pratyaksa
anumana
upamana
sabda

linga
vyapti
paksa
sadhya
Hetu

TAKE IT EASY
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WE WILL DISCUSS

• Introduction of Indian Logic
• Means of Knowledge
• Structure and Kinds of Anumana
• Constituents of Inference
• When there will be fallacies
Logic in general is the science and art of a right thinking, it is not concerned with reality about which we are thinking but only with the operation of thinking itself.

In ancient time the Indians called Sastra that means ‘precept’, ‘rules’, ‘manual’ etc. about which no science indeed, but which every science pre-supposed.

Ashtadasha vidya (18 types of Sastra) was accepted by ancient Indian seers. Among these eighteen (18) vidyas Nyaya, that is also known as ‘Anviksiki’ (Logic) is most important. It has been esteemed as the lamp of all sciences, the resource of all actions and the shelter of all virtues.
‘Atmavidya’ that was identified ‘Anviksiki’ in the later period, got a crucial role in ancient Indian scholastic circle. ‘Anviksiki’ is an incorporation of two subjects viz. the soul and the theory of reasons.

The theory of reason is also known as hetu-sāstra or hetu- vidyā. It is also called as tarkavidyā or vadavidyā, the art of debates and discussions.

Kautilya, the author of Arthasastra has referred it as the lamp of all vidyas or discourses.
Anviksiki, in the second stage of its development, as we find in the Nyāya-Bhasya, was widely known as Nyāya-Sastra. The word “Nyāya” popularly signifies “right” or “Justice”. The Nyāya-Sastra is therefore the science of right judgement or true reasoning. Technically, the word signifies syllogism or a speech of five parts.

The Nyāya-Sutra treats of sixteen topics or categories like, Pramāṇa, prameya, etc.

But after their struggle with the Baudhāya and Jaina logicians for over a thousand years, Hindu logicians founds it expedient in treating of the Nyāya, to take up only one topic, viz. Pramāṇa, to the exclusion of remaining fifteen topics.
Knowledge (buddhi)           

Presentation (anubhava)     

Valid (Prama)               
Non-Valid (aprama)          

Doubt (samsaya)             
Error (viparyyaya)          
Hypothetical Argument (tarka)

Perception (pratyaksa)      
Inference (anumana)         
Comparison (upamana)        
Testimony (sabda)

Memory (smriti)             

True                         
False
STRUCTURE AND KINDS OF ANUMANA

Anumāṇa has been defined in the Nyaṇya system as the knowledge of an object, not by direct observation, but by means of the knowledge of a linga or sign and that of its universal relation (Vyāpti) with the inferred object.

It leads to the knowledge of a thing as possessing a character, say fire, because of its having another character, smoke, which we apprehend and which we know to be always connected with it.

Thus in anumāṇa we arrive at the knowledge of an object through the medium of two acts of knowledge or propositions.
THE CONSTITUENTS OF INFERENCE:

Inference (anumāṇa) always consists of not less than three propositions and more than three terms. In inference we arrive at the knowledge of some unperceived character of a thing through the knowledge of some linga or sign in it and that of vyapti or universal relation between the sign and the inferred character.

There is first the knowledge of what is called the linga or mark in relation to the pakṣa or the subject of inference.

This is generally a perceptual judgement relating to the linga or middle term with the Pakṣa or minor term of inference (lingadārsana), as when I see that the hill is smoky, and infer that it is fiery.
Secondly; inference requires the knowledge of Vyāpti or a universal relation between the linga (probans) and the sadhya (probandum), or the middle and major terms.

This knowledge of the linga or middle term as always related to the sadhya or major term is the result of our previous experience of their relation to each other. Hence it is a memory judgment in which we think of the linga as invariably connected with the sadhya (Vyāptismarana), e.g. ‘all smoky objects are fiery’.
Thirdly, we have the inferential knowledge (anumiti) as resulting from the previous knowledge of the linga and that of its universal relation (vyāpti) with the sadhya.

It is a proposition which relates the pakṣa or minor term with the sadhya or major term, e.g. ‘the hill is fiery.’

The inferential cognition (anumiti) is a proposition which follows from the first two propositions and so corresponds to the conclusion of the syllogism.
First Premise: - The Hill is Smoky. (S is M)

Second Premise: - All Smoky objects are Fiery. (M is P) (Memory Judgement or Vyapti Smarana)

Conclusion: - The Hill is Fiery. (S is P)
Corresponding to the minor, major and middle terms of the syllogism, inference in Indian logic contains three terms, namely, Paksa, Sadhya and Hetu.

While the Paksa is the subject, the Sadhya is the object of inference. The third term of inference is called the linga or sign because it serves to indicate that which we do not perceive.

It is found once in relation to the Paksa or minor term and then in relation to the Sadhya or the major term. That is, the paksa is related to the sadhya through their common relation to the hetu or middle term.
There are five characteristics of the middle term.

The first is Paksadharmata, or its being a character of the Paksa. The middle term must be related to the minor term, e.g. the hill is smoky (S is M).

The second is Sapaksasattva or its presence in all positive instances in which the major exists. The middle must be distributively related to the major,

e.g. all smoky objects are fiery. (M is P)
The third is Vipaksasaāttva, or its absence in all negative instances in which the major is absent, e.g. whatever is not fiery is not smoky (No not-P is M).

The fourth is abādhitavisayatva, or the uncontradictedness of its object. The middle term must not aim at establishing such absurd and contradictory objects as the coolness of fire or the squareness of a circle.

The fifth character of the middle is asatpratipaksatva, or the absence of counteracting reasons leading to a contradictory conclusion.
These five characteristics, or at least four of them, must be found in the middle term of a valid inference.

If not, there will be fallacies.
6 Types of Pramana

- pratyaksa
- anumana
- upamana
- sabda
- Anupalabdhi
- Arthapatti

Indian Logic
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6 Types of pramana (sources of knowledge)

1) Pratyaksh Pramana (Perception)
2) Anuman Pramana (Inference based on observation)
3) Upamana Pramana (Comparisons)
4) Sabdha Pramana (The Vedas-Sruti)
5) Anupalabdhi Pramana (Negation or Absence)
6) Arthapatti Pramana (Implication or Postulation)
1) Pratyaksh Pramana (Perception):

Pratyaksh or Perception implies direct, immediate cognition. There are two kinds of direct perception, external and internal. The ‘external’ perception implies cognition of sense objects, namely – sound, touch, form, taste and smell by our five sense organs (ears, skin, eyes, tongue and nose). When the sense organs contact their respective objects then the Pratyaksh knowledge takes place.

The ‘internal’ perception means the direct & immediate cognition of pain, pleasure, love, hate, anger, knowledge or ignorance of various objects etc. in & by our minds.
Sitting in one place the knower knows even far off objects directly, provided they come in the range of our sense organs. The immediacy of direct cognition is the intrinsic characteristic of perceptual knowledge, and does not merely depend on the organs of perception.

In all direct perception the knowledge is extremely clear but its scope is very limited.
We have an extremely beautiful creation right in front of our eyes, but we don’t see a creator directly, but as there can’t be an effect without a cause so we have to take resort of some other valid means of knowledge to know that inevitable creator.

Moreover, we directly see a rising sun but astonishingly our deeper probes reveal that the sun never rises. Thus come the great necessity of other means of valid knowledge.
Pratyaksh is of certain importance but still it is also susceptible to error. This is what is perceived through our 5 sense organs like eyes, ears, skin, tongue and nose is understood by us. It is considerable & should not be rejected or accepted without proper & fool-proof enquiry. It is a perception.

For Example;
Ilusion at night of the rope as a snake
Two modes or steps in perception (Pratyaksa)

*Nirvikalpa*, when one just perceives an object without being able to know its features. "not admitting an alternative ", "admitting no doubt," "free from change or differences."

*nis* ("away, without, not") to the term *vikalpa* ("alternative, variant thought or conception").

*Savikalpa*, when one is able to clearly know an object. All laukika and alaukika pratyakshas are savikalpa.
2) Anuman Pramana (Inference):

Literally translated the word Anuman means ‘knowing after’. It means the method by which knowledge is derived from knowledge. It is an indirect, mediate knowledge. We have knowledge of an invariable relationship between two things and on that basis while seeing one we deduce the presence the other. Thus Anuman refers to the logical process of gaining knowledge. The knowledge thus gained is called inferential knowledge or the logical deduction. The nearest word to Anuman is inference.
Anuman is given least importance because it is susceptible to error. It is inference based on observation(s). For example, if one observes smoke coming from behind a mountain, one infers based on this observation, that there is fire behind the mountain. One may be right or wrong. It can be even a mist or cloud passing behind the mountain. So Anuman is not fool-proof but still considered as a Pramana. It comes after perception i.e. (Pratyaksh Pramana).
3) Upamana Pramana (Analogy):

The Mimansakas & Advaitins define Upamana as the process by which the knowledge of A’s similarity to B is gained from the perception of B’s similarity to A, which has been seen elsewhere. This methodology is seen as distinct from mere inference, and is thus accepted as a valid mediate method of knowledge. Thus by Upamana he gains the knowledge of his cow’s similarity to the gavaya from the perception of the gavaya’s similarity to his cow (with reference to example). Upamana is a distinct means of knowledge, and cannot be clubbed under Anuman, because we cannot have a universal proposition that a thing is similar to whatever is similar to it. Such knowledge cannot be gained without the observation of the two similar things together.
4) Sabdha Pramana (Verbal Testimony):

Sabdha Pramana is **verbal testimony**. It is also called ‘apta-vakyas’ (statement of a trust-worthy person’, and agama (authentic word). We learn mostly by means of words. An oral or written message is a universal mode of communication. We constantly get various information, direction & knowledge through words. Right from school days to this moment we use words as a valid & effective means of bringing about awareness of things, ideas or emotions. Books, magazines, newspaper, letters, conversations, chats, radio, TV, movies, songs etc. etc. All use or depend on words. We cannot do without verbal testimony.
A verbal statement conveying valid knowledge must have an authentic source which must be free from defects. Only a competent person possessed of knowledge can impart accurate knowledge. Such knowledge needs no verification, unless of course there is doubt about its reliability.
5) Anuplabdhi Pramana (Negation or Absence):
Anupalabdhi is a proof of knowledge from negation or absence of a thing. Since Brahman is everywhere present and nowhere absent, this proof does not deserve consideration.

For Example:
In a college, Mr. A has not attended any lecture today. So it must mean that he went to watch a movie.
6) Arthapatti Pramana (Implication/ Postulation):

It is of two kinds – Pratyaksha based on the perception of an object and Shruti based on hearing. This kind of proof is a mixed proof by perception and inference. But Brahman is not one whose knowledge can be got either by perception or inference, or by the combination of both.

For Example:
Mr. A, who is alive, but is not in his house. The very knowledge of his being out of his house is based on perception. We, ourselves look for him in the house, but we do not see him, so we conclude that since he is alive and is not inside the house, he must be somewhere outside his house.
The Naiyayikas give us three different classifications of inference. According to the first, inference is of two kinds, namely, Svarthanumana (Inference for one self) and Pararthanumana (Inference for the sake of others). This is a psychological classification which has in view the use or purpose which an inference serves.

The first does not stand in need of demonstration but the second does. The demonstration consists of a syllogism of five parts.

Pratijña  Hetu  Udaharana  Upanaya  Nigamana
Anumana Inference occupies a central place in the Hindu school of logic (Nyaya). This school worked out a syllogism in the form of an argument that goes through five stages:

1. the proposition (*pratijna*, literally “promise”),
2. the ground (*hetu*),
3. the illustration (*udaharana*),
4. the application (*upanaya*), and
5. the conclusion (*nigamana*).
A syllogism is vitiated by a fallacious ground; this is called *hetvabhasa* (“the mere appearance of a ground”). A number of types of invalid grounds are distinguished: simple error, contradiction, tautology, lack of proof for the ground, and inopportunity.
pratyaksa
anumana
upamana
sabda

linga
vyapti
paksa
sadhya
Hetu

DECEMBER 2019 ALL SET
The distinction between Savikalpaka (determinate) and Nirvikalpaka (indeterminate) is made with respect to which of the following pramanas?

(1) Anumana (inference)  
(2) Pratyaksa (perception)  
(3) Arthapatti (postulation)  
(4) Upamdana (comparison)
Two modes or steps in perception (Pratyaksa)

*Nirvikalpa*, when one just perceives an object without being able to know its features. "not admitting an alternative ", "admitting no doubt," "free from change or differences."

*nis* ("away, without, not") to the term *vikalpa* ("alternative, variant thought or conception").

*Savikalpa*, when one is able to clearly know an object. All laukika and alaukika pratyakshas are savikalpa.
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(1) Anumana (inference)  (2) Pratyaksa (perception)
(3) Arthapatti (postulation)  (4) Upamdana (comparison)
The distinction between laukika and alaukika is made with reference to which one of the following pramanas ‘? 
(1) Anumana (Inference)   (2) Upamana (Comparison)  
(3) Pratyaksa (Perception)  (4) S'abda (Verbal testimony)
The distinction between laukika and alaukika is made with reference to which one of the following pramanas ‘?’

(1) Anumana (Inference)    (2) Upamana (Comparison)
(3) Pratyaksa (Perception)  (4) S'abda (Verbal testimony)
Which of the following pramanas is used by classical Indian school of logic to prove the existence of God?

(1) Arthapatti (postulation)  (2) Upamana (comparison)  
(3) Perception (Pratyaksa)   (4) Inference (anumana)
Which of the following pramanas is used by classical Indian school of logic to prove the existence of God?

(1) Arthapatti (postulation)  (2) Upamana (comparison)
(3) Perception (Pratyaksa)  (4) Inference (anumana)
The term “Paksa’ according to classical Indian school of logic refers to which of the following terms in the process of inference?

(1) Major term  
(2) Undefined term  
(3) Minor term  
(4) Middle term
Major term – Sadhya / Object of inference
Middle Term – linga/Sadhana /sign, Hetu /reason
Minor term- paksha / subject of inference
The term “Paksa’ according to classical Indian school of logic refers to which of the following terms in the process of inference?

(1) Major term
(2) Undefined term
(3) Minor term
(4) Middle term
Which of the following is not correct with reference to anumana according to classical Indian school of logic?

(1) Linga/Sadhana is the middle term
(2) Paksa is the minor term
(3) Sadhya is the major term
(4) Hetu is the minor term

3rd Dec 2019 2nd shift
Which of the following is not correct with reference to anumana according to classical Indian school of logic?

(1) Linga/Sadhana is the middle term
(2) Paksa is the minor term
(3) Sadhya is the major term
(4) Hetu is the minor term
According to classical Indian school of logic, what is the correct sequence of steps involved in Anumana (influence)?

1. Upanaya, Pratijna, Hetu, Udaharana. Nigmana
2. Pratijna, Hetu, Upanaya, Udaharana, Nigmana
3. Pratijna, Upanaya, Hetu, Udaharana. Nigmana
4. Pratijna, Hetu, Udaharana, Upanaya. Nigmana
Anumana Inference occupies a central place in the Hindu school of logic (Nyaya).

This school worked out a syllogism in the form of an argument that goes through five stages:

(1) the proposition (pratijna, literally “promise”),
(2) the ground (hetu),
(3) the illustration (udaharana),
(4) the application (upanaya), and
(5) the conclusion (nigamana).
According to classical Indian school of logic, what is the correct sequence of steps involved in Anumana (influence)?

(1) Upanaya, Pratijna, Hetu, Udaharana, Nigmana
(2) Pratijna, Hetu, Upanaya, Udaharana, Nigmana
(3) Pratijna, Upanaya, Hetu, Udaharana, Nigmana
(4) Pratijna, Hetu, Udaharana, Upanaya, Nigmana

4th Dec 2019 1st shift
Which of the following is not a necessary step when you present an argument based on inference before the others according to the Classical Indian School of Logic?

1. Nigamana
2. Upamana
3. Upanaya
4. Udahrana
Which of the following is not a necessary step when you present an argument based on inference before the others according to the Classical Indian School of Logic?

1. Nigamana
2. Upamana
3. Upanaya
4. Udaharana
Which one of the following is signified by Udaharana of Anumana (Inference) in Indian Logic?

(1) Statement of reason
(2) Proposition to be proved
(3) Conclusion proved
(4) Universal proposition along with an instance
Which one of the following is signified by Udaharana of Anumana (Inference) in Indian Logic?

(1) Statement of reason
(2) Proposition to be proved
(3) Conclusion proved
(4) Universal proposition along with an instance

4th Dec 2019 2nd shift
Devdatta is fat and he does not eat during the day. Therefore, Devadatta is eating during the night.
The above example in classical Indian School of Logic is a case of:

(1) Comparison  (2) Implication
(3) Perception  (4) Verbal Testimony
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The above example in classical Indian School of Logic is a case of:

(1) Comparison
(2) Implication
(3) Perception
(4) Verbal Testimony
Which one of the following is signified by the term ‘hetu’ in the process of anumana (inference) in classical Indian School of Logic?

(1) Example Provided
(2) Statement of reason
(3) Proposition to be proved
(4) Conclusion Proved
Which one of the following is signified by the term ‘hetu’ in the process of anumana (inference) in classical Indian School of Logic?

(1) Example Provided  (2) Statement of reason
(3) Proposition to be proved  (4) Conclusion Proved
Assumption of an unperceived fact in order to reconcile two apparently inconsistent perceived facts is known in Indian Logic as:

1. Anumdana (Inference)  
2. Upamana (Comparison)  
3. Arthapatti (Implication)  
4. Anupalabdhi (Non-apprehension)
Assumption of an unperceived fact in order to reconcile two apparently inconsistent perceived facts is known in Indian Logic as:

1. Anumdana (Inference)
2. Upamana (Comparison)
3. Arthapatti (Implication)
4. Anupalabdhi (Non-apprehension)
Consider the example of anumana given below:
(a) The mountain is fiery
(b) Because it has smoke
(c) Wherever there is smoke, there is fire.

Which one of the following expresses Vyapti (relation of invariable concomitance)?

(1) The relation of invariable concomitance between mountain and fire
(2) The relation of invariable concomitance between mountain and smoke
(3) The relation of invariable concomitance between fire and smoke
(4) The relation of invariable concomitance between perceiver and the smoke
Which of the following is true with reference to anupalabdhi as a means of knowledge?

(1) I do not cognize the pot on the table, therefore it is absent there.
(2) I directly perceive the absence of pot on the table.
(3) I infer the absence of pot on the table since I do not find it to be there.
(4) I know the absence of the pot on the table because I know its similarity with other absences.

6th Dec 2019 1st shift
Which of the following is true with reference to anupalabdhi as a means of knowledge?

(1) I do not cognize the pot on the table. Therefore it is absent there.
(2) I directly perceive the absence of pot on the table.
(3) I infer the absence of pot on the table since I do not find it to be there.
(4) I know the absence of the pot on the table because I know its similarity with other absences.

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(2) The relation of invariable concomitance between mountain and smoke
(3) The relation of invariable concomitance between fire and smoke
(4) The relation of invariable concomitance between perceiver and the smoke
Consider the following with reference to the Indian School of Logic

a) It is related to form of the argument only
b) It is related to the content of the argument only
c) It is related to perceptual knowledge alone
d) It is related to presenting analogies alone

Choose the correct answer from the options given below

1. a) only
2. b) only
3. Both a) and b)
4. Both c) and d)
Consider the following with reference to the Indian School of Logic

a) It is related to form of the argument only
b) It is related to the content of the argument only
c) It is related to perceptual knowledge alone
d) It is related to presenting analogies alone

Choose the correct answer from the options given below

1. a) only
2. b) only
3. Both a) and b)
4. Both c) and d)
Which one of the following is true with respect to the first figure of categorical syllogism?

(1) The middle term is the subject of the major premise and the predicate of the minor premise
(2) The middle term is the predicate of the major premise and subject of the minor premise
(3) The middle term is the subject of the major premise and the predicate of the conclusion
(4) The middle term is the subject of the minor premise and the predicate of the conclusion
Which one of the following is true with respect to the first figure of categorical syllogism?

(1) The middle term is the subject of the major premise and the predicate of the minor premise
(2) The middle term is the predicate of the major premise and subject of the minor premise
(3) The middle term is the subject of the major premise and the predicate of the conclusion
(4) The middle term is the subject of the minor premise and the predicate of the conclusion

5th Dec 2019 2nd shift
Consider the following statements and choose the right option

(a) Middle term should be distributed in at least one premise
(b) Middle term should be present in the conclusion
(c) Both premises can be particular in a valid argument
(d) Both premises can be negative in a valid argument

(1) (c) and (d)  (2) Only (c)
(3) Only (a)    (4) (b) and (c)
Consider the following statements and choose the right option

(a) Middle term should be distributed in atleast one premise
(b) Middle term should be present in the conclusion
(c) Both premises can be particular in a valid argument
(d) Both premises can be negative in a valid argument

(1) (c) and (d)  (2) Only (c)
(3) Only (a)  (4) (b) and (c)
Fallacy:
A fallacy is the use of invalid or otherwise faulty reasoning, or "wrong moves" or misconception in the construction of an argument.

A fallacious argument may be deceptive by appearing to be better than it really is. Some fallacies are committed intentionally to manipulate or persuade by deception, while others are committed unintentionally due to carelessness or ignorance.

Fallacies are commonly divided into "formal" and "informal". A formal fallacy can be expressed neatly in a standard system of logic, such as propositional logic, while an informal fallacy originates in an error in reasoning other than an improper logical form. Arguments containing informal fallacies may be formally valid, but still fallacious.
In Indian logic the fallacies of inference are all material fallacies. So far as the logical forms of inference are concerned, there can be no fallacy, since they are the same for all valid inferences. An inference, therefore, becomes fallacious by reason of its material conditions. The Nyaya account of the fallacies of inference is accordingly limited to those of its members or constituent propositions, and these have been finally reduced to those of the hetu or the reason. For the purpose of proof an inference is made to consist of five members, namely, pratijna, hetu, udaharana, upanaya and nigamana.
Anumana Inference occupies a central place in the Hindu school of logic (Nyaya).

This school worked out a syllogism in the form of an argument that goes through five stages:

1. the proposition (pratijna, literally “promise”),
2. the ground (hetu),
3. the illustration (udaharana),
4. the application (upanaya), and
5. the conclusion (nigamana).
First Premise: The Hill is Smoky. (S is M)

Second Premise: All Smoky objects are Fiery. (M is P) (Memory Judgement or Vyapti Smarana)

Conclusion: The Hill is Fiery. (S is P)
Corresponding to the minor, major and middle terms of the syllogism, inference in Indian logic contains three terms, namely, Paksa, Sadhya and Hetu.

While the Paksa is the subject, the Sadhya is the object of inference. The third term of inference is called the linga or sign because it serves to indicate that which we do not perceive.

It is found once in relation to the Paksa or minor term and then in relation to the Sadhya or the major term. That is, the paksa is related to the sadhya through their common relation to the hetu or middle term.
Major term – **Sadhya** / Object of inference

Middle Term – **linga/Sadhana** / sign, **Hetu** / reason

Minor term- **paksha** / subject of inference
There are five characteristics of the middle term.

The first is **Paksadharmata**

*It must be present in the Paksha*

or its being a character of the Paksa. The middle term must be related to the minor term,

*e.g. the hill is smoky (S is M).*

The second is **Sapaksasattva**

*It must be present in all positive instances*

or its presence in all positive instances in which the major exists. The middle must be distributively related to the major,

*e.g. all smoky objects are fiery. (M is P)*
The third is Vipaksasaṅttva,
It must be absent in all negative instances
or its absence in all negative instances in which the major is absent,
e.g. whatever is not fiery is not smoky (No not-P is M).

The fourth is abādhitavisayatva,
It must not incompatible with the minor term or Paksha
or the uncontradictedness of its object. The middle term must not aim at
establishing such absurd and contradictory objects
as the coolness of fire or the squareness of a circle.

The fifth character of the middle is asatpratipaksatva,
All other contradictions by other means of knowledge should be absent.
or the absence of counteracting reasons leading to a contradictory
conclusion.
These five characteristics, or at least four of them, must be found in the middle term of a valid inference.

If not, there will be fallacies.
The fallacies in Anumana (*hetvābhasa*) may occur due to the following:

1. **Asiddha (THE UNPROVED MIDDLE):** It is the unproved hetu that results in this fallacy. [Paksadharmata]

   It is called also sadhyasama or the asiddha. The word sadhyasama means a middle term which is similar to the sadhya or the major term. Hence the sadhyasama stands for a middle term which requires to be proved as much as the major term. This means that the sadhyasama middle is not a proved or an established fact, but an asiddha or unproved assumption.

   The fallacy of the asiddha occurs when the middle term is wrongly assumed in any of the premises and so cannot be taken to prove the conclusion.

   It follows that the premises which contain the false middle become themselves false.

   Thus the fallacy of the asiddha virtually stands for the fallacy of false premises, which is a form of the material fallacies in western logic.
- **Ashrayasiddha**: If Paksha [minor term] itself is unreal, then there cannot be locus of the hetu.
  - e.g. The sky-lotus is fragrant, because it is a lotus like any other lotus.
- **Svarupasiddha**: Hetu cannot exist in paksa at all.
  - E.g. Sound is a quality, because it is visible.
- **Vyapyatvasiddha**: Conditional hetu.
  - `Wherever there is fire, there is smoke'. The presence of smoke is due to wet fuel.
One condition of a valid middle term is that it must be present in the minor term. The minor term is thus the locus of the middle. Hence if the minor term is unreal and fictitious, the middle cannot be related to it. So the result is that the minor premise, in which the middle is related to an unreal minor, becomes false.

Example:-
‘The sky-lotus is fragrant, because it belongs to the class of lotus.’
Class of lotus have fragrant;
Sky-lotus belongs to the class of lotus;
Therefore, the sky-lotus is fragrant.
B. Svarūpaśiddha:

It is a middle term which cannot be proved to be real in relation to the minor term. It is a middle term which is not found in the minor term. The existence of the middle in the minor being unreal, the minor premise which relates it to the minor term becomes false. E.g. Sound is eternal, because it is visible. All visible things are eternal; Sound is visible; Therefore Sound is eternal. Here the middle term ‘visible’ is wrongly assumed in the minor term ‘sound’ and is not justified by facts. It has also four divisions:

Bhagasiddha, Visesanasiddha, Vivesyasiddha, Asamarthavisesyasiddha
2. *Savyabhichara*:

It is first kind of inferential fallacy. Here hetu is found to lead to no one single conclusion, but to different opposite conclusions. 

**This is the fallacy of irregular hetu.**

This fallacy arises when the middle term violates its second condition (sapaksasattva). This condition requires that the major must be present in all the cases in which the middle is present. But the *savyabhicāra* hetu, however, is not uniformly concomitant with the major term. It is related to both the existence and non-existence of the major term. It is therefore called *anāikāntika* or an ir-regular concomitant of the *sādhya* or the major term.

Hence from such a middle term we can infer both the existence and the non-existence of the major term.
The fallacy, Savyabhicāra (inconstant reason) has three subdivisions viz. 

a. sadhārana (common) 

b. asadhārana (uncommon) 

c. anupasamhāri (inconclusive).
Sadharana (common): Here the middle term is in some cases related to the major and in the other cases related to the absence of the major. As for example:-

All knowable objects are fiery;
The hill is knowable;
Therefore, the hill is fiery.

Here the middle term ‘knowable’ is indifferently related to both fiery objects like the kitchen and fireless objects like the lake.

All knowable being thus not fiery we cannot conclude that the hill is fiery because it is knowable. Rather, it is as much true to say that, for the same reason, the hill is fireless.
Asadharana (uncommon):

It is called asadharana (uncommon) because it is a peculiar form of the fallacy of the irregular middle. Here middle term is related neither to things in which the major exists nor to these in which it does not exist. e.g. Sound is eternal because there is soundness.

Sound has soundness;
Soundness or sabdatva is eternal;
Therefore, Sound is eternal.

It is found neither in eternal object like the soul nor in other non-eternal things like the pot.
Anupasamhari (inconclusive).

All objects are eternal, because they are knowable.

All knowable things are eternal;
All objects are knowable;
Therefore, All objects are eternal.

Here the distribution of the middle term cannot be proved either positively or negatively. The middle term is related to minor term that stands not for any definite individual or class of individuals, but indefinitely for all objects. (In this fallacy sadhya (the inferent) and the hetu (the reason) are nowhere absent.
3. **Satpratipaksa** PRAKARANASAMA OR THE COUNTERACTED MIDDLE:-(Satpratipaksin): 

Literally, it means a reason which is similar to the point at issue (Prakarana). We have a point at issue when there are two opposite views with regard to the same subject, both of which are equally possible, so that they only give rise to a state of mental vacillation as to the truth of the matter. 

Now when a middle term does not go farther than producing a state of mental oscillation between two opposite views we have a case of the prakaranasama middle. “Sound is eternal, because the properties of the non-eternal are not found in it” And “Sound is not-eternal, because the properties of the eternal are not found in it.”
The two middle terms being counteracted by each other cannot lead to any definite conclusion and we are left with the same question with which we started, namely, whether sound is eternal or non-eternal.

In savyabhicara the same character of the minor is taken as a middle term that may lead to opposite conclusions, in the prakaranasama two different characters of the minor are taken as the middle terms leading to opposite conclusions.
In viruddha or contradictory middle which by itself proves the opposite of what it is intended to prove.
But here in prakaranasama the opposite conclusion is proved by a different middle term.
4. **Badhita** or the mistimed and contradicted middles:

When another proof (as by perception) definitely contradicts and disproves the middle term (hetu).

'Fire is cold because it is a substance’.

It is illustrated in the inference ‘sound is durable, because it is manifested by conjunction, like colour.’ The colour of a thing is manifested when the thing comes in contact with light, although the colour exists before and after the contact. So also, it is argued, sound which is manifested by the contact between two things (samyogavyangya) must be durable, i.e. exist before and after the contact. But the argument is fallacious because its middle term is vitiated by a limitation in time. In the case of colour the manifestation takes place simultaneously with the contact between light and the coloured object.
The manifestation of sound, however, is separated by an interval of time from the contact between two things. In fact, we hear the sound when the contact between the two has ceased. Hence it cannot be due to the contact, because when the cause has ceased, the effect also must cease. The middle term being incongruous with the given example fails to prove the conclusion and is therefore fallacious.
5. **Viruddha** (CONTRADICTORY REASON):

Instead of proving something it is proving the opposite.

“Sound is eternal, because it is caused.”
In Savyabhicāra or the irregular middle only fails to prove the conclusions.
Whereas the viruddha or the contradictory middle disproves it or proves the contradictory proposition.

All eternal objects are caused;
Sound is caused;
Therefore Sound is eternal.

According to the later Naiyayikas, from Uddyotakar downwards, the hetu or the reason is called viruddha when it disproves the very proposition which it is meant to prove.

This happens when a middle term exists, not in the objects in which the major exists, but in those in which the major does not exist. That is, the viruddha or the contradictory middle is that which is pervaded by the absence of the major term.
The fallacies in Anumana (hetvābhāsa) may occur due to the following:

1. **Asiddha**: It is the unproved hetu that results in this fallacy.
   [Paksadhrmata]
   - **Ashrayasiddha**: If Paksha [minor term] itself is unreal, then there cannot be locus of the hetu.
     - e.g. The sky-lotus is fragrant, because it is a lotus like any other lotus.
   - **Svarupasiddha**: Hetu cannot exist in paksā at all.
     - E.g. Sound is a quality, because it is visible.
   - **Vyapyatvasiddha**: Conditional hetu.
     - `Wherever there is fire, there is smoke'. The presence of smoke is due to wet fuel.
2. Savyabhichara: This is the fallacy of irregular hetu.
  - **Sadharana**: The hetu is too wide. It is present in both sapaksa and vipaksa. "The hill has fire because it is knowable'.
  - **Asadharana**: The hetu is too narrow. It is only present in the Paksha, it is not present in the Sapaksa and in the Vipaksha. "Sound is eternal because it is audible'.
  - **Anupasamhari**: Here the hetu is non-exclusive. The hetu is all-inclusive and leaves nothing by way of sapaksha or vipaksha. e.g. 'All things are non-eternal, because they are knowable'.

Unify Study
Which one of the following fallacious hetu (middle term) is not uniformly concomitant with the major term?

(1) Asatpratipaksa  (2) Auyatireki  
(3) Anyonya-Asiddha  (4) Suyabhicara
3. **Satpratipaksa:** Here the hetu is contradicted by another hetu. If both have equal force, then nothing follows. 'Sound is eternal, because it is audible', and 'Sound is non-eternal, because it is produced'. Here 'audible' is counterbalanced by 'produced' and both are of equal force.

4. **Badhita:** When another proof (as by perception) definitely contradicts and disproves the middle term (hetu). 'Fire is cold because it is a substance'.

5. **Viruddha:** Instead of proving something it is proving the opposite. 'Sound is eternal because it is produced'. 
“Fire is cold, because it is a substance” — is an instance of which one of the hetuabhasas (fallacy of inference)

(1) A siddha (unproved middle term)
(2) Badhita (non-inferential contradicted middle)
(3) Virudha (contradictory middle)
(4) Saryabhic’ara (irregular middle)

5th Dec 2019 2nd shift
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(3) Virudha (contradictory middle)
(4) Saryabhic’ara (irregular middle)
Which one of the following hetwabhasa (fallacy) is involved in the argument, “Sound is element because it is caused”?

(1) Viruddha or contradictory middle  
(2) Satpratipaksa or inferentially contradicted middle  
(3) Sadhyasama or the unproved middle  
(4) Badhita or non-inferentially contradicted middle
Which one of the following hetwabhasa (fallacy) is involved in the argument, “Sound is element because it is caused”?

(1) Viruddha or contradictory middle
(2) Satpratipaksa or inferentially contradicted middle
(3) Sadhyasama or the unproved middle
(4) Badhita or non-inferentially contradicted middle
Thank You
FALLACY
UGC NET

THE FALLACIES OF INFERENCE

Straw man
Slippery slope
Ad Populum
Ad misericordiam
Equivocation
Types of Logical Fallacies

Fallacies are mistaken beliefs based on unsound arguments. They derive from reasoning that is logically incorrect, thus undermining an argument's validity. Fallacies are difficult to classify, due to their variety in application and structure. In the broadest sense possible, fallacies can be divided into two types: formal (or deductive) fallacies and informal (or inductive) fallacies.
**Formal (or deductive) Fallacies**

Formal (or deductive) fallacies occur when the conclusion doesn't follow the premise. These are often referred to as non-sequiturs, or conclusions that have nothing to do with initial claims. In formal fallacies, the pattern of reasoning seems logical but is always wrong.

A deductive argument often follows the pattern:

(1) All dogs have legs.
(2) Tiny is a dog.

Therefore: (3) Tiny has legs.
Informal (or inductive) Fallacies

Informal (or inductive) fallacies abound. Not only are we more likely to come across them than formal fallacies, their variations are endless. While formal fallacies are identified through an examination of the statement or claim, informal fallacies are identified through supporting evidence.

In these instances, the statement or claim is not supported with adequate reasons for acceptance.

A strong inductive argument follows this pattern:
(1) The sun has not exploded for all its existence.
(2) Therefore: (2) The sun will not explode tomorrow.
The core fallacies

1. The fallacy of equivocation

is an argument which exploits the ambiguity of a term or phrase which has occurred at least twice in an argument, such that on the first occurrence it has one meaning and on the second another meaning. A familiar example is:

The end of life is death.
Happiness is the end of life.
So, death is happiness.

‘The end of life’ first means ceasing to live, then it means purpose. That the same set of words is used twice conceals the fact that the two distinct meanings undermine the continuity of the reasoning, resulting in a non-sequitur.
2. The fallacy of *amphiboly* is, like the fallacy of equivocation, a fallacy of ambiguity; but here the ambiguity is due to indeterminate syntactic structure. In the argument:

The police were told to stop drinking on campus after midnight. So, now they are able to respond to emergencies much better than before.

There are several interpretations that can be given to the premise because it is grammatically ambiguous. On one reading it can be taken to mean that it is the police who have been drinking and are now to stop it; this makes for a plausible argument. On another reading what is meant is that the police were told to stop others (e.g., students) from drinking after midnight. If that is the sense in which the premise is intended, then the argument can be said to be a fallacy because despite initial appearances, it affords no support for the conclusion.
3 & 4. The fallacies of *composition* and *division* occur when the properties of parts and composites are mistakenly thought to be transferable from one to the other. Consider the two sentences:

a. Every member of the investigative team was an excellent researcher.
b. It was an excellent investigative team.

Here it is ‘excellence’ that is the property in question. The fallacy of composition is the inference from (a) to (b) but it need not hold if members of the team cannot work cooperatively with each other. The reverse inference from (b) to (a)—the fallacy of division—may also fail if some essential members of the team have a supportive or administrative role rather than a research role.
5. The fallacy of begging the question (petitio principii) can occur in a number of ways. One of them is nicely illustrated with Whately’s (1875 III §13) example: “to allow everyman an unbounded freedom of speech must always be, on the whole, advantageous to the State; for it is highly conducive to the interest of the Community, that each individual should enjoy a liberty perfectly unlimited, of expressing his sentiments.” This argument begs the question because the premise and conclusion are the very same proposition, albeit expressed in different words. It is a disguised instance of repetition which gives no reason for its apparent conclusion.
Another version of begging the question can occur in contexts of argumentation where there are unsettled questions about key terms. Suppose, for example, that everyone agrees that to murder someone requires doing something that is wrong, but not everyone agrees that capital punishment is a form of ‘murder’; some think it is justified killing. Then, should an arguer gives this argument: Capital punishment requires an act of murdering human beings. So, capital punishment is wrong.
Some versions of begging the question are more involved and are called circular reasoning. They include more than one inference. Descartes illustrated this kind of fallacy with the example of our belief in the Bible being justified because it is the word of God, and our belief in God’s existence being justified because it is written in the Bible. The two propositions lead back and forth to each other, in a circle, each having only the support of the other.
6. The fallacy known as complex question or many questions is usually explained as a fallacy associated with questioning. For example, in a context where a Yes or No answer must be given, the question, “Are you still a member of the Group?” is a fallacy because either response implies that one has in the past been a member of the Group, a proposition that may not have been established as true. Some say that this kind of mistake is not really a fallacy because to ask a question is not to make an argument.
7. There are a number of fallacies associated with causation, the most frequently discussed is **post hoc ergo propter hoc**, (after this, therefore because of this). This fallacy ascribes a causal relationship between two states or events on the basis of temporal succession.  

**For example,**  

Unemployment decreased in the fourth quarter because the government eliminated the gasoline tax in the second quarter.

The decrease in unemployment that took place after the elimination of the tax may have been due to other causes; perhaps new industrial machinery or increased international demand for products. Other fallacies involve confusing the cause and the effect, and overlooking the possibility that two events are not directly related to each other but are both the effect of a third factor, a common cause. These fallacies are perhaps better understood as faults of explanation than faults of arguments.
8. The fallacy of *ignoratio elenchi*, or irrelevant conclusion, is indicative of misdirection in argumentation rather than a weak inference.

The claim that Kolkata is the fastest growing city in India, for example, is not defeated by a sound argument showing that it is not the biggest city in India.

A variation of *ignoratio elenchi*, known under the name of the straw man fallacy, occurs when an opponent’s point of view is distorted in order to make it easier to refute.
For example, in opposition to a proponent’s view that (a) industrialization is the cause of global warming, an opponent might substitute the proposition that (b) all ills that beset mankind are due to industrialization and then, having easily shown that (b) is false, leave the impression that (a), too, is false. Two things went wrong: the proponent does not hold (b), and even if she did, the falsity of (b) does not imply the falsity of (a). There are a number of common fallacies that begin with the Latin prefix ‘ad’ (‘to’ or ‘toward’) and the most common of these will be described next.
9. The *ad verecundiam* fallacy concerns appeals to authority or expertise. Fundamentally, the fallacy involves accepting as evidence for a proposition the pronouncement of someone who is taken to be an authority but is not really an authority. This can happen when non-experts parade as experts in fields in which they have no special competence—when, for example, celebrities endorse commercial products or social movements. Similarly, when there is controversy, and authorities are divided, it is an error to base one’s view on the authority of just some of them.
10. The fallacy *ad populum* is similar to the *ad verecundiam*, the difference being that the source appealed to is popular opinion, or common knowledge, rather than a specified authority. So, for example:
These days everyone (except you) has a car and knows how to drive;
So, you too should have a car and know how to drive.
Often in arguments like this the premises aren’t true, but even if they are generally true they may provide only scant support for their conclusions because that something is widely practised or believed is not compelling evidence that it is true or that it should be done. There are few subjects on which the general public can be said to hold authoritative opinions. Another version of the *ad populum* fallacy is known as “playing to the gallery” in which a speaker seeks acceptance for his view by arousing relevant prejudices and emotions in his audience in lieu of presenting it with good evidence.
The *ad baculum* fallacy is one of the most controversial because it is hard to see that it is a fallacy or even that it involves bad reasoning. *Ad baculum* means “appeal to the stick” and is generally taken to involve a threat of injury of harm to the person addressed.

So, for example,

If you don’t join our demonstration against the expansion of the park, we will evict you from your apartment;

So, you should join our demonstration against the expansion of the park.

Such threats do give us reasons to act and, unpleasant as the interlocutor may be, there seems to be no fallacy here. In labour disputes, and perhaps in international relations, using threats such as going on strike, or cutting off trade routes, are not normally considered fallacies, even though they do involve intimidation and the threat of harm. However, if we change to doxastic considerations, then the argument that you should believe that candidate X is the one best suited for public office because if you do not believe this you will be evicted from your apartment, certainly is a good instance of irrelevant evidence.
The fallacy *ad misericordiam* is a companion to the *ad baculum* fallacy: it occurs not when threats are out of place but when appeals for sympathy or pity are mistakenly thought to be evidence. To what extent our sympathy for others should influence our actions depends on many factors, including circumstances and our ethical views. However, sympathy alone is generally not evidence for believing any proposition. Hence, You should believe that he is not guilty of embezzling those paintings; think of how much his family suffered during the Depression. *Ad misericordiam* arguments, like *ad baculum* arguments, have their natural home in practical reasoning; it is when they are used in theoretical (doxastic) argumentation that the possibility of fallacy is more likely.
Appeal to Pity (Ad Misericordiam)

Description:
The argument attempts to persuade by provoking irrelevant feelings of sympathy.

Example:
"You should not find the defendant guilty of murder, since it would break his poor mother's heart to see him sent to jail."
13. The *ad hominem* fallacy involves bringing negative aspects of an arguer, or their situation, to bear on the view they are advancing. There are three commonly recognized versions of the fallacy. The abusive *ad hominem* fallacy involves saying that someone’s view should not be accepted because they have some unfavorable property. Thompson’s proposal for the wetlands may safely be rejected because last year she was arrested for hunting without a license. The hunter Thompson, although she broke the law, may nevertheless have a very good plan for the wetlands. Another, more subtle version of the fallacy is the circumstantial *ad hominem* in which, given the circumstances in which the arguer finds him or herself, it is alleged that their position is supported by self-interest rather than by good evidence. Hence, the scientific studies produced by industrialists to show that the levels of pollution at their factories are within the law may be undeservedly rejected because they are thought to be self-serving. Yet it is possible that the studies are sound: just because what someone says is in their self-interest, does not mean it should be rejected. The third version of the *ad hominem* fallacy is the *tu quoque*. It involves not accepting a view or a recommendation because the espouser him- or herself does not follow it. Thus, if our neighbor advises us to exercise regularly and we reject her advice on the basis that she does not exercise regularly, we commit the *tu quoque* fallacy: the value of advice is not wholly dependent on the integrity of the advisor. We may finish our survey of the core fallacies by considering just two more.
I4. The fallacy of faulty analogy occurs when analogies are used as arguments or explanations and the similarities between the two things compared are too remote to support the conclusion.

If a child gets a new toy he or she will want to play with it; so, if a nation gets new weapons, it will want to use them.

In this example (due to Churchill 1986, 349) there is a great difference between using (playing with) toys and using (discharging) weapons. The former is done for amusement, the latter is done to inflict harm on others. Playing with toys is a benign activity that requires little justification; using weapons against other nations is something that is usually only done after extensive deliberation and as a last resort. Hence, there is too much of a difference between using toys and using weapons to conclude that a nation, if it acquires weapons, will want to use them as readily as children will want to play with their toys.
15. The fallacy of the slippery slope
generally takes the form that from a given starting point one can by a
series of incremental inferences arrive at an undesirable conclusion, and
because of this unwanted result, the initial starting point should be
rejected. The kinds of inferences involved in the step-by-step argument
can be causal, as in:
You have decided not to go to college;
If you don’t go to college, you won’t get a degree;
If you don’t get a degree, you won’t get a good job;
If you don’t get a good job, you won’t be able to enjoy life;
But you should be able to enjoy life;
So, you should go to college.
The weakness in this argument, the reason why it is a fallacy, lies in the second and third causal claims. The series of small steps that lead from an acceptable starting point to an unacceptable conclusion may also depend on vague terms rather than causal relations. Lack of clear boundaries is what enables the puzzling slippery slope arguments known as “the beard” and “the heap.” In the former, a person with a full beard eventually becomes beardless as hairs of the beard are removed one-by-one; but because the term ‘beard’ is vague it is unclear at which intermediate point we are to say that the man is now beardless. Hence, at each step in the argument until the final hair-plucking, we should continue to conclude that the man is bearded. In the second case, because ‘heap’ is vague, it is unclear at what point piling scattered stones together makes them a heap of stones: if it is not a heap to begin with, adding one more stone will not make it a heap, etc. In both these cases apparently good reasoning leads to a false conclusion.

Many other fallacies have been named and discussed, some of them quite different from the ones mentioned above, others interesting and novel variations of the above. Some of these will be mentioned in the review of historical and contemporary sources that follows.
The informal fallacy of accident (also called destroying the exception or a dicto simpliciter ad dictum secundum quid) is a deductively valid but unsound argument occurring in a statistical syllogism (an argument based on a generalization) when an exception to a rule of thumb is ignored. It is one of the thirteen fallacies originally identified by Aristotle in Sophistical Refutations. The fallacy occurs when one attempts to apply a general rule to an irrelevant situation.

For example:
Cutting people with knives is a crime. →
Surgeons cut people with knives. →
Surgeons are criminals.

It is easy to construct fallacious arguments by applying general statements to specific incidents that are obviously exceptions. Generalizations that are weak generally have more exceptions (the number of exceptions to the generalization need not be a minority of cases) and vice versa.
Which one of the following fallacious hetu (middle term) is not uniformly concomitant with the major term?

(1) Asatpratipaksa  
(2) Auyatireki  
(3) Anyonya-Asiddha  
(4) Suyabhicara
THE FALLACIES OF INFERENCE

- Straw man
- Slippery slope
- Ad Populum
- Ad misericordiam
- Equivocation
Types of Logical Fallacies

Fallacies are mistaken beliefs based on unsound arguments. They derive from reasoning that is logically incorrect, thus undermining an argument's validity. Fallacies are difficult to classify, due to their variety in application and structure. In the broadest sense possible, fallacies can be divided into two types: formal (or deductive) fallacies and informal (or inductive) fallacies.
**Formal (or deductive) Fallacies**

Formal (or deductive) fallacies occur when the conclusion doesn't follow the premise. These are often referred to as *non-sequiturs*, or conclusions that have nothing to do with initial claims. In formal fallacies, the pattern of reasoning seems logical but is always wrong.

A deductive argument often follows the pattern:

(1) All dogs have legs.
(2) Tiny is a dog.
Therefore: (3) Tiny has legs.
Informal (or inductive) Fallacies

Informal (or inductive) fallacies abound. Not only are we more likely to come across them than formal fallacies, their variations are endless. While formal fallacies are identified through an examination of the statement or claim, informal fallacies are identified through supporting evidence.

In these instances, the statement or claim is not supported with adequate reasons for acceptance.

A strong inductive argument follows this pattern:
(1) The sun has not exploded for all its existence.
(2) Therefore: (2) The sun will not explode tomorrow.
"If it rains, then the drought will end. The drought has ended. Therefore, it rained". Which kind of fallacy does this commit?

(1) Deductive fallacy  (2) Inductive fallacy
(3) Abductive fallacy  (4) Informal fallacy
"If it rains, then the drought will end. The drought has ended. Therefore, it rained". Which kind of fallacy does this commit?

(1) Deductive fallacy  (2) Inductive fallacy  (3) Abductive fallacy  (4) Informal fallacy
"In this hospital, some nurses don't wear white dress. Some doctors have private practice and medicines prescribed are of high cost. Therefore, treatment in this hospital is of poor quality". What fallacy does this argument make?

(1) Fallacy of composition  (2) Slippery slope
(3) Fallacy of accident    (4) Fallacy of division
The fallacies of composition and division occur when the properties of parts and composites are mistakenly thought to be transferable from one to the other. Consider the two sentences:

a. Every member of the investigative team was an excellent researcher.
b. It was an excellent investigative team.

Here it is ‘excellence’ that is the property in question. The fallacy of composition is the inference from (a) to (b) but it need not hold if members of the team cannot work cooperatively with each other. The reverse inference from (b) to (a)—the fallacy of division—may also fail if some essential members of the team have a supportive or administrative role rather than a research role.
The informal fallacy of accident (also called destroying the exception or a dicto simpliciter ad dictum secundum quid) is a deductively valid but unsound argument occurring in a statistical syllogism (an argument based on a generalization) when an exception to a rule of thumb is ignored. It is one of the thirteen fallacies originally identified by Aristotle in Sophistical Refutations. The fallacy occurs when one attempts to apply a general rule to an irrelevant situation.

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It is easy to construct fallacious arguments by applying general statements to specific incidents that are obviously exceptions.
Generalizations that are weak generally have more exceptions (the number of exceptions to the generalization need not be a minority of cases) and vice versa.
The fallacy of the *slippery slope* generally takes the form that from a given starting point one can by a series of incremental inferences arrive at an undesirable conclusion, and because of this unwanted result, the initial starting point should be rejected. The kinds of inferences involved in the step-by-step argument can be causal, as in:
You have decided not to go to college;
If you don’t go to college, you won’t get a degree;
If you don’t get a degree, you won’t get a good job;
If you don’t get a good job, you won’t be able to enjoy life;
But you should be able to enjoy life;
So, you should go to college.
"In this hospital, some nurses don't wear white dress. Some doctors have private practice and medicines prescribed are of high cost. Therefore, treatment in this hospital is of poor quality". What fallacy does this argument make?

1. Fallacy of composition
2. Slippery slope
3. Fallacy of accident
4. Fallacy of division
“Mr X lives in a slum and is unemployed. Therefore, Mr X deserves to be a minister.”
Which kind of fallacy is committed in this argument?

1. Fallacy of Composition
2. Ad misericordiam
3. Fallacy of Division
4. Fallacy of Accident
12. The fallacy ad misericordiam is a companion to the ad baculum fallacy: it occurs not when threats are out of place but when appeals for sympathy or pity are mistakenly thought to be evidence. To what extent our sympathy for others should influence our actions depends on many factors, including circumstances and our ethical views. However, sympathy alone is generally not evidence for believing any proposition. Hence,

You should believe that he is not guilty of embezzling those paintings; think of how much his family suffered during the Depression.

Ad misericordiam arguments, like ad baculum arguments, have their natural home in practical reasoning; it is when they are used in theoretical (doxastic) argumentation that the possibility of fallacy is more likely.
Appeal to Pity (Ad Misericordiam)

Description:
The argument attempts to persuade by provoking irrelevant feelings of sympathy.

Example:
"You should not find the defendant guilty of murder, since it would break his poor mother's heart to see him sent to jail."
“Mr X lives in a slum and is unemployed. Therefore, Mr X deserves to be a minister.”
Which kind of fallacy is committed in this argument?

1. Fallacy of Composition
2. Ad misericordiam
3. Fallacy of Division
4. Fallacy of Accident
"Everyone is going to the party. You should go too."
This inference commits which kind of fallacy?

(1) Ad Populum  
(2) Equivocation  
(3) Ad Verecundiam  
(4) Ad Ignorantiam
The fallacy *ad populum* is similar to the *ad verecundiam*, the difference being that the source appealed to is popular opinion, or common knowledge, rather than a specified authority. So, for example:

These days everyone (except you) has a car and knows how to drive;
So, you too should have a car and know how to drive.

Often in arguments like this the premises aren’t true, but even if they are generally true they may provide only scant support for their conclusions because that something is widely practised or believed is not compelling evidence that it is true or that it should be done. There are few subjects on which the general public can be said to hold authoritative opinions. Another version of the *ad populum* fallacy is known as “playing to the gallery” in which a speaker seeks acceptance for his view by arousing relevant prejudices and emotions in his audience in lieu of presenting it with good evidence.
The fallacy of equivocation is an argument which exploits the ambiguity of a term or phrase which has occurred at least twice in an argument, such that on the first occurrence it has one meaning and on the second another meaning. A familiar example is:
The end of life is death.
Happiness is the end of life.
So, death is happiness.
‘The end of life’ first means ceasing to live, then it means purpose. That the same set of words is used twice conceals the fact that the two distinct meanings undermine the continuity of the reasoning, resulting in a non-sequitur.
The *ad verecundiam* fallacy concerns appeals to authority or expertise. Fundamentally, the fallacy involves accepting as evidence for a proposition the pronouncement of someone who is taken to be an authority but is not really an authority. This can happen when non-experts parade as experts in fields in which they have no special competence—when, for example, celebrities endorse commercial products or social movements. Similarly, when there is controversy, and authorities are divided, it is an error to base one’s view on the authority of just some of them.
The fallacy of equivocation

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8. The fallacy of *ignoratio elenchi*, or irrelevant conclusion, is indicative of misdirection in argumentation rather than a weak inference.

The claim that Kolkata is the fastest growing city in India, for example, is not defeated by a sound argument showing that it is not the biggest city in India.

A variation of *ignoratio elenchi*, known under the name of the straw man fallacy, occurs when an opponent’s point of view is distorted in order to make it easier to refute.
"Everyone is going to the party. You should go too."
This inference commits which kind of fallacy?

(1) Ad Populum  (2) Equivocation
(3) Ad Verecundiam  (4) Ad Ignorantiam
The inference “A mouse is an animal. Therefore, a large mouse is a large animal” commits which one of the following fallacies?

(1) Straw man  (2) Slipper slope
(3) Equivocation (4) Fallacy of composition

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Straw Man Fallacies - These include misrepresentations to make an argument look weak.

• First senator: The nation is in debt and we should not add to the defense budget.
Second senator: I cannot believe you want to leave the nation defenseless!
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(1) Straw man  (2) Slipper slope  
(3) **Equivocation**  (4) Fallacy of composition
An informed fallacy in which the conclusion of an argument is stated or assumed in any one of the premises is known as:

(a) Begging the question
(b) Circular argument
(c) *Ignoratio elenchi*
(d) *Petitio precept*

Choose the correct option from the following:

(1) (a). (b) and (d)  
(2) (a) and (c)  
(3) (c) only  
(4) (b). (c) and (d)
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Choose the correct option from the following:

(1) (a), (b) and (d)  (2) (a) and (c)
(3) (c) only          (4) (b), (c) and (d)

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5. The fallacy of begging the question (petitio principii) can occur in a number of ways. One of them is nicely illustrated with Whately’s (1875 III §13) example: “to allow everyman an unbounded freedom of speech must always be, on the whole, advantageous to the State; for it is highly conducive to the interest of the Community, that each individual should enjoy a liberty perfectly unlimited, of expressing his sentiments.” This argument begs the question because the premise and conclusion are the very same proposition, albeit expressed in different words. It is a disguised instance of repetition which gives no reason for its apparent conclusion.
Circular Argument - Also referred to as Circulus in Probando, this fallacy is when an argument takes its proof from a factor within the argument itself, rather than from an external one.
• I believe that Frosted Flakes are great because it says so on the Frosted Flakes packaging.

False Dilemma - Sometimes referred to as Bifurcation, this type of fallacy occurs when someone presents their argument in such a way that there are only two possible options.
• If you don't vote for this candidate, you must be a Communist.
Thank You
Subcategories of Formal (or deductive) Fallacies

**Appeal to Probability** - This is a statement that takes something for granted because it is probable or possible.

- I see a dark cloud on the horizon. Dark clouds mean rain. It's going to rain here today.

**Bad Reasons Fallacy** - Also known as Argumentum ad Logicam, in this type of fallacy, the conclusion is assumed to be bad because the arguments are bad.

- Her new boyfriend drives an old car. He must be poor. She should break up with him.
**Masked Man Fallacy** - Also known as the Intentional Fallacy it involves a substitution of parties. If the two things that are interchanged are identical, then the argument is assumed to be valid.

- Jeremy's private investigator reported that a man with a beard was having dinner with his wife. Jeremy's best friend, Ronnie, has a beard. Therefore, Ronnie is having an affair with Jeremy's wife.

**Non Sequitur** - A fallacy wherein someone asserts a conclusion that does not follow from the propositions.

- All Dubliners are from Ireland. Ronan is not a Dubliner, therefore, he is not Irish.
Subcategories of Informal Fallacies

There are so many varieties of informal fallacies they can be broken down into subcategories. Let's examine some of those subcategories.

Fallacies of Presumption

Presumption of truth without evidence can also cause fallacious reasoning. Examples of these fallacies include:

Complex Question Fallacy - This involves questionable assumptions.
• "Are you going to admit that you're wrong?" Answering yes proves you're wrong. Answering no implies you accept you are wrong, but won't admit it. This question presumes guilt either way.
Hasty Generalization Fallacy - This is based upon only one abnormal situation. It is the reverse of a sweeping generalization fallacy.

- Hitler was a vegetarian. Therefore, I don't trust any vegetarians.

Post Hoc, Ergo Propter Hoc - This (meaning "after this, therefore because of this") is based upon an assumption of cause and effect, A happened, then B happened, so A must have caused B.

- I saw a magpie and then I crashed my car. Magpies are bad luck.
**Cum Hoc, Ergo Propter Hoc** - This fallacy (meaning "with this, therefore because of this") is when the person making the argument connects two events that happen simultaneously and assumes that one caused the other.

- Hospitals are full of sick people. Therefore hospitals make people sick.

**Slippery Slope Fallacy** - This falsely assumes the consequences of actions.

- If we let your brother stay, we'll have to let your whole family stay.
**Sweeping Generalization Fallacy** - This includes too broad of an application of a premise.

- Running is a good way to keep fit, so everyone should run a mile every day.

**Tu Quoque Fallacy** - This applies the concept of "Look who's talking" and is used to turn criticism against the other person.

- "You shouldn't have that second piece of cake. It's so fattening. Didn't you eat an entire tub of ice cream yesterday?"
Appeal to Ignorance - Or Arguing from Ignorance, these fallacies abound in everyday conversation, advertising, politics, and history. This fallacy argues that a proposition is true because it has not yet been proven false.

• During his Communism investigations Joe McCarthy presented a case saying, "I do not have much information on this except the general statement of the agency…that there is nothing in the files to disprove his Communist connections." His argument was that, because there was no evidence against a Communist connection, that person must be working with the Communists. (Source: Senator Joe McCarthy, Richard H. Rovere, Methuen, 1960).
**Circular Argument** - Also referred to as Circulus in Probando, this fallacy is when an argument takes its proof from a factor within the argument itself, rather than from an external one.

• I believe that Frosted Flakes are great because it says so on the Frosted Flakes packaging.

**False Dilemma** - Sometimes referred to as Bifurcation, this type of fallacy occurs when someone presents their argument in such a way that there are only two possible options.

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Fallacies of Ambiguity

A fallacy can also be caused by a lack of clarity or by a misunderstanding of the words. Examples of these fallacies include:

**Accent Fallacies** - These are based on the stress or emphasis of a word or word parts being unclear
• Depending on which word is stressed in the sentence "I didn't take the test yesterday", has several meanings, such as someone else took the test or I took it another day.

**Equivocation Fallacies** - These occur when words are used multiple times with different meanings.
• You have faith in science, and I have faith in God.
Straw Man Fallacies - These include misrepresentations to make an argument look weak.

• First senator: The nation is in debt and we should not add to the defense budget.

Second senator: I cannot believe you want to leave the nation defenseless!
Fallacies of Relevance

These fallacies attempt to persuade people with irrelevant information, appealing to emotions rather than logic. Examples of these fallacies include:

Appeal to Authority - also referred to as Argumentum ad Verecundia (argument from modesty). In this case, rather than focusing on the merits of an argument, the arguer will try to attach their argument to a person of authority in order to give credence to their argument.

• Well, Isaac Newton believed in alchemy, do you think you know more than Isaac Newton?
**Appeal to Popular Opinion** - This type of appeal is when someone claims that an idea or belief is true simply because it is what most people believe.
• Lots of people bought this album, so it must be good.

**Attacking the Person** - Also known as ad Hominem, this is quite a common occurrence in debates and refers to a person who substitutes a rebuttal with a personal insult.
• Don't listen to Eddie's arguments on education. He didn't even finish high school.
**Bandwagon Fallacy** - This contains arguments that are only appealing because of current trends and growing popularity.

• More people are turning to meditation and mindfulness to help them cope with the stress of modern-day living. Therefore meditation can make us all calmer.

**Gambler's Fallacy** - This assumes that short-term deviations will correct themselves.

• This coin has landed heads-up nine times in a row. So it will probably land tails-up next time it is tossed.
**Genetic Fallacy** - This involves acceptance or rejection of concepts based on their source, not their merit.
• My best friend says you're a liar, so I'm not going to talk to you.

**Red Herring Fallacy** - This uses irrelevant information or other techniques to distract from the argument at hand.
• You bring up gay marriage and claim that I'm against it but isn't it just as important to talk about the issue of homeless veterans. Did you know that I volunteer at a local shelter?

**Weak Analogy** - These fallacies employ analogies between things that are not really alike.
• Cars kill people just like guns, but if you're not going to ban the sale of cars you can't ban the sale of guns.