UNIT 10: THE METHOD OF HYPOTHESIS MEANING AND DEFINITION OF HYPOTHESIS, METHODS OF HYPOTHESIS, CRITICISM

UNIT STRUCTURE

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10.1 Learning Objectives

After studying this unit, the learners will be able to:

- Understand the meaning and nature of hypothesis.
- Explain the definition of hypothesis as used in logic and scientific method.
- Describe the method of hypothesis in a systematic manner.
- Examine the role and importance of hypothesis in inquiry and knowledge.
- Critically evaluate the method of hypothesis and its limitations.

10.2 Introduction

Logic is not merely concerned with the evaluation of arguments or the distinction between valid and invalid reasoning; it is also deeply connected with the methods through which new knowledge is discovered. One of the most

important methods employed in logical and scientific inquiry is the method of hypothesis. This method becomes necessary when certain facts or events are observed that cannot be satisfactorily explained by already established laws, principles, or theories. In such situations, the mind seeks a possible explanation in the form of a tentative assumption known as a hypothesis. A hypothesis is framed as a provisional explanation to account for a given set of facts. It is not a statement of final truth but a reasoned guess that guides investigation. The value of a hypothesis lies in its ability to suggest new facts, predict outcomes, and bring coherence to scattered observations. By deducing consequences from a hypothesis and comparing them with actual experience, the investigator is able to test its validity. If the hypothesis successfully explains the facts and withstands repeated verification, it may eventually be accepted as a theory or law; if not, it is revised or rejected. The method of hypothesis has played a crucial role in the advancement of science and philosophy. Many important discoveries have been made by framing bold hypotheses and subjecting them to careful testing. At the same time, this method has certain limitations and has been subjected to criticism by philosophers and logicians. Therefore, a critical understanding of the method of hypothesis is essential for a proper appreciation of the process of knowledge. This unit seeks to discuss the meaning and definition of hypothesis, explain the method of hypothesis in a systematic manner, and examine its importance as well as its limitations in logical and scientific inquiry. The method of hypothesis is not confined to the natural sciences alone but is also significant in logic and philosophy. In logical inquiry, it helps in framing explanations, testing assumptions, and advancing knowledge through rational analysis. By combining imagination with logical control, the method of hypothesis occupies a central place in the study of inductive reasoning.

10.3 Meaning of Hypothesis

A hypothesis is a tentative or provisional explanation of a fact, problem, or phenomenon that needs explanation. It is an intelligent guess or assumption made by a researcher in response to a research question. As soon as a research problem or question is formulated, the formulation of a hypothesis becomes necessary because it provides a possible solution that can be tested. Etymologically, the word *hypothesis* comes from two Greek words: *hypo*

meaning “less than” and *thesis* meaning a proposition. Thus, a hypothesis is less than a fully established theory**.** It is an assumption or proposition whose truth is yet to be verified. It is based on observation, previous knowledge, and existing research, but the available evidence is not yet sufficient to confirm it. According to J. S. Mill, a hypothesis is a supposition made either without evidence or with insufficient evidence in order to deduce conclusions that agree with known facts. If the conclusions derived from the hypothesis are found to be true, the hypothesis itself becomes likely to be true. Similarly, Mouly (1963) defines a hypothesis as an assumption whose testability is examined on the basis of its implications and their compatibility with empirical evidence and previous knowledge. In scientific research, a hypothesis must be testable and verifiable. It is not a random guess but a reasoned prediction about the relationship between variables. Modern researchers agree that, whenever possible, research should proceed from a hypothesis. Van Dalen (1973) states that a hypothesis acts as a guiding light or beacon for the researcher, showing what to study and how to proceed. For example, if a theft occurs in a house and no one knows who committed it, a supposition may be made that a newly appointed servant is responsible. When investigation reveals the stolen items in his possession, the hypothesis is confirmed. Similarly, in science, Newton observed an apple falling to the ground and hypothesized that it was due to the attraction of the earth. This hypothesis was later tested and confirmed, leading to the formulation of the Law of Gravitation. In educational research, suppose a researcher wants to know why a gifted child performs poorly in class. The researcher may hypothesize that the child was ill during examinations. This hypothesis then guides the researcher to collect relevant information, such as medical records or family reports, to verify the assumption. Thus, a hypothesis is a conjectural statement, hunch, or shrewd guess about the solution to a problem. It is tested through observation and experimentation and is either accepted or rejected. Hypotheses connect theory with observation. When a hypothesis is repeatedly tested and supported by evidence, it may develop into a scientific theory. A theory is therefore a well-supported final hypothesis, and the conclusions of research help in building or refining theories.

10.4 Definition of Hypothesis

In research, a hypothesis is an essential starting point of scientific inquiry. Once a researcher identifies a problem or frames a research question, it becomes necessary to propose a possible explanation or solution. This tentative explanation is called a hypothesis. It provides direction to research by indicating what needs to be tested and examined. In essence, a hypothesis helps the researcher to move systematically from theoretical ideas to empirical investigation. A hypothesis may be defined as a tentative assumption or intelligent guess formulated to explain a phenomenon or the relationship between variables. It is not a proven statement but a proposition whose validity is to be tested through observation and evidence. Hypotheses are developed based on logical reasoning, existing theories, and prior research findings, and they guide the systematic collection and analysis of data. The classical understanding of a hypothesis was articulated by J. S. Mill. According to him, *"A hypothesis is any supposition which we make (either without actual evidence, or on evidence avowedly insufficient) in order to endeavour to deduce from it conclusions in accordance with facts which are known to be real; under the idea that if the conclusions to which the hypothesis leads are known truths, the hypothesis itself either must be or at least is likely to be true" (Mill, 1843). Mill's* definition emphasizes the provisional and instrumental nature of a hypothesis. He notes that a hypothesis may initially be formed without sufficient evidence, but its scientific value lies in its ability to generate conclusions that correspond with known facts. If the deductions drawn from a hypothesis are verified, the hypothesis gains credibility. For Mill, therefore, hypotheses are tools for discovery rather than established truths. Modern social scientists also highlight the testable nature of hypotheses. Goode and Hatt define a hypothesis as *"a proposition which can be put to a test to determine its validity"* (Goode & Hatt, 1952). This definition underscores that testability is a fundamental feature of a scientific hypothesis. Statements that cannot be empirically tested remain speculative and do not qualify as hypotheses in scientific research.Similarly, Kerlinger defines a hypothesis as *"a conjectural statement of the relationship between two or more variables"* (Kerlinger, 1986). This emphasizes that hypotheses concern relationships and must be expressed in a form suitable for

empirical verification. Lundberg describes a hypothesis as *"a tentative generalization, the validity of which remains to be tested"* (Lundberg, 1941), stressing its provisional and revisable character. A hypothesis performs several key functions in research. It provides clarity and focus, helps in selecting appropriate research methods, and guides the analysis and interpretation of data. Moreover, it allows theories to be tested, refined, or extended, contributing to the systematic development of knowledge. A well-formulated hypothesis should be clear, specific, logically consistent, and empirically testable. In essence, a hypothesis is a tentative and testable proposition formulated to explain observed facts or relationships. As emphasized by J. S. Mill and later social scientists, a hypothesis serves as a guiding tool in scientific inquiry. Through systematic testing and verification, hypotheses not only help in confirming or rejecting proposed explanations but also play a crucial role in advancing knowledge and strengthening scientific theory.

10.5 Nature and Characteristics of Hypothesis

A hypothesis is a fundamental element of scientific research and plays a central role in guiding inquiry. It is essentially a tentative assumption or an intelligent guess formulated to explain a phenomenon or answer a research question. Being provisional in nature, a hypothesis is not a final conclusion but a statement whose validity must be tested through observation, experimentation, or empirical analysis. The predictive aspect of a hypothesis allows researchers to anticipate possible outcomes and relationships between variables. It suggests how one variable might influence another, thereby providing direction for data collection and analysis. Ahypothesis is always grounded in observation, prior research, or established theories, ensuring that it is connected to reality rather than mere speculation. Clarity and specificity are essential in a hypothesis. Ambiguous or vague terms can weaken the research, while operationally defined variables ensure that the hypothesis is measurable and testable. By framing a hypothesis in clear, precise language, researchers can design experiments and investigations that yield meaningful and interpretable results. A hypothesis is inherently empirical, meaning it is closely tied to observable and measurable evidence. It must be capable of verification or

falsification through empirical testing, which is what distinguishes scientific hypotheses from assumptions or beliefs. In addition, a hypothesis serves as a guiding tool for research, helping to bridge the gap between theory and practice. It informs the selection of research methods, data collection strategies, and analysis procedures. Importantly, a hypothesis is dynamic and revisable. It may be modified or rejected based on research findings, contributing to the refinement of theories and the advancement of knowledge. By being both testable and adaptable, a hypothesis ensures that scientific inquiry remains systematic, rigorous, and grounded in evidence. In essence, the nature of a hypothesis reflects its role as a tentative, testable, and predictive statement that guides the researcher from observation to theory, providing structure, focus, and purpose to the research process.

Moreover, A hypothesis is the foundation of research, and it is essential that it is carefully formulated. A well-constructed hypothesis possesses several important characteristics:

(i) A good hypothesis is based on real and observable phenomena. It does not arise from mere speculation or random guessing. Observing facts ensures that the hypothesis is relevant to actual conditions and phenomena. *Example:* If researchers want to study the effect of study habits on academic performance, they must first observe students' study patterns and their academic results.

(ii) After observing facts, a hypothesis proposes a tentative explanation or solution for the problem. It represents an intelligent guess derived from observations and prior knowledge.

Example: "Students who study regularly perform better academically than those who study irregularly."

(iii) A hypothesis should allow the use of deductive reasoning. From a general assumption, specific predictions or consequences can be derived, which can then be tested empirically.

Example: If the general assumption is "Regular practice improves skill," one can deduce that students practicing mathematics daily will score higher in tests than those who do not.

(iv) A good hypothesis must be testable through observation, experimentation, or statistical analysis. If it cannot be tested, it cannot contribute to scientific knowledge. *Example:* The hypothesis "Education brings all-round development"

is difficult to test because it is hard to separate the effect of education from other factors.

(v) A hypothesis should involve variables that can be measured and quantified. Without measurable variables, testing the hypothesis becomes impossible. *Example:* "There is a positive relationship between learning style and academic achievement of 8th-grade students" – both learning style and achievement are measurable.

(vi) A hypothesis must clearly state the expected relationship between independent and dependent variables. Ambiguous or undefined variables weaken a hypothesis. *Example:* "There is a significant effect of frustration on the academic achievement of 10th-grade students" – both variables are clearly defined. *Counter-example:* "Students who participate in N.S.S. activities show higher moral growth" – *moral growth* is not clearly measurable.

(vii) A hypothesis should propose a tentative explanation for the observed problem, providing direction to the research. *Example:* "Academic achievement varies according to the level of intelligence" – suggests intelligence may influence achievement.

(viii)A hypothesis should be expressed in clear, precise, and unambiguous language. Vague terms such as "good," "bad," or "personality" should be avoided. Operational definitions should be used. *Example:* Use "personality measured by 16 PF (16 Personality Factors)" instead of simply "personality."

(ix) A hypothesis should focus on a specific and manageable aspect of a problem. Overly broad or ambitious hypotheses are difficult to test and often yield inconclusive results.

Example: Testing "The impact of daily study habits on mathematics performance of 10th-grade students" is manageable, whereas "The impact of education on global moral development" is too broad.

(x) A hypothesis should be consistent with existing knowledge, theories, and empirical findings. It should not contradict well-established facts. *Example:* A hypothesis based on Skinner's reinforcement theory must align with known principles of behaviourism.

(xi) A good hypothesis should explain the phenomena under study. Operationally defined variables allow researchers to test predictions and

account for outcomes. *Example:* "Higher intelligence leads to better problem-solving skills" explains the relationship between intelligence and performance.

(xii) A hypothesis should be grounded in relevant theories or previously discovered truths. The theoretical foundation strengthens the rationale for investigation. *Example:* "There is a significant relationship between contingencies of reinforcement and behavior shaping" is based on Skinner's behaviourist theory.

(xiii) A hypothesis should be testable within a reasonable time and with available resources. Researchers should avoid hypotheses that require excessive time, unavailable data, or complex methods. *Example:* A study on "The effect of daily exercise on the attention span of school children" is feasible, whereas testing "The impact of education on global culture over centuries" is impractical. Thus, it can be said that good hypothesis is the cornerstone of any research study. It is carefully formulated, testable, measurable, and grounded in theory, while providing a clear and precise statement of the expected relationships among variables. By adhering to these characteristics, a hypothesis not only guides the research process but also ensures that findings are meaningful, reliable, and scientifically valid. A well-constructed hypothesis thus serves as both a roadmap and a tool for discovery, helping researchers move systematically from observation to analysis, and ultimately contributing to the advancement of knowledge in a given field.

10.6 Methods of Hypothesis

A hypothesis is a tentative statement that proposes a possible explanation for a phenomenon or predicts the relationship between variables. There are several methods that researchers use to formulate hypotheses. One common approach is the method of induction, where a researcher observes specific facts or patterns and then draws a general conclusion. For example, after noticing that students who study regularly perform better in tests across several schools, a researcher might hypothesize that regular study habits improve academic performance. This method relies on careful observation before forming the hypothesis. Another approach is the method of deduction, which starts with a general theory or principle and derives specific predictions that can be tested.

For instance, based on Skinner's reinforcement theory, a researcher may hypothesize that students who receive positive reinforcement for completing homework will show higher academic achievement than those who do not. This method ensures that the hypothesis is grounded in established theory. The hypothetico-deductive method combines both induction and deduction. Researchers first observe phenomena and form a tentative hypothesis, then deduce specific predictions from it that can be tested empirically. This method links observation, theory, and testing in a systematic way and is widely used in scientific research. Sometimes, hypotheses are formed by analogy, where the researcher assumes that if a particular relationship exists in one situation, it may also exist in a similar situation. For example, if a certain teaching method improves learning in mathematics, a researcher may hypothesize that the same method will improve learning in science. This method relies on the similarity of situations or conditions. The operational or empirical method focuses on formulating hypotheses that can be directly tested and measured. Variables are clearly defined so that their relationships can be verified through observation or experimentation. For example, one might hypothesize that students who sleep at least eight hours before an exam will score higher than those who sleep less than six hours, as both sleep duration and test scores can be measured. Finally, sometimes hypotheses are based on intuition or personal experience. A researcher may form a hypothesis based on practical knowledge or insight, which is then tested systematically. For example, a teacher might observe that students who engage in group discussions appear more confident and hypothesize that group discussions enhance students' communication skills. While intuition can guide initial ideas, it must eventually be verified through research. In all these methods, the key is that the hypothesis should be clear, measurable, and testable. Choosing the right method ensures that the hypothesis is scientifically valid and practically useful, providing a solid foundation for research.

10.7 Importance of Hypothesis in Scientific Inquiry

A hypothesis plays a vital role in guiding scientific research. It provides tentative explanations of facts and phenomena that can be tested and validated. When a

hypothesis is confirmed, it helps in forming generalizations, which extend knowledge in a particular field and contribute to theory building. A well-formulated hypothesis not only indicates what the researcher should look for but also guides the research design. It helps in selecting samples, choosing appropriate methods, collecting data, and interpreting results to draw valid conclusions. By providing focus, a hypothesis ensures that the study remains specific and manageable, preventing the research from becoming too broad or unfocused. A hypothesis consists of rational statements expressed in a logical order, describing or explaining conditions or events that are not yet confirmed. Some relationships in a hypothesis are based on known facts, while others extend beyond what is known, offering reasonable explanations for observed phenomena. This allows the researcher to relate known facts to intelligent guesses about unknown conditions (Ary et al., 1972, pp. 73–74). Formulating and testing a hypothesis adds scientific rigor to research. It provides a clear and specific goal for the researcher and ensures that the study is systematic and meaningful. Hypotheses are particularly important in studies that aim to predict outcomes, such as experimental research, where expected results are compared with observed data. In historical or descriptive studies, the role of a hypothesis may be less direct because these studies often focus on fact-finding rather than prediction. However, even in such studies, formulating a hypothesis can help interpret facts, detect relationships, and draw generalizations, making the research more organized and purposeful. Without a guiding hypothesis, a researcher may waste time collecting extensive data without being able to clearly state facts or identify relevant relationships between variables. In conclusion, a hypothesis is a fundamental tool in research, providing focus, guiding methodology, enhancing scientific rigor, and helping in the interpretation of data. Its formulation ensures that research is systematic, meaningful, and capable of contributing to the advancement of knowledge.

10.8 Criticism of the Method of Hypothesis

The method of hypothesis occupies an important place in scientific inquiry because it provides direction and structure to research. However, despite its usefulness, this method has been criticized on several grounds. These

criticisms point out the limitations and weaknesses that may arise when research relies too heavily on hypotheses. One major criticism is that a hypothesis is often formulated on the basis of insufficient or incomplete evidence. Since hypotheses are usually framed before the collection of adequate data, they may be based more on assumptions or preliminary impressions than on verified facts. As a result, the entire research process may begin with a weak foundation. Another criticism relates to researcher bias. A researcher may become strongly attached to a particular hypothesis and may consciously or unconsciously interpret data in a way that supports it. Evidence that contradicts the hypothesis may be ignored or undervalued, which affects objectivity and reduces the reliability of the research findings. The method of hypothesis may also restrict the scope of inquiry. By concentrating only on variables mentioned in the hypothesis, the researcher may overlook other relevant factors or relationships. This narrow focus can prevent a comprehensive understanding of complex phenomena, particularly in social sciences where multiple variables operate simultaneously. A further limitation is that hypotheses are sometimes poorly formulated. When hypotheses are vague, ambiguous, or not clearly defined in operational terms, they become difficult to test. Such poorly constructed hypotheses can lead to confusion in research design and analysis and may result in unclear or unreliable conclusions. The method of hypothesis is often considered unsuitable for exploratory, historical, or descriptive studies. In these types of research, the main objective is to collect and describe facts rather than to test predictions. Strict dependence on hypotheses in such studies may limit flexibility and hinder the discovery of new insights. Another criticism is that excessive reliance on hypotheses can make research rigid and mechanical. Researchers may focus primarily on testing predetermined statements instead of remaining open to unexpected findings. This rigidity can reduce creativity and limit the researcher’s ability to understand the deeper meaning of data. Finally, the method of hypothesis may not adequately capture the complexity of human behaviour and social life. Human actions are influenced by many interconnected factors, and simple hypotheses may oversimplify reality. As a result, hypotheses may fail to explain the full range of social phenomena. In essence, although the method of hypothesis is an important tool in scientific research, it has certain limitations. Issues such as

bias, narrow focus, poor formulation, lack of flexibility, and oversimplification highlight the need for careful and balanced use of hypotheses. When used thoughtfully along with open-minded observation and analysis, the method of hypothesis can still contribute meaningfully to scientific inquiry.

10.9 Let Us Sum Up

- A hypothesis is a tentative and provisional explanation formulated to explain facts, events, or relationships that cannot be adequately explained by existing knowledge.
- It serves as an intelligent guess or assumption that provides direction to scientific and logical inquiry.
- The formulation of a hypothesis becomes necessary as soon as a research problem or question is identified.
- Etymologically, the term hypothesis means a proposition that is yet to be verified and is less than a theory.
- According to J. S. Mill, a hypothesis is a supposition made with insufficient evidence to deduce conclusions that can be tested against known facts.
- Modern scholars emphasize that a hypothesis must be testable, measurable, and capable of empirical verification.
- A hypothesis acts as a bridge between theory and observation by linking abstract ideas with empirical facts.
- The nature of a hypothesis is provisional, predictive, and revisable; it may be accepted, modified, or rejected based on evidence.
- A good hypothesis possesses several characteristics such as clarity, testability, measurability, theoretical grounding, feasibility, and consistency with established facts.
- Hypotheses can be formulated using different methods, including inductive, deductive, hypothetico-deductive, analogical, operational, and intuitive methods.

- In scientific inquiry, a hypothesis guides the researcher in selecting research design, methods, samples, tools, and procedures for data collection and analysis.
- The formulation and testing of hypotheses add scientific rigor and precision to research and contribute to theory building and extension of knowledge.
- Although the method of hypothesis is essential for scientific progress, it has certain limitations such as researcher bias, rigidity, narrow focus, and oversimplification of complex phenomena.
- Despite its limitations, the method of hypothesis remains a fundamental and indispensable tool in logic and scientific inquiry when used critically and systematically.

10. 10 Check Your Progress

(i) What is meant by a hypothesis? Explain its basic meaning.
(ii) Trace the etymological meaning of the term hypothesis.
(iii) Define hypothesis according to J. S. Mill.
(iv) Why is a hypothesis described as a tentative or provisional explanation?
(v) Distinguish between a hypothesis and a theory.
(vi) What are the main characteristics of a good hypothesis?
(vii) Why is testability considered an essential feature of a scientific hypothesis?
(viii) Explain any two methods of hypothesis formulation.
(ix) What is the hypothetico-deductive method?
(x) Discuss the importance of hypothesis in scientific inquiry.
(xi) In which types of studies may a hypothesis not be strictly necessary? Explain briefly.
(xii) What are the major criticisms of the method of hypothesis?
(xiii) Why should a hypothesis be consistent with established facts and theories?
(xiv) How does a hypothesis help in guiding research design and data collection?
(xv) Do you think the method of hypothesis limits creativity in research? Give reasons.

✓ 10.11 Answers to Check Your Progress

(i) A hypothesis is a tentative or provisional explanation of a fact, phenomenon, or problem. It is an intelligent guess formulated to explain observed facts and is tested through observation and experimentation.

(ii) Etymologically, the term hypothesis comes from the Greek words *hypo* meaning "less than" and *thesis* meaning a proposition. Hence, a hypothesis is a proposition that is not yet fully established.

(iii) According to J. S. Mill, a hypothesis is a supposition made with insufficient evidence in order to deduce conclusions that agree with known facts. If these conclusions are verified, the hypothesis becomes likely to be true.

(iv) A hypothesis is described as tentative or provisional because it is not a final truth. Its validity must be tested and confirmed through empirical evidence.

(v) A hypothesis is a tentative and testable proposition, whereas a theory is a well-established explanation supported by repeated verification. A theory often develops from confirmed hypotheses.

(vi) The main characteristics of a hypothesis include clarity, testability, measurability, limited scope, consistency with known facts, theoretical grounding, feasibility, and the ability to explain relationships between variables.

(vii) Testability is essential because only testable hypotheses can be verified or falsified through observation or experimentation. Without testability, a hypothesis cannot contribute to scientific knowledge.

(viii) Two important methods of hypothesis formulation are:

- the inductive method, which is based on observation of facts, and
- the deductive method, which derives hypotheses from established theories or principles.

(ix) The hypothetico-deductive method involves formulating a hypothesis, deducing specific predictions from it, and testing those predictions through observation or experimentation.

(x) A hypothesis is important in scientific inquiry because it guides research, provides direction, helps in selecting methods, and contributes to theory building and knowledge advancement.

(xi) In historical or descriptive studies, a hypothesis may not be strictly necessary because such studies mainly focus on fact-finding rather than prediction. However, hypotheses are useful for interpretation and generalization.
(xii) The major criticisms of the method of hypothesis include reliance on insufficient evidence, researcher bias, narrow focus, rigidity, poor formulation, and oversimplification of complex phenomena.
(xii) A hypothesis should be consistent with established facts and theories because scientific research builds upon existing knowledge, and contradiction weakens its credibility.
(xiv) A hypothesis guides research design by indicating what data to collect, how to select samples, which tools to use, and how to analyze results.
(xv) The method of hypothesis may limit creativity if applied rigidly; however, when used flexibly, it supports systematic inquiry while allowing openness to new findings.

10.12 Further Readings

1.Mill, J. S. (1843). *A System of Logic, Ratiocinative and Inductive*. Longmans, Green And Co.
2. Copi, I. M. (1978). *Introduction To Symbolic Logic* (5th Ed.). Macmillan.
3. Kerlinger, F. N. (1986). *Foundations Of Behavioral Research* (3rd Ed.). Holt, Rinehart and Winston.
4. Chakraborti, C. (2009). *Logic: Informal, Symbolic and Inductive*. PHI Learning.
5. Suppes, P. (1957). *Introduction To Symbolic Logic*. McGraw-Hill.

10.13 Model Questions

A. Very Short Questions

1. What is meant by a hypothesis?
2. What is the etymological meaning of the term hypothesis?
3. Who defined hypothesis as a supposition made with insufficient evidence?
4. What is meant by testability of a hypothesis?

5. What is the hypothetico-deductive method?

B. Short Questions (Answer each question in about 150 words)

1. Explain the meaning and nature of hypothesis.
2. Define hypothesis and explain J. S. Mill's definition.
3. What are the main characteristics of ahypothesis?
4. Explain any two methods of hypothesis formulation.
5. Discuss the importance of hypothesis in scientific inquiry.

C. Write Short Notes On (Answer each question in about 150 words)

1. Testability and measurability of hypothesis
2. Hypothesis and theory
3. Inductive and deductive methods of hypothesis
4. Hypothetico-deductive method
5. Limitations of hypothesis in social sciences

D. Long Questions (Answer each question in about 300 words)

1. Explain the meaning, definition, and nature of hypothesis in detail.
2. Discuss the methods of hypothesis formulation with suitable examples.
3. Examine the role and importance of hypothesis in scientific inquiry.
4. Critically evaluate the method of hypothesis.
5. Discuss the characteristics of ahypothesis and their significance in research.

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