

**Subject:** Introduction to Logic  
**Program:** BS (MMC)  
**Instructor:** Mehboob Alam

**Course Code:** PH101  
**Time Allowed:** 04 hr  
**Total Marks:** 30

**Summer Semester: Mid Term**

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**ID: 13825**

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Q:1 What is logic? What is the scope and significance of logic?

Q:2 What is argument? Distinguish between inductive and deductive arguments with the help of self-constructed examples.

Q:3 What are fallacies? Discuss its different types in detail.

#### INSTRUCTIONS/GUIDELINES

- Do not simply copy paste materials.
- Try to express your self-learning. Creativity will be highly appreciated.
- Copy materials having academic value. Materials copied only from books are authentic.
- Follow a logical order in responding to each question.
- For instance, the order runs as: give historical account, provide multiple definitions, followed by discussion with examples, where necessary and finally the commentary and conclusion.

All the best!

## Q1: What is logic? What is the scope and significance of logic?

Ans: **Logic Definition:**

- Logic is the study of the methods and principles used to distinguish correct from incorrect reasoning.
- Logic is the science that evaluates arguments.
- Logic is the study of the forms of reasoning in arguments and the development of standards and criteria to evaluate arguments.
- Logical thinking is the process in which one uses reasoning consistently to come to a conclusion. Problems or situations that involve logical thinking call for structure, for relationships between facts, and for chains of reasoning that “make sense.”

❖ **History of Logic:**

The history of logic is the study of the development of the science of valid inference (logic). Logic was developed in ancient times in China, India, and Greece. Greek logic, particularly Aristotelian logic, found wide application and acceptance in science and history of logic.

- **Aristotelian:** Aristotle's logic was further developed by Islamic and Christian philosophers in the Middle Ages, reaching a high point in the mid-fourteenth century. The period between the fourteenth century and the beginning of the nineteenth century was largely one of decline and neglect, and is regarded as barren by at least one historian of logic.
- **Progress in logic:** Progress in mathematical logic in the first few decades of the twentieth century, particularly arising from the work of Gödel and Tarski, had a significant impact on analytic philosophy and philosophical logic, particularly from the 1950s to onwards.
- **School of Logic:** The other great school of Greek logic is that of the Stoics. Stoic logic traces its roots back to the late 5th century BC. The most important member of the school was Chrysippus. (206– 278 BC) who was its third head.
- **Plato:** None of the surviving works of the great fourth-century philosopher Plato (347–428 BC) include any formal logic but they include important contributions to the field of philosophical logic. Plato raises three questions:
  - 1-What is it that can properly be called true or false?
  - 2-What is the nature of the connection between the assumptions of a valid argument and its conclusion?
  - 3-What is the nature of definition?
- **Logic in Asia:** In China, a contemporary of Confucius, Mozi, "Master Mo", is credited with founding the Mohist school.
- **Logic in India:** Logic began independently in India and continued to develop through to early modern times, without any known influence from Greek logic. Gautama (6th century BC) founded the tarka school of logic. The Mahabharata around the 5<sup>th</sup> century BC, refers to tarka schools of logic. Panini (5th century BC)
- **Logic in the Middle East:** The works of Al-Kindi, Al-Farabi, Ibn Sina, Al-Ghazali, and other Muslim were important in communicating the ideas of the ancient world to the middle West. Al-Farabi (Alfarabi) (873–950) was a logician who discussed the topics between logic and grammar.
- **MIDDLE EAST PHILOSOPHERS:**
  - Ibn Sina (Avicenna) (980–1037)

- Fakhr al-Din al-Razi(b. 1149)
  - Nasir al-Din al-Tusi(1201–1274)
  - Ibn al-Nafis (1213–1288)
  - **Traditional logic:** Traditional logic generally means the textbook tradition that begins with Annual and Pierre Nicole's Logic, or the Art of Thinking, better known as the Port-Royal Logic. Published in 1662.
  - **Rise of modern logic:** The period between the fourteenth century and the beginning of the nineteenth century had been largely one of decline and neglect, and is generally regarded as barren by historians of logic. The revival of logic occurred in the mid nineteenth century, at the beginning of a revolutionary period where the subject developed into a formalistic discipline whose exemplar was the exact method of proof used in mathematics. The development of the modern so-called "symbolic" or "mathematical" logic.
    - ❖ **Scope of Logic:**
      - Scope of logic is very wide. It covers all types of knowledge related to art and science. The nature of logic is like a tree and all the other fields are its branches. It is the main spring of all knowledge, because logic provides reasoning for the existence of that knowledge.
      - Some features of logic have stayed remarkably constant from Aristotle in the fourth century BC to modern times. The subject of logic can be divided into three broad areas:
        - (1) Theory of inference that is all about arguments that are used to justify one statement on the basis of others. Many of these arguments fall into standard argument-patterns.
        - (2) Theory of definition, which tells about use of words or symbols to identify or characterize things; the things can be concrete or abstract. Again, there are some standard forms that depend on the kind of thing being characterized.
        - (3) applied logic, in which theory of inference and theory of definition are applied as tools for analyzing or solving practical problems.
      - ❖ **Significance of Logic:**
        - Knowledge of logic has great significance, in everyday life in a way that maybe I couldn't be able to run my stuff up to its full extent. Logic tells me how something happens and what measures should need to be taken when something goes wrong or want to get more better result from our set targets.
        - Logic explains us about our limitations, ups and downs, good and bad, in short logic tells us the common differences among things which are in front of us but we were not seeing that before and after studying knowledge we can now clearly see it and observe its full potential.
        - As a student of media and mass communication knowledge of logic tells me what is important and what is not important in my life and clear my eyes from the elusion that everything just happens itself and tells me not to believe on everything I see or not to do everything other says like for example if during reporting an officer on spot says this is the crime scene so everyone would believe it because he is in charge but instead logic force me to question everything.
        - If you want to get full potential out of your life and avoid being confused every time something happens or some ones making you do something without your knowledge that you will later regret in life so you need knowledge of logic because there is nothing about which logic can't answer you, you just need to know what you want and what are you up to and rest logic will answer you.
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**Q2: What is argument? Distinguish between inductive and deductive arguments with the help of self-constructed examples.**

❖ **Arguments:**

- The act or process of arguing, reasoning, or discussing.
- A coherent series of reasons, statements, or facts intended to support or establish a point of view
- An argument is a series of statements called the premises, intended to determine the degree of truth of another statement, the conclusion.
- Argument is based on two parts:
  - **Premises:** A premise is a statement in an argument that provides reason or support for the conclusion. There can be one or many premises in a single argument.

**Premise Indicators:**

Since	as indicated by
Because	the reason is that
For	for the reason that
As	may be inferred from
Follows from	may be derived from
As shown by	may be deduced from
In as much as	in view of the fact that

- **Conclusion:** A conclusion is a statement in an argument that indicates of what the arguer is trying to convince the reader/listener. What is the argument trying to prove? There can be only one conclusion in a single argument.

**Conclusion Indicators:**

Therefore	for these reasons
Hence	it follows that
So	I conclude that
Accordingly	which shows that
In consequence	which means that
Consequently	which entails that
Proves that	which implies that
As a result	which allows us to infer that
Thus	we may infer

- **Deductive Argument:**
  - Some would argue deductive reasoning is an important life skill. It allows one to take information from two or more statements and draw a logically sound conclusion.

- Deductive reasoning moves from generalities to specific conclusions. Perhaps the biggest stipulation is that the statements upon which the conclusion is drawn need to be true.
- If they're accurate, then the conclusion stands to be sound and accurate.
- **Inductive Argument:**
- Inductive Argument is a method of reasoning in which the premises are viewed as supplying some evidence for the truth of the conclusion (in contrast to deductive reasoning). While the conclusion of a deductive argument is certain, the truth of the conclusion of an inductive argument may be probable, based upon the evidence given.

❖ **Examples of Deductive and Inductive Argument:**

Inductive Argument:

The first book I pulled from my bag is red. The second book I pulled from my bag is red. Therefore, all the books in my bag, are red.

Deductive Argument:

The first book I pulled from my bag is red. All books in my bag, are red. Therefore, the second book, I pull from my bag will be red too.

Inductive Argument:

My mother is Irish. She has blond hair. Therefore, everyone from Ireland has blond hair.

Deductive Argument:

My mother is Irish. Everyone from Ireland has blond hair. Therefore, my mother has blond hair.

Inductive Argument:

Most of our snowstorms come from the north. It's starting to snow. This snowstorm must be coming from the north.

Deductive Argument:

All of our snowstorms come from the north. It's starting to snow. Therefore, the storm is coming from the north.

Inductive Argument:

Maximilian is a shelter dog. He is happy. All shelter dogs are happy.

Deductive Argument:

Maximillian is a shelter dog. All shelter dogs are happy. Therefore, he is happy.

Inductive Argument:

Saira is a girl and she love playing tennis. Therefore, she won a gold medal in tennis.

Deductive Argument:

Saira play tennis. She is a good tennis player therefore all tennis players are gold medalists.

❖ **Validity and Truth:**

➤ **Validity:**

- A deductive argument is valid when it succeeds in linking, with logical necessity, the conclusion to its premise. In other words, when conclusion follows with logical necessity from the premises, we say that the argument is valid. Validity is applicable to deductive argument and it can not be applied to single proposition by itself because the needed relation cannot possibly be found within any one proposition.

➤ **Truth:**

- Truth and falsehood are attributes of individual proposition. A single statement that serves as a premise in an argument may be true or false. The concept of truth cannot be applied to argument. Example of truth and falsehood can be a statement such as 'River Indus is the biggest river in the Pakistan' is a statement which may be true or false in accord with the real-world record.
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**Q3: What are fallacies? Discuss its different types in detail.**

❖ **Fallacies:**

- A type of argument that seems to be correct, but contains a mistake in reasoning. Similarly, any mistaken idea or false belief may sometimes also be labeled as 'fallacious'.
- In addition, when that flaw appears to be correct – when it is presented within an argument as logical, accurate, or seems to “make sense” – it is referred to as a “logical fallacy”.

❖ **Types of fallacies:**

**1. Appeal to Majority:**

Appeal to majority is that fallacy in which we believe on things every other person believes, without questioning it or testing it, we just say if others are doing it so we also need to do it and we start doing it.

Example might be a book released and its cover says it's the best-selling book, so no matter what crap will be inside it but we will buy it because book is best-selling.

Or on release ceremony of iPhone 10 the company says this is the best iPhone apple has built so people blindly start believing that this is the best so we should buy it but during the process they lose focus of past that on release ceremony of previous iPhone the company has given the same statement that this is the best iPhone but now people are not looking back.

**2. Ad Hominem:**

it is the situation in which people want to win at all cost, when they are losing an argument so instead making an argument which will base his sentences, they attack the arguer that you want it because you have personal goals in it.

Example might be you want to win yourself therefore you are not even allowing me to play in game.

### **3. Straw Man:**

Making arguments on bases of finding weak spot in rival or opponent arguments and using it to character assassinate him or get some kind of benefit.

This is popular in religious and political circles.

Example PMLN party demanding for 6 months records of PTI party govt instead showing their own past 5 years records.

### **4. Appeal to emotions:**

It's a fallacy in which the arguments are made in such a way that emotions are being used in it for the manipulation purpose of results.

Like judge is going to charge someone due to certain crime he committed and on day of result the accused person whole family visits the court and set in front of judge so when judge is making decision so he will be emotionally manipulated and resulting low level charges will be applied.

### **5. Appeal to Authority:**

in this a certain argument is considered as true because a person in charge said it was true so now it's true. Example officer on spot say its crime scene so now it is crime scene.

### **6. The Appeal to Force:**

A fallacy in which the argument relies upon an open or veiled threat of force. Threats are strong arm methods to coerce one's opponents and can hardly be considered argument at all. Example include a threat of legal action received by a university journal when it published an article against a big paper making company.

### **7. Missing the Point:**

A fallacy in which the premises support a different conclusion form the one that is proposed. Example can be a situation where one person emphasizes how important it is to increase funding for the public schools. His opponent responds by insisting that a child's education involves much more than schooling and get underway long before a child's formal schooling begins.

### **8. The Red Herring:**

Clue or piece of information which is or is intended to be misleading or distracting is known as Red Herring. Some techniques used during implementation of this fallacy.

- Convincing statements.
- Making people look the other ways.
- Attacking questionnaire.
- Repeating the same question asked by someone.
- Failure to understand a simple question.
- Overly specific answer.

Counter tact's might be:

- By asking Bait question which trigger mind virus.
- Repeat same question but different sentences.

- presumes something related to the matter under discussion.

9. **Argument of ignorance:** A fallacy in which a proposition is held to be true. just because its not proven false.

OR

A fallacy in which a proposition is held to be false. Because its not proven as true. In simple words It says something is true because it has not yet been proved false.

- This happens when there is lack of evidence which is require to judge.
- This also happens when case is not taken as seriously as required.

Best described as: Absence of evidence is not evidence of absence, but in case of this fallacy, it is.

10. **False Cause:**

A fallacy in which something that is not really the cause of something else is treated as its cause. It is obvious that any reasoning that relies on treating as the cause of something or event what is not really its cause must be seriously mistaken. The false cause is assumed due to matter of dispute, unclear understanding, or temporal sequence in which something occurs.

Example include primitive cultures in which such mistakes were common such as reappearance of sun after an eclipse if the drums had been beaten in the darkness as it was assumed that beating of drums will make sun reappear; a false cause.

- ❖ **Conclusion:** Through proper use of logical fallacies, you can deceive someone but also can protect yourself from deceiving by others, also you can make your communication to the point so other listening party would not be get confused plus you shall only be sharing information which is only relevant to them so it won't waste time of you and other party, moreover you would be less prone to sharing information which might be somehow confidential because now you know where and how you can be tricked and blackmailed indirectly, so you can avoid it now, rest use is up to your imagination because its limitless.
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