(xv) Select which of the following is considered self-plagiarism.

a) Copying someone else's work without credit
b) Reusing large portions of your previously published work without citing it
c) Quoting a few lines from a book with citation
d) Publishing work in collaboration with co-authors

Group-B

(Short Answer Type Questions) 3 x 5=15

2. Describe deductive theory. (3)
3. Define the term 'variable' in research. (3)
4. Discuss the importance of validity in research measurements. (3)
5. Justify the importance of defining a statistical population in research. (3)
6. Justify the use of qualitative research in social sciences. (3)

OR

Evaluate the limitations of quantitative research in behavioral studies. (3)

Group-C

(Long Answer Type Questions) 5 x 6=30

7. Define research design and its importance. (5)
8. Define null hypothesis and its purpose in research. (5)
9. Evaluate the role of peer review in ensuring the quality of computer science journal publications. (5)
10. Evaluate the role of a sampling frame in the accuracy of a research study. (5)
11. Evaluate the challenges posed by non-response in survey-based research. (5)
12. Justify the use of quantitative research in testing hypotheses. (5)

OR

Justify the preference for larger sample sizes in quantitative research. (5)

****