



REPORT ON BOOK REVIEW

**TITLE OF BOOK: The Science of Correct Thinking Logic**

COURSE : **UHIT 2302 SEC. 13**

GROUP NAME : **GROUP 4**

LECTURER : **PROF. DR. BADLIHISHAM BIN MOHD NASIR**

DATE : -

REVIEWED BY:

|  |  |  |
| --- | --- | --- |
| 1. | Nur Batrisyia Abd Hadi | B20BE0096 |
| 2. | Nuralia Binti Fadzil | B20BE0107 |
| 3. | Muhammad Imran Bin Ismail | B20BE0076 |
| 4. | Hafiz Surya Nugraha | A20EC0304 |
| 5. | Anatasya Humaira | A20EC0261 |
| 6. | Muhammad Iqmal Hadi Bin Mohd Aziz | B20BE0077 |

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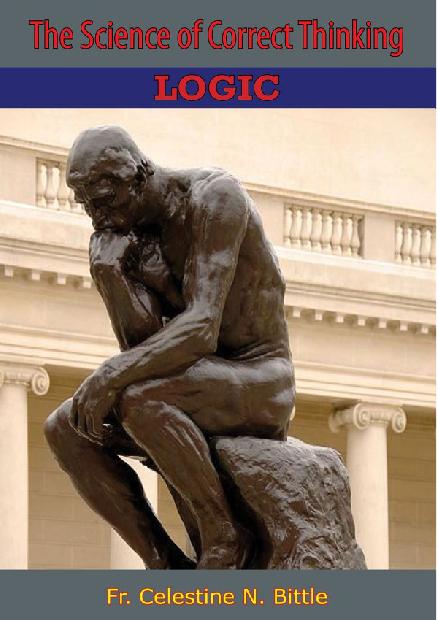
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Description on Author and Book



*Figure 1:Cover book of he Science of Correct Thinking Logic*

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**Description on Author and Book**

New ideas and theories in economics, science, statecraft, philosophy, and religion clamor for recognition. Some of these issues have been slow in coming to the fore; others have been violently thrust to the surface in the catastrophic upheaval of the World War. The study of logic should be time well spent for the educated person and particularly for the student, for they will be the leaders of tomorrow. Books on philosophy, and therefore also on logic ,are usually two types textbooks and monographs.

Since logic treats the purely mental operations of ideas, judgments, and inferences, which always remain the same, no radical departure from traditional teaching needs be expected. Nor can a large amount of explanations, definitions, divisions, and rules be avoided in a subject of this kind, they are a necessary burden which cannot be shirked without detriment to proper understanding of the nature and function of these operations. In explaining the syllogistic figures and moods the author has used a set of symbols of his own devising, he has found them very effective in his work in the classroom, and he hopes they will be equally helpful in enabling the reader to understand this difficult but Important part of logic. To make the subject more readable, this book arrangement was dropped in favor of the chapter form. It was hoped that in this way the book would be made palatable not only to the student, but also to any person desirous of self-education. The book is intended, therefore, as a textbook, if so desired or as supplementary reading in classwork, or as an introduction to philosophy for the general reader. In any case, a well-grounded knowledge in the science of correct thinking should be a "valuable asset in these troubled times confronting the nation.

Nur Batrisyia Abd Hadi (B20BE0092)

**SUMMARY OF CHAPTER I : NATURE OF THE IDEA**

The process of forming ideas reveals the nature of the idea. First in order is the phantasm. By means of abstraction the intellect extracts an intellectual image (idea) from out of the phantasm by leaving aside all the differentiating characteristics of the individuals and retaining the attributes common to them all. The idea, therefore, is the intellectual image or representation of a thing.

There is an essential difference between phantasm and idea. The phantasm is fundamentally concrete and individual and cannot be applied to a large number of individuals or to classes, while the idea is universal and applies with equal facility to any number of individuals taken singly or collectively. The phantasm becomes vague and indistinct with complexity and minuteness of details, while the idea is not interfered with by these things in its clearness and distinctness. No adequate phantasm can be made of a large number though the idea of them is very definite and exact.

The comprehension of an idea is the sum total of all the attributes or thought-elements which constitute the idea. The extension is the sum total of all the individuals and groups to which an idea can be applied. The comprehension can be neither increased nor diminished without changing the idea itself, but the extension can be increased or diminished without changing the idea. Comprehension and extension have an Inverse ratio or proportion, as the comprehension the extension decreases, and as the extension increases, the comprehension decreases.

COMMENT CHAPTER I

This chapter is about the process of forming ideas that will assist us in understanding their nature. Ideas are the building stones of knowledge. They are elements that constitute judgements of truth and error. This being the case, ideas in all their forms must be thoroughly understood by the philosopher, because no building can be solid unless its foundation is solid.

Nur Batrisyia Abd Hadi (B20BE0092)

**SUMMARY OF CHAPTER II : KINDS OF IDEAS**

There are different kinds of ideas:

1. From the standpoint of their origin, intuitive and abstractive.
2. From the standpoint of their perfection in representing an object, clear or obscure, distinct or confused, adequate or inadequate.
3. From the standpoint of their mutual relations: connex, or disparate, identical or diverse, compatible or incompatible, contradictory, privative, contraryand relative.
4. From the standpoint of their comprehension; simple or composite, concrete or abstract.
5. From the standpoint of their extension; singular, universal, particular, collective.

COMMENT CHAPTER II

Ideas can be approached from different angles and divided in different ways. The philosopher will naturally attempt to procure a comprehensive division of the idea into its various kinds, because a complete knowledge in its manifold will tend to avoid confusion in discussion by fixing the meaning terms employed by philosophy departments.

Nur Batrisyia Abd Hadi (B20BE0092)

**SUMMARY OF CHAPTER Ill : UNIVERSALS**

Since the classifications and laws of science are expressed in universal ideas, the validity of science depends on the universals as a true representation of reality. Universals represent reality in a true fashion, because the nature or essence of things is the same with the sameness of a perfect likeness in all individuals of a class. Therefore the Intellect is justified in representing this common nature as a universal. There are two kinds of universals: the direct and the logical universal.

1. The direct universal expresses the nature or essence of a thing as it is in itself. The direct universal is divided into ten ultimate called categories, quantity, quality, relation, action, passion, time, place, and posture.
2. The logical universal expresses the nature common to many, precisely as it is applicable to many. It presupposes a comparison between one idea and another and expresses the relationship between them. There are five such relationships: called predicables, genus, species differentia, property, and accident.

COMMENT CHAPTER II

In this chapter, the writer explains about the problem of the universal idea and the universals lie at the very foundation of scientific knowledge. It is the purpose of all science to sift the data phenomena, analyse manifold occurrences of the world, and extract from their ever-changing realities which is permanent and necessary.

Nur Batrisyia Abd Hadi (B20BE0092)

SUMMARY OF CHAPTER IV: TERMS

Chapter IV is the explanation about the term that we use. A term is a sensible conventional sign, expressive of an idea. Terms are of many kinds and it needs an explanation.

Firstly, from the standpoint of perfect and imperfect signification, terms are univocal, equivocal, or analogous, depending upon their use in the same sense, in a totally different sense, or a sense partly the same and partly different. From the standpoint of the extension of the idea expressed, we have singular, universal, particular, and collective terms.

The supposition of a term is used for the thing which to signify. This uses vanes. The supposition of a term will be material or formal; the formal supposition is either logical or real; the real supposition is either absolute or personal; the personal supposition is either distributive or collective, and the distributive supposition may be either completely or incompletely distributive

COMMENT CHAPTER IV

In this chapter, the writer explains deeply all about terms. They explain in words that people can understand. This writer also explains the subtopic using hierarchy and clear explanation.

Muhammad Imran Bin Ismail (B20BE0076)

SUMMARY OF CHAPTER V: DEFINITION & DIVISION

Chapter V explains about definition and division. These two things are first to define things and resolving whole into parts.

A definition is a statement that explains what a thing is. The nominal definition explains what a word means; the real definition explains what a thing is in itself. The real definition is essential when it explains the essence of a thing by proximate genus and specific differentia. It will be descriptive when it explains a thing by the positive, but non-essential, elements of its nature; and this descriptive definition will be either distinctive or genetic or causal or accidental. Rules for definition; it must be clearer than the thing defined; must not contain the idea to be defined; must be convertible with the idea defined; must be positive.

Division is the resolving of a whole into its parts. There are two main kinds: real and logical. A real division is the resolution of a thing into its natural parts. If these are physical, we have a physical (essential or integral) division. If the parts are metaphysical, we have a metaphysical division. A logical division resolves a universal idea into its members. A logical division is always a 'synthesis,' while a real division is always an 'analysis. Rules for division: it must be adequate and clears A division is adequate when the parts are taken together to coincide with the whole.

COMMENT CHAPTER V

In this chapter, the writer explains about what is definition and division. They explain in words that people can understand. This writer also explains the subtopic using hierarchy to make people easy to understand.

Muhammad Imran Bin Ismail (B20BE0076)

SUMMARY OF CHAPTER VI: NATURE OF JUDGEMENT & PROPOSITION

Chapter VI is in part two in this book which is judgment and proposition. It explains that Truth is not contained in ideas as such but the judgment. The judgment is an act of the mind pronouncing the agreement or disagreement of two ideas among themselves. Three things are required for the making of a judgment: two known ideas, their comparison, and the act of intellect pronouncing their identity or non-identity. Truth and the possibility of the advancement of knowledge lie in this union of two ideas performed by the judgment. The subject-idea and the predicate-idea are the matter of the judgment; the pronouncement of their agreement or disagreement is the form of the judgment. The mind does not make the judgment to be true; the truth is independent of the mind and lies in the conformity of the judgment to reality.

The proposition is the judgment expressed in a sentence. Every proposition consists of a subject, a predicate, and the copula; subject and predicate are the matter, and the copula is the form of the proposition. Since the copula expresses the present act of the mind in its judgment, it is always expressed in the present tense of the indicative mood of the verb 'to be,' even if the sentence refers to past or future events.

COMMENT CHAPTER VI

In this chapter, the writer explains about what is definition and division. They explain in words that people can understand. The writers have made a clear comparison between judgement and proposition. This writer also explains the subtopic using hierarchy to make people easy to understand.

Muhammad Imran Bin Ismail (B20BE0076)

SUMMARY OF CHAPTER VII:GENERAL TYPES OF PROPOSITIONS

Truth and falsity are found in the judgment and proposition; hence, a knowledge of the various types of propositions is necessary. There are general and special types. The general types are based on the quality, quantity, and the relation of subject and predicate found in the proposition.

1. From the standpoint of quality a proposition is either affirmative or negative. In an affirmative proposition the predicate is always used according to the whole of its comprehension and a part of its extension, it is, therefore, always a particular term In a negative proposition the predicate is always used according to a part of its comprehension and the whole of its extension; it,is, therefore, always a universal term.

2. The quantity of a proposition affects the whole proposition as such and expresses

the number of individuals to whom the judgment applies. This is shown by the extension of the subject. Depending on this, propositions will be universal, particular, singular, collective or indefinite These can all be reduced to the value of a universal or particular proposition. Symbols: A,E,L,O.

3. From the standpoint of the relation between subject and predicate, propositions will be either necessary or contingent. When the relation is in a necessary matter, the subject in always contained in the comprehension of the predicate, or vice, versa; hence, an analysis of the one will reveal the other and thereby reveal the truth of the proposition. But when this relation is in a contingent matter, neither subject nor predicate is contained in the comprehension of the predicate, or vice versa hence, an analysis of the one will reveal the other and thereby reveal the truth of the proposition. But when this relation is in a contingent matter, neither subject nor predicate is contained in the comprehension of the other, and an analysis of the one will not reveal the other, since this relation is based on a contingent fact, we can prove the truth of the proposition only by experience. The necessary proposition is, therefore, analytie, while the contingent proposition is synthetic; the former is also called 'a priori' and the latter 'a posteriori.

COMMENT CHAPTER VII

In this chapter the author explained The general types are based on the quality, quantity, and the relation of subject and predicate found in the proposition.r.he explain 3 type of the general types

Hafiz Surya Nugraha(A20EC0304)

SUMMARY OF CHAPTER VIII:SPECIAL TYPES OF PROPOSITIONS

The function of language is to convey thought and truth from one mind to another, but the complexity of language tends to cover up the truth of a judgment with words. Hence, there is a necessity to study the various types of propositions. Propositions are either single or multiple, categorical or hypothetical. A single proposition consists of one subject and one predicate; a multiple proposition consists of two or more propositions united into one. A categorical proposition attributes (affirms or denies) the predicate to its subject outright, a hypothetical proposition asserts the dependence of one judgment on another.

1.Single categorical propositions are either complex or modal. The complex categorical is one in which both the subject and the predicate or either one is a complex term. The qualifying term is either explicative or restrictive. The modal categorical has the copula so modified as to express the manner (mode) in which the predicate belongs to the subject, namely, whether as something necessary or impossible or possible or contingent This gives rise to necessary, impossible, possible, and contingent propositions

2.Multiple categorical propositions are either overtly or covertly multiple. The overtly multiple propositions are plainly composed of two or more proportions They are five m number the copulative, adversative (discretive), relative, causal, and comparative The covertly multiple have the appearance of single proposıtions, they are called 'exponibles, and they are five in number the exclusive, oxceptive, reduplicative, specificative, and inceptive desitive

3.The hypothetical proposition (which is always a multiple proposition) expresses the dependence of one affirmation or denial on another affirmation or denial There are three types of hypotheticals, the conditional, disjunctive, and conjunctive.

COMMENT CHAPTER VIII

In this chapter the author explained A categorical proposition attributes (affirms or denies) the predicate to its subject outright, a hypothetical proposition asserts the dependence of one judgment on another.

-Single categorical propositions

-Multiple categorical propositions

-.The hypothetical proposition Hafiz Surya Nugraha(A20EC0304)

SUMMARY OF CHAPTER IX:OPPOSITION OF PROPOSITIONS

Propositions are said to be logically opposed to each other, when they have the same subject and predicate, but with a change in 'quality or 'quantity or both.

1. All truth is based upon the three laws of thought: the Principle of Identity, the Principle of Contradiction, and the Principle of the Excluded Middle. The Principle of Identity states: "everything is what it is. The Principle of Contradiction states: it is impossible for the same thing both to be and not to be at the same time. The Principle of Excluded Middle states: everything must either be or not be (something). These principles are self-evident and they underlie all being and thinking

The square of opposition' exemplifies the four types of logical opposition possible between propositions: sub-alternation, contradiction, contrariety, and sub-contrariety.

2. Sub-alternation is the opposition existing between A and I and between E and O. The two rules for sub-alternation are: the truth of the universal involves the truth of the particular, but the truth of the particular does not involve the truth of the universal; the falsity of the particular involves the falsity of the universal, but the falsity of the universal does not involve the falsity of the particular.

Contradiction is the opposition existing between A and O and between E and I. The two rules are: contradictories cannot be true together, contradictions cannot be false together.

Contrariety is the opposition existing between A and E. The two rules are: contraries cannot be true together; contraries may be false together. Sub-contrariety is the opposition existing between I and O. The Two rules are: both sub-contraries cannot be false both sub-contraries may be true. This method of concluding from the truth or falsity of one statement to the truth or falsity of another is called immediate inference.

COMMENT CHAPTER IX

In this chapter the author explained Propositions are said to be logically opposed to each other, when they have the same subject and predicate, but with a change in 'quality or 'quantity or both.

And from the truth or falsity of one statement to the truth or falsity of another is called immediate inference.

Hafiz Surya Nugraha(A20EC0304)

SUMMARY OF CHAPTER X: EDUCTIONS

*Eduction* is a mental process whereby, from any proposition taken as true, we derive another implied in it, though differing from the first in the subject of predicate or both.

1. **Obversion (equipollence)** is an eduction in which the inferred judgement, while retaining the original subject, has for its predicate the contradictory of the original predicate. The original proposition is the ‘obvertend’, and the inferred proposition is the ‘obverse’. The rule for obversion is retain the subject, contradict the predicate, negate the copula. *‘All S is P’* becomes *‘no S is non-P.’*  *‘No S is P’* becomes *‘all S is non-P.’ ‘Some S is P’* becomes ‘*some S is not non-P.’ ‘Some S is not P’ becomes ‘some S is non-P.’*
2. **Conversion** is an eduction in which the inferred judgement takes the subject of the original proposition for its predicate, and the predicate of the original proposition for its subject. The original proposition is the ‘converted,’ and the inferred proposition is the ‘converse.’ The rules for conversion are : *the converse and convertend must retain the same quality; no term, undistributed in the convertend, may be distributed in the converse. ‘All S is P’* becomes *‘some P is S.’* *‘No S is P’* becomes *‘no P is S.’ ‘Some S is P’* becomes *‘some P is S.’* The particular negative (O) proposition cannot be converted.
3. **Contraposition** is an eduction in which the subject of the inferred proposition is the contradictory of the predicate of the original proposition. For instance, *‘all S is P’* becomes *‘no non-P is S.’*
4. **Inversion** is an eduction in which the mind by means of obversion and conversion finally arrives at a judgment in which the subject is the contradictory of the original subject. For example, *‘all S is P’* becomes *‘some non-S is non-P.’*

COMMENT CHAPTER X :

This chapter presents on how decision is made from a given proposition to the truth or falsity of its opposites, explaining the definition of eduction as well as its two main forms known as obversion and conversion; the author also conveys the purpose of this chapter, which refers to the discovery and proof of truth.In order to proceed safely and accurately, we have to understand first the exact meaning and the full implication of judgments and propositions.

Anatasya Humaira (A20EC0261)

SUMMARY OF CHAPTER XI: NATURE OF REASONING

**Reasoning is the supreme operation of man as man.**

1. **Man’s mind forms ideas of things**. Different ideas are then compared and united in a judgment expressing their mutual agreement or disagreement. Truth lies in the judgement. In many cases the agreement or disagreement between the ideas of a judgment is self-evident. In most cases, however, an analysis of subject and predicate or direct observation will not reveal their mutual identity or diversity. Here reasoning is necessary.
2. **The mind** compares two doubtful ideas with a *third* idea which is known. If both doubtful ideas agree with this third idea, they also agree among themselves; if one agrees with this third, and the other does not, then they also disagree among themselves: in the first case, we have an affirmative conclusion, and in the second case a negative conclusion. This is reasoning or *mediate inference*, and it is defined as *the process by which, from certain truths already known, the mind passes to another truth distinct from these but necessarily following from them.* There are two main types of mediate inference: *deduction,* where we conclude from the general law to a particular instance; and *induction,* where we conclude from the particular instances to the general law.  
    In order that a mediate inference by truly an inference, there must exist a *logical connection* between the various ideas and judgments, in virtue of which the conclusion follows *with necessary force* from them; this is called the *consistency* of the inference. The various ideas and judgments constitute the *manner*, and the logical connection constitutes the *form* of the inference.  
    Consistency is not the same as truth. A conclusion may be drawn with consistency from false judgments, giving us a false, though consistent, conclusion. In order that a conclusion be true with certainty, the conclusion must be deduced with consistency from *true* judgments. Errors in inferences, therefore, may flow from two sources: from false judgments or from lack of consistency. Logic, the science of correct thinking, is concerned with the laws of thought which will guarantee *consistency,* and it presupposes the truth of the judgments as such.
3. **The verbal expression** of the inference is called *argumentation*, which is defined as *discourse* *which logically deduces one proposition from others.* The subject of the conclusion is the ‘major extreme’.’ The mediating idea between them is the ‘middle term.’ The propositions from which the conclusion is drawn are the *premises*; the one containing the ‘minor’ term is the minor premise, and the one containing the ‘major’ term is the major premise.

COMMENT CHAPTER XI :

In this chapter, the author indicates among the ever-changing activities of all the multitudinous beings which constitute this universe, from the gyrations of the infinitesimal electrons to the ponderous wheelings of entire star galaxies, there is none which can even remotely compare with the splendid achievement of man’s reasoning. It also shows us how to discover which of the premises is the ‘major’ and which is the ‘minor’ by interpreting the definition of argumentations and some other terms.

Anatasya Humaira (A20EC0261)

SUMMARY OF CHAPTER XII: CATEGORICAL SYLLOGISM

The two chief divisions of argumentation are **deduction and induction**. The two main types of deduction are the categorical and hypothetical *syllogism.*

1. The *syllogism* is an *argumentation which, from two judgments that contain a common idea and one at least of which is universal, a third judgment, distinct from either of the former, follows with necessity.* It is a categorical *syllogism,* if the propositions composing it are categorical.  
    A categorical syllogism consists of two premises and a conclusion. One premise contains a comparison of the major term (P) with the middle term (M), and the other contains a comparison of the minor term (S) with the middle (M). The conclusion expresses the argument or disagreement of the minor (S) and masor (P), as revealed in the premises.  
    The *general axiom* underlying the categorical syllogism in the *Dictum de omni et nullo*: ‘What is affirmed of a logical whole may be affirmed of a logical part of that whole; and what is denied of a logical part of that whole, may be denied of a logical part of that whole.’
2. The nature of the syllogism gives rise to the ***Eight General Rules:***(1) Only three terms may appear in the syllogism.  
    (2) Neither the major nor the minor term may be universal in the conclusion, if it was only a particular term in the premises.  
    (3) The middle term may not occur in the conclusion.  
    (4) The middle term must be distributed at least once in the premises.  
    (5) If both premises are affirmative, the conclusion must also be affirmative.  
    (6) Both premises may not be negative; one at least must be affirmative.  
    (7) If one of the premises is negative, the conclusion must be negative; ifone of the premises is particular, the conclusion must be particular.  
   (8) No conclusion can be drawn from two particular premises; at least one must be universal.  
    The proof of these eight rules would take us too far in a mere summarization. Consult the individual proofs.

COMMENT CHAPTER XII :

This chapter explains that correct thinking is the aim of logic, and thinking consists primarily in reasoning by expounding two divisions of augmentation which are deduction and induction. Since argumentations are composed of propositions, and propositions are of two main types (categorical and hypothetical), we managed to obtain two main types of deductive argumentation, the categorical and hypothetical syllogism.

Anatasya Humaira (A20EC0261)

SUMMARY OF CHAPTER XIII: SYLLOGISTIC FIGURES AND MOOD

The categorical syllogism is built up of figures and moods.

1. The syllogistic figure is defined as the disposition of the middle terms with respect to the major and minor Terms in the premises. There are four syllogistic figures. In the first figure the middle term is the predicate of the minor premise. In the second figure the middle term is the predicate of both premises. In the third figure the subject of both premises.In the fourth figure it is the predicate of the major premise and the subject of the minor premise.
2. First Figure. The rule:The minor premise must be affirmative , the major premise must be universal. There are four valid moods in this figure:A A, A I, E A, and E I.
3. Second Figure. The rule: one premise must be negative : the major must be universal.
4. Third Figure. The rule: if the major premise must be affirmative ,the conclusion must be particular. Here we have six valid moods:A A, A I, E A, and O A.
5. Fourth Figure. The rule: if the major premise must be affirmative,the minor premise must be universal ;if the minor premise is negative, the major premise must be universal. There are five valid moods in this figure: A A, E A , E I, and I A.

All in all, there are four syllogistic figures and nineteen valid moods.

COMMENT CHAPTER XIII

In this chapter, the author explained first we need toIdentify the [major](https://www.uky.edu/~rosdatte/phi120/glossary.htm#major%20term), [minor](https://www.uky.edu/~rosdatte/phi120/glossary.htm#minor%20term), [middle terms](https://www.uky.edu/~rosdatte/phi120/glossary.htm#middle%20term) and the [mood](https://www.uky.edu/~rosdatte/phi120/glossary.htm#mood) and [figure](https://www.uky.edu/~rosdatte/phi120/glossary.htm#figure) of each of the following standard form categorical syllogisms. Then determine whether the argument is valid or invalid. For example using the premise in real life :

If he has cancer of the stomach, he is seriously ill;

He has no cancer of the stomach;

He, is not seriously ill

So when this should be used in an argumentative situation.

Nuralia Binti Fadzil (B20BE017)

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# SUMMARY OF CHAPTER XIV : VARIETIES OF CATEGORICAL SYLLOGISMS

Since different kinds of categorical proposition may be used as premises, there will be as many varieties of categorical syllogisms as there are varieties of categorical propositions. The general rule is:Divide the multiple proposition into its component statements and reduce each part to the standard syllogism according to figure and mood; keep a strict control over the terms and consider the meaning more than the words; then apply the general and special rules pertaining to syllogism.

1. In syllogisme using complex propositions, the combinations of complex terms should be kept strictly together.

Modal propositions, the combinations of complex terms should be kept strictly together and should be avoided. A change of wording will often help to remove confusion.

1. In overtly and covertly multiple propositions the general rule should be observed. Incase of doubt, resolve the multiple proposition into its component statements an arrange each into a separate syllogism , testing each syllogism according to the rule of the figure which it falls. The overtly multiple proportion are five in number.
2. The covertly multiple proposition often present serious difficulties. Here more than anywhere else, the proposition should be resolve into its exponibles and each constructed into a syllogism, in order to test its consistency.

COMMENT CHAPTER XIV

In this chapter, the author explained this method of demonstrating the invalidity of categorical syllogisms is useful in many contexts; even those who have not had the benefit of specialized training in formal logic will often acknowledge the force of a logical analogy.

Nuralia Binti Fadzil (B20BE017)

# SUMMARY OF CHAPTER XV : HYPOTHETICAL SYLLOGISMS

A hypothetical syllogism is one which uses a hypothetical propositions a major premise. There are three types: conditional, disjunctive and conjunctive.

1. The conditional syllogism contains a conditional proportion as the major premise . There are two component members to a conditional proportion as the major premise. There are two component members to a conditional proportion :the antecedent , which expresses the condition (‘if’); and the consequent, which express the result of the fulfillment of the condition.

If the entire syllogism consist of conditional syllogism; if the major premise is conditional statement and the minor premise and conclusion are categorical statement, its is a mixed or conditional-categorical syllogism. The latter alone is of real value for truth and knowledge, and its general law reads;From the truth of the antecedent follows the truth of the consequent, but from falsity of the consequent follows the falsity of the antecedent, but from the truth of the consequent the truth of the antecedent does not follow.

1. The disjunctive syllogism has disjunctive proposition for its major premise. This type appears in two forms, depending on the fact whether the proposition contains a proper or an improper disjunction.

In the two-part disjunction the true is: if one part is true, the other part is false; and he one part is false;the one part is true. Hence there are two valid moods: if the minor premise posits one part , the conclusion must sublate the other; if the minor premise sublate one part , the conclusion must posit the other.

1. The conjunctive syllogism, having a conjunctive proposition for its major premise, has as its general rule: from the truth of the other (or others) does not follow. Consequently, it has one valid mood if the minor premise posits one member, the conclusion must sublate the other (or other).

COMMENT CHAPTER XV

Further chapter, in classical logic, hypothetical syllogism is a valid argument form which is a syllogism having a conditional statement for one or both of its premises. An example in English: If I do not wake up, then I cannot go to work. If I cannot go to work, then I will not get paid.

Nuralia Binti Fadzil (B20BE017)

# SUMMARY OF CHAPTER XVI : VARIATIONS OF THE SYLLOGISM

Due to the flexibility of the mind, if often deviates from the stereotyped form of the syllogism by the addition or omission of material. This given rise to some variations of the syllogism.

1. The enthymeme is an abridged syllogism in which one of the premises or the conclusion is omitted. It should be reconstructed according to type and judged according to the rues of the type .
2. The epicheireme is a syllogism in which the proof is conjoined to one or more premise.such a premise with proof is really an enthymeme and should be treated like an enthymeme.
3. The polysyllogism is an argumentation consisting of two or more syllogism, logically linked together in such a way that the conclusion of the proceeding syllogism become the premise of the one following.
4. The sorites is an abridged polysyllogism in which a number of premises lead to a common conclusion. In the Aristotelian sorites the predicate of the preceding premise becomes the subject of the following premise, the final conclusion being compose of the subject of the premise and the predicate of the last.
5. The dilemma is an argument in which the major premise consist of disjunctive proposition and the minor premise consists of conditional propositions, each of which takes one member of the disjunction and from t draws a conclusion detrimental to the adversary.
6. Extra-syllogistic inferences follow the general pattern of the syllogistic figures, but they are based on different from axiom of the Dictum de omni et nullo Some are based on the relation of comparative magnitude; others on the relation of degrees of quality;others, on the relation of space and time ; others on the relation of kinship and jurisdictional authority.

COMMENT CHAPTER XVI

Next chapter, we could foresee a syllogism is a three-part logical argument, based on deductive reasoning, in which two premises are combined to arrive at a conclusion. So long as the premises of the syllogism are true and the syllogism is correctly structured, the conclusion will be true.

Nuralia Binti Fadzil (B20BE017)

Muhammad Iqmal Hadi Bin Mohd Aziz (B20BE0077)

# SUMMARY OF CHAPTER XVII : NATURE OF INDUCTION

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An insignificant comparison of ideas will not always enable the ideas to tell their identity or non-identity.

1. Some of the basic facts can be analyzed by immediate observation. A self-evidence truth can be known by an analysis of ideas. But the great size of the scientific truths demand a process of reasoning to express their truth. Thus, the necessity of understanding the laws of consistency in the various forms of argument.
2. Method is the proper arrangement of our mental processes in the discovery and proof of the truth. The logic method proceeds from the universal to the particular, from the cause to the effect, from the logical whole to the logical part. This is the deduction, the analytic method proceeds in the reverse order. While the induction or the experimental method of the physical sciences.

COMMENT CHAPTER XVII

This chapter is about forming an ideas were on comparing different ideas will not exposing or analyze the truth identity. Truth identity will be express and being applied when it goes through a process of reasoning and the necessity of understanding the law also a self-evedince will be a crucial part. Both induction and deduction enter as methods in physical science. The general law is established by means of the analytic method of induction. It is a process of abstraction and generalization, based on the nature of things.

# SUMMARY OF CHAPTER XVIII : THE LOGICAL FOUNDATION OF INDUCTION

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The logical foundations or grounds, upon which the validity of induction as a true scientific method are based, are the Principle of Causality and the Uniformity of Nature.

1. The Principle of Identity gives rise to the Principle of Contradiction, and this in turn gives rise to the Principle of Sufficient Reason, example ‘Everything must have a sufficient reason to be what it is in its existence and being. If a being has this sufficient reason in itself, it must be self-sufficient and unproduced in its existence and being, Thus if it's sufficient reason lies in another, it is produced by some other being , and this latter is then the cause of the former, and the former is an effect of the latter. The Principle of Sufficient Reason, therefore, leads logically to the Principle of Causality which means ‘Whatever happens (occurs, begins to be, changes) has a cause for its existence and being.’
2. The Principle of Causality alone, however, would be insufficient for the validity of universal and necessary laws , because it insignificantly demands that every individual effect must have an adequate cause. The Uniformity of Nature is a necessary suggest of science, in order to explain the universality and necessity of these laws, since they are supposed to be valid for all times and places and in all circumstances. The Uniformity of Nature as a principle of scientific induction is not the result of a complete the action of establishing new numbers for individual cases, because no such enumeration is possible. Science, then, in the Principle of Causality and in the Uniformity of Nature has a logical foundation for induction as a scientific method for the discovery of truth.

COMMENT CHAPTER XVIII

This chapter is about the general method employed by the physical sciences to ascend from the concrete, isolated, individual occurrences of nature to the generalized, universal, necessary laws which govern these phenomena. Due to induction as a method of discovering scientific truths, the experimental sciences during the last two centuries have made tremendous strides in the advancement of knowledge. These principles cannot be proved and they need not be proved; they are self-evident and need only be explained, in order to show their truth and validity. The Principle of Causality, therefore, is a necessary principle for all contingent and temporal beings which undergo change , and it is precisely in this connection that the Principle of Causality forms the logical foundation of induction.

# SUMMARY OF CHAPTER XIX : INDUCTIVE METHOD

It is the purpose of science to discover the causes and laws of natural phenomena. This is done by induction. There are various elements that belong to induction.

1. It is the close scrutiny and examination of natural occurrences , in order to determine their causes and effects. Observation is made by the mind through the senses , assisted by mechanical instruments like the microscope and telescope.
2. Observation must be supplemented by experiment , which is the observation of phenomena under selective and controlled conditions . Experiments simplify conditions by eliminating all irrelevant factors, until the sole determining cause of a particular effect is found. The cosmic forces of nature cannot be controlled; but when a phenomenon of this sort is observed under exceptionally favorable circumstances, it is called nature’ s experiment . Scientific experiments are artificially arranged according to a definite plan.
3. Another important phase of induction is the hypothesis is a provisional explanation of a phenomenon , based on probable arguments, until verified by subsequent evidence. It is the guiding norm in experimentation. There is an hypothesis of cause , which seeks to establish the causes of a phenomenon; and an hypothesis of law , which seeks to explain the manner in which the causes operate.

COMMENT CHAPTER XIX

This chapter is about the general method of science and philosophy. These laws and rules have now been examined and established; familiarity with their technique should help the mind to avoid the more glaring errors which result from a violation of the fundamental forms. An hypothesis is not a mere guess or an arbitrary opinion without some foundation in fact. There must be something in the nature of the things or in the circumstances of the facts which prompts the mind to assume that a causal connection exists. Therefore, is a justifiable assumption which lends itself to a tentative explanation of the fact or law, so that it can be used as a guiding norm in making observations and experiments. This extended example of the process of induction, as employed by Pasteur, illustrates very clearly the application of Mill’s Methods in the solution of a problem.

SUMMARY OF CHAPTER XX : FALLACIES

Formal errors are violations of the rules which govern the fundamental forms of reasoning. Material errors are errors of facts or faulty use of ideas and words. If these latter have a deceptive resemblance to truth and are used with a purpose of misleading, they are sophisms but if their use is unintentional, they are fallacies.

1. Fallacies in terms of language, Equivocation OR using a word in different meanings. Amphiboly , using phrases or entire sentences ambiguously. Composition , taking conjointly what should be taken separately. Division , taking separately what should be taken conjointly. Accent or Prosody , ambiguity due to false accent or false emphasis . Figures of Speech , when a conclusion of identity or similarity of Science, then, in the Principle of Causality and in the Uniformity of Nature has a logical foundation for induction as a scientific method for the discovery of truth.
2. In Fallacies matter aspect, Accident are the confusion of accidental and essential characteristics of a thing. Absolute and Qualified Statements , arguing from a generally true statement to a specific case, or from a special case to the general class. Ignoring the issue , proving what is not to be proved, not proving what is to be proved, disproving what has not been asserted. Begging the Question , assuming as true the very thing to be proved. Consequent, arguing from the falsity of the antecedent to the falsity of the consequent, or from the truth of the consequent to the truth of the antecedent. False Cause , assigning a wrong cause to a certain effect.

COMMENT CHAPTER XX

This chapter is about laws and rules have been examined and established with familiarity in their technique helps the mind to avoid the more glaring errors which result from a violation of the fundamental forms in which the mind casts its thoughts in the formulation of arguments. Material error is more insidious in character. Thus, it may be due to the simple ignorance or the plain misapprehension of facts. Misapprehension was the reason of the belief, prevalent for thousands of years, that the sun rotated around the earth. Ignorance of the existence of microbes was responsible for the false notions about the origin and nature of many diseases.

CONCLUSION

For the conclusion, this book The Science of Correct Thinking Logic by Fr. Cellestine Nr. Beetle is all about explaining the element in science and technology thinking. The element that are been told in this book is on philosophy of science that are based upon an ignorance of the nature and function of philosophy. Philosophy and the exact sciences are not in opposition to each other and their origin also scope are fundamentally the same. Thus, a merely superficial knowledge of the phenomena of nature no longer suffices; the mind endeavors to break through the surface of things and appearances, in order to study the deeper causes of nature and its workings including the natural of sciences. It is the scope of science to discover these relations and to formulate them into laws of universal value which will apply at all times and in all places and under all conditions. Science does not desire a mere enumeration of facts; it seeks to discover the underlying principles, the causes and the laws behind these facts, so as to explain them and arrange them into a comprehensive system of knowledge. Science and philosophy have the same origin and scope a deeper knowledge of the world within and around us, viewed in its underlying causes and principles. Philosophy is the extension of science. Scientific logic is natural logic trained and developed to expertness. Logic as a science consists of a comprehensive body of established principles and laws with their legitimate conclusions; logic as an art is the mastery of the technique embodied in these principles and laws. Lastly, this book is very useful for learning information technically on this specific subject whic is Science and Technology Thinking. The book contains various information and knowledge on how the science work and be done through the technology of ideas thinking for human.