Summary :

Nature of hypothesis

A hypothesis is a tentative supposition put forward for explaining facts that cannot be understood without it.

Charcteristic of Hypothesis -

(1) It is an important stage in the scientific investigation. (2) Attempts at explanation

(3) Provisional (4) It is an organising principle

(5) Result of rational activity

(6) Result of keen and creative imagination

Origin of hypothesis

(1) Keen and creative imagination (2) Painstaking work

(3) Adequate and wide knowledge (4) Insight

(5) Chance (6) Induction per simple enumeration and Analogy

Conditions of good hypothesis -

(1) Relevance

(2) Hypothesis must be self-consistent -

(3) Hypothesis must be testable -

(4) Hypothesis must be compatible with pre-established knowledge

(5) Hypothesis must have explanatory power

(6) Hypothesis must have predictive power

(7) Hypothesis must be simple

Verification of hypothesis

(1) Direct Verification

(2) Indirect Verification

Limits of verification

It shows that 'C' is the cause of 'E', but does not show that 'C' is the only cause of 'E'.

Exercises

Q. 1. Fill in the blanks with suitable words from those given in the brackets :

(1) A guess or a supposition as to how facts are connected is called ……. . *(Hypothesis/ Law)*

(2) ……. verification consists in confirming the deduced consequences. *(Direct / Indirect)*

(3) When a generalization is supported by positive instance and no contrary instance has been observed, the method of ……. is said to be used. *(Simple Enumeration /Anology)*

(4) Hypothesis is a ……. solution to the problem. *(tentative / permanant)*

(5) ……. of hypothesis consists in finding out whether it agrees with facts. *(Verification / proof)*

Q. 2. State whether the following statements are true or false.

(1) A hypothesis must be inconsistent with the fundamental assumption.

(2) The hypothesis verified directly are called theoretical hypothesis.

(3) A hypothesis is said to be simpler when it makes minimum number of assumptions.

(4) Hypothesis is a tentative suggestion.

(5) Hypothesis is an important stage in scientific investigation.

Q. 3. Match the columns :

	(A)		**(B)**
(1)	Origin of hypothesis	(a)	indirectly verified
(2)	Conditions of good hypothesis	(b)	keen imagination
(3)	Analogy	(c)	Verifiability
(4)	Non-Instantial hypothesis	(d)	suggests a hypothesis to the scientist.

Q. 4. Give logical term for the following :

(1) A hypothesis from which the facts to be explained can be deduced as a logical consequence.

(2) Verification of hypothesis which consist of deducing consequence from the hypothesis and examining them.

(3) A tentative solution to the problem.

(4) A good power of reasoning where solution to a problem strike all of a sudden and unexpectedly.

(5) A hypothesis which makes minimum number of indenpendent assumptions.

Q. 5. Explain the following :

(1) Explain with an illustration, direct verification of hypothesis by observation.

(2) Explain with an illustration, direct verification of hypothesis by experiment.

(3) Explain Indirect verification of hypothesis with an example.

(4) Explain with an illustration characteristics of hypothesis.

Q. 6. Answer the following :

(1) Explain with an illustration the factors that can suggest a hypothesis to the scientist.

(2) Explain with an illustration origination of hypothesis.

(3) Explain Direct verification of hypothesis with examples.

(4) Explain with an illustration the conditions of good hypothesis.

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Glossary

Singular Proposition : states that an individual possesses or does not possess a certain property / attribute (quality).

Affirmative singular proposition : states that an individual possesses a certain property.

Negative singular proposition : states that an individual does not posess a certain property.

General propositions : make an assertion about a class or a classes.

An Individual constant : is a symbol which stands for the name of an individual.

Predicate constant : is a symbol which stands for a particular property.

Individual variable : is a symbol which stands for any individual whatsoever.

A propositional function is defined as an expression which contains at least one free variable and becomes a proposition when the variable is replaced by a suitable constant.

Simple propositional function is one which does not contain propositional connectives.

Complex Propositional function propositional functions which contain propositional connectives are called complex propositional functions.

Free variable is one which falls beyond the scope of a quantifier. It is not preceded by an appropriate quantifier.

Bound variable is one which is preceded by an appropriate quantifier.

Instantiation is the process of obtaining singular proposition from a propositional function by substituting a constant for a variable.

The method of Quantification or Generalization is a process of obtaining a general proposition from a propositional function by placing a Universal or Existential quantifier before the propositional function.

The process of Universal Quantification consists in a obtaining a universal general proposition by placing a universal quantifier before the propositional function.

The process of Existential quantification consists in obtaining an existential general proposition by placing an existential quantifier before the propositional function.

Quantificational Deduction consists in deducing the conclusion of an argument from its premises with the help of certain rules.

Perception To become aware of objects and events that happens to come to our notice.

Observation selective perception of facts with a certain purpose.

Experiment observation under conditions controlled by the investigator.

The fallacy of non - observation is overlooking or ignoring relevant facts.

Negelct of instances Overlooking relevant instances, either unknowingly or due to the observer's bias.

Neglect of operative conditions considering the unessential, irrelevant conditions to be the cause of an effect.

Mal - observation wrong interpretation of sence impressions.

Term is word or group of words which stands as the subject or predicate of a logic proposition.

Anumana is that cognition which pre supposes some other cognition.

Pratijna : statement of the propositions to be proved in Nyaya syllogisim

Hetu statement of reasons in Nyaya syllogism.

Upanaya statement of the presence of mark.

Nigaman conclusion proved.

Vyapti knowlege of universal con comitance.

Conditional Proposition (Traditional logic) is one in which the assertion is made subject to some expressed condition.

Categorical Propostion is a proposition of relationship between two classes, class of subject term and class of predicate term.

Conversion is a process of immediate inference in which the subject term and predicate term are interchanged.

Obversion is a process of immediate inference in which the subject term remains the same but the predicate term in the conclusion is complementary to the original predicate term in the premise.

Paksha : The Minor term is Nyaya Syllogism.

Sadhya : The Major term is Nyaya Syllogism.

Ling : The Middle term is Nyay Syllogism.

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