

Tribhuvan University  
Institute of Science and Technology  
**SCHOOL OF MATHEMATICAL SCIENCES**  
**First Assessment 2079**

*Subject: Research Methodology*

*Course No: MDS 601*

*Level: MDS /II Year /III Semester*

*Full Marks: 45*

*Pass Marks: 22.5*

*Time: 2hrs*

*Candidates are required to give their answers in their own words as far as practicable.*

**Attempt All Questions.**

**Group A    [3 × 5 = 15]**

1. Explain the difference between research methods and Research methodology.
2. What do you mean by Research Hypothesis? Explain in brief with one case study.
3. Define Inductive and Deductive theory with suitable examples.
4. Distinguish between research hypothesis and statistical hypothesis.
5. Define literature review. What are the benefits of good literature survey?

**Group B    [5 × 6 = 30]**

6. "The distinction between basic and applied research is that the purpose of the former is to answer a question and the purpose of the later is to solve a question". Comment on this statement.
7. What is scientific research? Describe the major steps involved in the scientific research process?
8. What library skills are required for a thorough survey of literature related to a research topic in Data science?
9. Discuss research design. Is it possible to conduct a research study without a formal research design? How?

**OR**

✓ Define descriptive research design? What are the characteristics of descriptive research design?

10. Describe a research design for testing the following hypothesis. "Male managers will have more access to critical information than female managers in the same ranks".

**OR**

What are the elements of research design? Point out the initial questions in developing a research design.

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Second assessment 2079

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*Full Marks 45*  
*Pass Marks: 22.5*  
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**Attempt ALL questions.**

**Group A [5×3=15]**

1. What is case study? Describe the characteristics of case study.
2. Describe the nature and purpose of historical research.
3. What is ratio scale? What are its superiorities over other scale of measurement
4. Explain how a stratified sample can reduce the standard error?
5. What is research report? What purposes does it serve?

**Group B [5×6=30]**

6. A manager notices the number of grievances in the organization is increasing. The manager wishes to investigate this occurrence. What research design seems appropriate for the study? Give appropriate explanation
7. Under what conditions might be a laboratory experiment be better than a field experiment
8. Define the term "reliability" and "validity". Describe the various types of validity.
9. What is a questionnaire? What are the most critical problems or concerns in questionnaire design?

**OR**

What are the sampling error and non-sampling error? How non-sampling error can be reduced in the process of data collection?

10. Explain the conventions of academic writing.

**OR**

What are the various methods of documenting sources? Describe the **APA** method of citation with examples

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Tribhuvan University  
Institute of Science and Technology  
2079  
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Master Level / Second Year / Third Semester / Science  
**Data Science (MDS 601)**  
(Research Methodology)

Full Marks: 45  
Pass Marks: 22.5  
Time: 2 hours

*Candidates are required to give their answers in their own words as far as practicable.*

**Attempt All Questions.**

**Group A**

[5 × 3 = 15]

1. What is applied research? How is it different from basic research?
2. What are the characteristics of scientific research? Is it possible to have good research that is not generalizable? Why or why not?
3. Why research problem is stated in a study? What are the criteria for a good problem statement?
4. What are the goals of a literature review? What distinguish a strong from a weak literature review?
5. Describe the nature of descriptive research. What is the value of descriptive research in data science?

**Group B**

[5 × 6 = 30]

- ✓ 6. What is scientific research? Describe the major steps involved in the scientific research process?
7. What type of experiment do you think it would be possible to conduct in the following situation? Describe the different steps that you would take in conducting the experiment. "A company has designed a new product. You think that the consumer will like this product more than other similar products. You wish to demonstrate by scientific experiment, that this is the case."
- ✓ 8. "A valid instrument is always reliable, but a reliable instrument may not always be valid" comment on this statement.
- ✓ 9. What is non-response error? Describe how non response error can occur? What can be done to rescue the non-response errors associated with mail questionnaire?