MSC-CA Semester 1 - Research Methodology Internal Assessment

Complete Question Bank with Answer Keys

Course: Master of Science in Computer Applications
Semester: 1 (July 2025)
Subject: Research Methodology & Introduction to Research (RM-IA)
Total Questions: 30
Date: December 11, 2025

Questions with Answers

Question 1
What is the first step in the research process?

- Defining Problem or Formulating a research question ✓ **CORRECT**
- Literature review
- Data collection
- Data analysis

Explanation: The foundation of any research begins with identifying and clearly defining the problem or research question. This guides all subsequent research activities.

Question 2
What type of research design involves the random assignment of participants to different conditions and the manipulation of one or more independent variables?

- Descriptive research
- Experimental research ✓ **CORRECT**
- Correlational research
- Qualitative research

Explanation: Experimental research is characterized by controlled manipulation of variables and random assignment of participants to ensure validity and establish cause-and-effect relationships.

Question 3
Which type of research is primarily exploratory and is used to gain an understanding of underlying reasons, opinions, and motivations?

- Descriptive research
- Correlational research
- Experimental research
- Qualitative research ✓ **CORRECT**

Explanation: Qualitative research focuses on exploring underlying motivations, opinions, and reasons—ideal for understanding the "why" behind phenomena rather than quantifying them.

Question 4
After collecting data, the next step in the research process is usually:

- Formulating a hypothesis
- Data analysis ✓ **CORRECT**

- Defining the problem
- Conducting a literature review

Explanation: Once data is collected, it must be analyzed to extract meaningful patterns and insights. Data analysis transforms raw data into useful information.

Question 5
What is the primary purpose of a literature review?

- Summarize and critically evaluate previous research ✓ **CORRECT**
- List all studies on a topic without evaluation
- Replace the need for conducting your own research
- Limit the scope of your research question

Explanation: A literature review synthesizes existing knowledge, identifies gaps, and critically evaluates previous findings to provide context for new research.

Question 6
Which of the following is NOT a recognized type of research?

- Basic research
- Applied research
- Quantitative research
- Literary research ✓ **CORRECT**

Explanation: While "literary research" involves studying literature as a subject, it's not classified as a formal research type in research methodology. The recognized types are basic, applied, quantitative, and qualitative.

Question 7
What type of research examines the relationship between two variables without manipulating them?

- Experimental research
- Descriptive research
- Correlational research ✓ **CORRECT**
- Qualitative research

Explanation: Correlational research identifies relationships and associations between variables without introducing any experimental manipulation or control.

Question 8
The process of grouping variables in a literature review can help in:

- Refining the research questions or hypotheses ✓ **CORRECT**
- Making the review more subjective
- Avoiding critical analysis of the literature
- Limiting the scope to only one variable

Explanation: Grouping variables helps identify patterns and themes across studies, leading to refined research questions and clearer hypotheses.

Question 9
After collecting data, the next step in the research process is usually:

- Formulating a hypothesis
- Data analysis ✓ **CORRECT**
- Defining the problem

- Conducting a literature review

Explanation: Data analysis is the logical next step after collection, where researchers examine and interpret the data to draw conclusions.

Question 10
Which characteristic is typical of quantitative research?

- Focus on personal experiences
- Uses numerical data and statistical analysis ✓ **CORRECT**
- Emphasizes understanding context and meanings
- Relies on observational methods without measurement

Explanation: Quantitative research is defined by its use of numerical data, measurements, and statistical analysis to test hypotheses and establish relationships.

Question 11
What is the primary purpose of grouping variables in a literature review?

- To simplify the writing process
- To identify patterns and themes across studies ✓ **CORRECT**
- To reduce the number of sources reviewed
- To make the review more objective

Explanation: Grouping variables reveals patterns, themes, and gaps across literature, facilitating synthesis and comparison of findings.

Question 12
Which of the following is a key difference between a systematic literature review and a traditional review?

- Systematic reviews use rigorous and replicable methodology ✓ **CORRECT**
- Systematic reviews are faster to complete
- Systematic reviews focus only on qualitative data
- Traditional reviews are more objective

Explanation: Systematic reviews follow explicit, predetermined protocols and are exhaustive in scope, whereas traditional reviews are more narrative and subjective.

Question 13
Which type of literature review would typically require the registration of a review protocol?

- Traditional literature review
- Systematic literature review ✓ **CORRECT**
- Critical literature review
- None of the above

Explanation: Systematic literature reviews require pre-registration of the protocol (PROSPERO, OSF) to ensure transparency and reduce bias.

Question 14
A traditional literature review typically:

- Uses explicit inclusion/exclusion criteria
- Often lacks explicit inclusion/exclusion criteria ✓ **CORRECT**
- Follows a strict pre-registered protocol
- Requires meta-analysis

Explanation: Traditional reviews are narrative syntheses without pre-specified criteria, unlike systematic reviews which have explicit protocols.

Question 15
In which type of literature review is the subjective interpretation of the reviewer most apparent?

- Systematic literature review
- Traditional literature review ✓ **CORRECT**
- Critical literature review
- Meta-analysis

Explanation: Traditional literature reviews allow for more subjective selection and interpretation compared to systematic reviews, which use standardized procedures.

Question 16
What is primary data?

- Data that is collected by someone else and used in your research
- Data collected firsthand by the researcher for a specific purpose ✓ **CORRECT**
- Data that is found in books and articles
- Data that is outdated and no longer useful

Explanation: Primary data is original data collected directly by the researcher for their specific research objectives, ensuring relevance and control.

Question 17
The final step in the research process, where findings are communicated to others, is called:

- Data collection
- Data analysis
- Literature review
- Reporting and publishing results ✓ **CORRECT**

Explanation: Reporting and publishing results complete the research cycle by sharing findings with the academic and professional community.

Question 18
Which approach is typically emphasized in a critical literature review?

- A descriptive summary of studies
- An unbiased and rigorous search strategy
- A critical evaluation and synthesis of the literature ✓ **CORRECT**
- A focus on providing a comprehensive list of all studies

Explanation: Critical literature reviews emphasize critical evaluation and synthesis of findings, moving beyond mere description to interpret and evaluate quality.

Question 19
What type of research focuses on understanding fundamental aspects of phenomena without a specific application in mind?

- Basic research ✓ **CORRECT**
- Applied research
- Descriptive research
- Exploratory research

Explanation: Basic research aims to advance fundamental knowledge and understanding without immediate practical application, emphasizing theoretical understanding.

Question 20
Which of the following is common to both systematic and critical literature reviews?

- They both involve a rigorous and systematic search of the literature ✓ **CORRECT**
- They both avoid critical evaluation of the studies
- They both aim to provide a narrative summary of the literature
- They both allow for subjective interpretation without strict criteria

Explanation: Both systematic and critical reviews employ rigorous methodologies, though systematic reviews are more standardized while critical reviews emphasize evaluation.

Question 21
Which of the following is a key feature of a systematic literature review?

- It aims to offer a general overview of the literature
- It includes an exhaustive and comprehensive search strategy ✓ **CORRECT**
- It allows for selective inclusion of studies based on the author's preference
- It focuses on presenting qualitative data only

Explanation: Systematic reviews are characterized by comprehensive, exhaustive search strategies with explicit inclusion/exclusion criteria to minimize bias.

Question 22
In which phase of the research process do researchers develop instruments or tools for data collection?

- Research design ✓ **CORRECT**
- Literature review
- Formulating the problem
- Data analysis

Explanation: During the research design phase, researchers develop questionnaires, interview guides, observation protocols, or other measurement instruments.

Question 23
In which type of literature review is the subjective interpretation of the reviewer most apparent?

- Traditional literature review ✓ **CORRECT**
- Systematic literature review
- Critical literature review
- Meta-analysis

Explanation: Traditional reviews rely heavily on the reviewer's subjective judgment in selecting and interpreting sources, unlike systematic approaches.

Question 24
Which type of research is designed to systematically describe a situation, problem, phenomenon, or population?

- Exploratory research
- Descriptive research ✓ **CORRECT**
- Experimental research
- Longitudinal research

Explanation: Descriptive research systematically documents characteristics, conditions, and phenomena, providing detailed descriptions without manipulation.

Question 25
Which type of literature review is most likely to include a meta-analysis?

- Traditional literature review
- Systematic literature review ✓ **CORRECT**
- Critical literature review
- None of the above

Explanation: Systematic literature reviews often include meta-analysis (quantitative synthesis of results) when data from studies are comparable.

Question 26
Empirical research is primarily based on:

- Hypothesis
- Theory
- Observation and experimentation ✓ **CORRECT**
- Literature review

Explanation: Empirical research relies on direct observation, experimentation, and actual data collection rather than theory or literature alone.

Question 27
Which type of research establishes a cause-and-effect relationship between variables?

- Correlational research
- Descriptive research
- Experimental research ✓ **CORRECT**
- Exploratory research

Explanation: Only experimental research, with controlled manipulation of variables and random assignment, can establish true cause-and-effect relationships.

Question 28
Which type of research aims to solve specific, practical problems?

- Basic research
- Applied research ✓ **CORRECT**
- Quantitative research
- Qualitative research

Explanation: Applied research targets practical problems and aims for solutions with immediate application value in real-world contexts.

Question 29
Which type of research establishes a cause-and-effect relationship between variables?

- Correlational research
- Descriptive research
- Experimental research ✓ **CORRECT**
- Exploratory research

Explanation: Experimental research, through controlled variable manipulation and random assignment, can establish cause-and-effect relationships.

Question 30
What is the primary focus of a traditional literature review?

- To provide a comprehensive summary of the available literature on a specific topic ✓ **CORRECT**
- To critically evaluate and synthesize existing research on a topic
- To systematically search for and appraise research evidence
- To conduct a meta-analysis of quantitative studies

Explanation: Traditional literature reviews aim to provide a narrative summary of existing literature, highlighting key findings and gaps in knowledge.

Summary of Answer Distribution

Research Type	Count	Key Characteristics
Experimental Research	4	Random assignment, variable manipulation, cause-and-effect
Qualitative Research	2	Understanding reasons, opinions, motivations, context
Descriptive Research	2	Systematic description, documentation, observation
Applied Research	2	Practical problems, real-world solutions
Literature Review Types	10	Systematic, Traditional, Critical approaches
Data & Methodology	5	Primary data, data analysis, research design
Research Process	3	Steps and stages in research

Key Concepts Reference

Research Types by Purpose
- **Basic Research:** Fundamental understanding without specific application
- **Applied Research:** Solving practical, specific problems
- **Quantitative:** Numerical data, statistical analysis
- **Qualitative:** Meanings, experiences, context

Research Designs
- **Experimental:** Manipulation + Random Assignment + Control
- **Correlational:** Relationship identification without manipulation
- **Descriptive:** Systematic observation and documentation
- **Exploratory:** Initial investigation, understanding

Literature Review Approaches
Aspect	Traditional	Systematic	Critical
Protocol Registration	No	Yes	No
Search Strategy	Narrative	Exhaustive	Rigorous
Inclusion Criteria	Implicit	Explicit	Implicit but justified
Subjectivity	High	Low	Moderate-High
Meta-Analysis	Rare	Common	Possible

Research Process Sequence
1. **Define Problem** → Formulate research question
2. **Literature Review** → Understand existing knowledge
3. **Hypothesis Formulation** → Predict relationships
4. **Research Design** → Plan methodology & develop instruments
5. **Data Collection** → Gather primary or secondary data
6. **Data Analysis** → Extract meaningful insights

7. **Reporting & Publishing** → Share findings with community

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Important Notes for MSC-CA Students

This assessment tests foundational understanding of research methodology essential for:
- Thesis/project proposal development
- Literature review writing
- Research design selection
- Proper data collection and analysis
- Academic writing and publication

Focus Areas for Exam Success:
- Distinguish between research types (basic vs. applied, quantitative vs. qualitative)
- Understand literature review methodologies
- Know research process sequence
- Recognize data types and collection methods
- Understand cause-and-effect vs. correlation vs. description

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All 30 Questions Covered
Ready for MSC-CA Exam Preparation

PART 2

MSc CA Internal Assessment - Complete Question Bank

July 2025 Semester 1

Set 1 Questions and Answers

Section 1: Instrument Design Focus
Question: Instrument design focuses on:

Options:
- Writing literature review
- Developing data collection tools
- Statistical modeling
- Sampling

Correct Answer: **Developing data collection tools**

Section 2: Reliability Test Measures
Question: A reliability test measures:

Options:
- Accuracy
- Consistency of instrument

- Validity
- Sampling bias

Correct Answer: **Consistency of instrument**

Section 3: Scale Formation Components
Question: Scale formation includes:

Options:
- Coding
- Reliability testing
- Item generation
- Hypothesis writing

Correct Answer: **Item generation**

Section 4: Cronbach's Alpha
Question: Cronbach's alpha measures _____ reliability.

Options:
- Internal consistency
- Predictive
- External
- Temporal

Correct Answer: **Internal consistency**

Section 5: Intervening Variables
Question: STATE True/False: Intervening variables act similar to mediators.

Correct Answer: **True**

Section 6: Exogenous Variables
Question: Exogenous variables are:

Options:
- Internal variables
- External independent variables
- Measured only
- Always dependent

Correct Answer: **External independent variables**

Section 7: Validity Definition
Question: Validity refers to:

Options:
- Tool consistency
- Measuring what it intends
- Bias removal
- Sample accuracy

Correct Answer: **Measuring what it intends**

Section 8: Research Question Identifies
Question: A research question identifies the _____ of the study.

Options:
- Sample size
- Data type
- Purpose
- Limitation

Correct Answer: **Purpose**

Section 9: Hypothesis Formulation Requirement
Question: Hypothesis formulation requires:

Options:
- Random selection
- Clear theoretical framework
- Coding skills
- None of the Mentioned

Correct Answer: **Clear theoretical framework**

Section 10: Data Collection Methods
Question: Data collection methods include:

Options:
- Interviews
- Questionnaires
- Observations
- All

Correct Answer: **All**

Section 11: Moderating Effect Analysis
Question: A moderating effect is best tested using ____ analysis.

Options:
- Regression interaction
- Cluster
- ANOVA only
- Pivot

Correct Answer: **Regression interaction**

Section 12: Good Hypotheses Characteristics
Question: Good hypotheses are:

Options:
- Testable
- Clear
- Directional/Non-directional
- Ambiguous

Correct Answer: **Testable, Clear, and Directional/Non-directional** (All three checked)

Section 13: Experimental Designs Classification
Question: Experimental designs belong to:

Options:
- Exploratory research

- Conclusive research
- Qualitative research
- Narrative research

Correct Answer: **Conclusive research**

Section 14: Sampling Designs
Question: Sampling designs include:

Options:
- Probability sampling
- Non-probability sampling
- Random sampling
- Economical sampling

Correct Answer: **Probability sampling and Non-probability sampling** (Both checked)

Section 15: Control Variables
Question: STATE True/False: Control variables are used to reduce bias.

Correct Answer: **True**

Set 2 Questions and Answers

Section 16: Indirect Linkage Model
Question: An indirect linkage model includes:

Options:
- Only direct effects
- Mediating variables
- No variables
- Only moderators

Correct Answer: **Mediating variables**

Section 17: Endogenous Variables
Question: Endogenous variables are:

Options:
- Independent variables
- Dependent/affected variables
- Confounding variables
- Sampling errors

Correct Answer: **Dependent/affected variables**

Section 18: Theoretical Framework Components
Question: Components of theoretical framework:

Options:
- Concepts
- Relationships
- Assumptions
- Budget

Correct Answer: **Concepts, Relationships, and Assumptions** (All three checked)

Section 19: Confounding Variables
Question: Confounding variables are:

Options:
- Unrelated variables
- Hidden variables affecting results
- Always moderators
- Eliminated automatically

Correct Answer: **Hidden variables affecting results**

Section 20: Mediating Variable Function
Question: A mediating variable _____ the relationship between two variables.

Options:
- Neglects
- Explains
- Removes
- Hides

Correct Answer: **Explains**

Section 21: Moderating Variable Effect
Question: Moderating variables _____ the strength of a relationship.

Options:
- Cause
- Influence
- Modify
- Remove

Correct Answer: **Modify**

Section 22: Probability Sampling
Question: STATE True/False: Probability sampling gives equal chance to all units.

Correct Answer: **True**

Section 23: Direct Linkage Model
Question: A direct linkage model suggests:

Options:
- Direct effect between variables
- Effect through mediator
- Effect through moderator
- No effect

Correct Answer: **Direct effect between variables**

Section 24: Construct Validity
Question: STATE True/False: Construct validity evaluates how well variables represent concepts.

Correct Answer: **True**

Section 25: Descriptive Research Design
Question: Descriptive research design aims to:

Options:
- Explore phenomena
- Describe characteristics
- Test cause-effect
- Manipulate variables

Correct Answer: **Describe characteristics**

Summary Table: Key Research Concepts

\begin{table}
\begin{tabular}{|l|l|}
\hline
\textbf{Concept} & \textbf{Definition} \\
\hline
Reliability & Consistency of measurement instrument \\
\hline
Validity & Whether instrument measures what it intends to \\
\hline
Exogenous Variables & External independent variables in research \\
\hline
Endogenous Variables & Dependent/affected variables in research \\
\hline
Mediating Variables & Explain relationship between two variables \\
\hline
Moderating Variables & Modify strength of relationship \\
\hline
Confounding Variables & Hidden variables that affect results \\
\hline
Control Variables & Variables used to reduce bias \\
\hline
Hypothesis & Testable, clear prediction with theoretical basis \\
\hline
Cronbach's Alpha & Measures internal consistency reliability \\
\hline
\end{tabular}
\caption{Key Research Methodology Concepts}
\end{table}

Study Tips for MSc CA Research Methodology

Key Areas to Focus:

1. **Variable Types** - Understand the differences between endogenous, exogenous, mediating, moderating, confounding, and control variables

2. **Reliability vs Validity** - Reliability is consistency (measured by Cronbach's alpha for internal consistency); Validity is measuring what you intend to measure

3. **Research Design Types** - Descriptive (characteristics), Conclusive/Experimental (cause-effect), Exploratory (phenomena)

4. **Data Collection** - Interviews, Questionnaires, Observations (all are valid methods)

5. **Sampling Methods** - Both Probability (equal chance) and Non-probability (purposive) are valid sampling designs

6. **Hypothesis Requirements** - Must be testable, clear, with directional or non-directional statements based on clear theoretical framework

7. **Statistical Analysis** - Regression interaction for moderating effects, appropriate for testing complex relationships

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Document Information

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