

SYLLOGISM

Answer the following questions:-

1. Is it true that an immediate inference there are 2 premises?

→ NO

2. Obversion is an immediate inference - Is it true?

→ Yes.

3. How many premises are required to draw a conclusion of an Immediate Inference?

→ One.

4. Is it true that in a categorical Syllogism there is only one middle term?

→ Yes.

5. Which term determine the figure of Syllogism?

→ Middle Term.

6. How many valid moods are there in third figure?

→ 6 Valid Moods.

7. In the first figure the major premise must be particular proposition - Is it true?

→ NO.

8. What is of the Major

9. In the is used Premises. Predicate

10. In the are

11. BAROCO

12. In categorical premises Can't

13. Give Converts

14. Can NO

15. Which premise third

→ Any premise third

16. In is premise

8. What is the name of the predicate of the conclusion of a Syllogism?
→ Major Term.

9. In the second figure the middle term is used as Subject/Predicate of both the Premises.
→ Predicate of both the premises.

10. In the fourth figure of Syllogism there are 5 valid moods.

11. BAROCO is a valid mood of 2nd figure.

12. In categorical Syllogism from two particular premises conclusion can/can't be drawn.
→ Can't be drawn.

13. Give examples of Immediate Inference.
→ Conversion, Obversion and Contraposition.

14. Can 'O' proposition be converted?
→ NO.

15. Which proposition is used as major premise in the valid moods of the third figure?

→ Any proposition can be used as major premise in the valid moods of the third figure.

16. In the fourth figure the middle term is used as 'predicate' in the major premise ~~in an immediate inference~~ and 'Subject' in the minor premise.

17. Is it true that there is one premise in an immediate inference?

→ Yes.

18. Can A proposition be simply converted?

→ NO

19. How many forms of Syllogism are there?

→ 2 forms (Pure and mixed).

20. How many forms of ^{Pure} Syllogism are there?

→ 3 forms, viz; Pure Categorical, Pure Disjunctive, Pure Hypothetical.

21. How many forms of Mixed Syllogism are there?

→ 3 forms, viz; Disjunctive Categorical, Hypothetical Categorical and Dilemma.

22. Distinguish between Mediate and Immediate Inference.

Ans: i) In immediate inference the conclusion is drawn from only one premise but in case of Mediate Inference the conclusion is drawn from more than one premise.

ii) In immediate inference there are two proposition - one premise and one conclusion. But in Mediate Inference

there is one conclusion and more than one premise.

23. What are the points of similarity between immediate and mediate Inference?

Ans: i) Both mediate and Immediate Inference are of deductive nature. Their conclusion cannot be more general than their premise or premises.

ii) In immediate Inference both the case of Inference we are concerned with formal truth or validity only.

24. What are the different kinds of Conclusion?

Ans: Conversion is of two kinds; viz; Simple Conversion and Conversion per accidens. Simple Conversion is that in which the quantity of the conclusion is the same as the quantity of the premise;

Eg; E - No cat is Rat
 $\therefore$ E - No Rat is Cat

Conversion per accidens is that in which the quantity of the conclusion is different from quantity of premise.

A - All mothers are Kind-hearted
 $\therefore$ I - Some Kind hearted beings are mothers.

25. What do you mean by Inference by Converse Relation?

Ans: Inference by Converse relation consists in transposing the terms of a proposition

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and replacing the word indicating the relation between them by its correlative, E.g;
 $A \rightarrow$ Plato is the teacher of Aristotle.
 $\therefore A \rightarrow$ Aristotle is the student of Plato.
 This kind of Conversion is possible when the subject and the predicate of a given proposition are a pair of relative terms.

26. What do you mean by Conversion by Negation?

Ans: According to Conversion by Negative 'O' proposition can be converted. First of all, an 'O' proposition is to be transformed into an 'I' proposition by negating the sign of negation from the copula adding it to the predicate. And then that 'I' proposition is to be converted according to the general rules of Conversion, E.g;
 $O \rightarrow$ Some men are not wise.
 $I \rightarrow$ Some men are not wise.
 $\therefore I \rightarrow$ Some not wise beings are men.

27. Why is Conversion by negation not taken as a proper form of Conversion?

Ans: (a) According to one of the rules of Conversion the quality of the conclusion must be same as that of the premise. But here the quality of the premise is changed in the conclusion. The premise is negative but the conclusion is

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affirmative.

(b) According to the of the of the given pr

28. What do

Ans: According inference. Known obversion justified of the $A \rightarrow$ Known $\therefore A \rightarrow$ Eg

29. Distinguish

Ans: Inference express Argument in a

30. State a Immediate

Ans: Conversion in terms conclusion the predicate class

affirmative.

- (b) According to another rule the predicate of the premise becomes the subject of the conclusion. But here the subject of the conclusion is contradictory of the given predicate.

28. What do you mean by material obversion?

Ans: According to Bain, there is a form of inference through obversion which is known as material obversion. In material obversion there is obverse inference justified only on examination of the matter of the proposition.

$A \rightarrow \text{Knowledge is virtue.}$
 $\therefore A \rightarrow \text{Ignorance is Bad.}$

29. Distinguish between argument and Inference.

Ans: (Inference is a mental process but when expressed in language it is called an Argument.) Every argument is expressed in a premise - conclusion structure.

30. State and explain Conversion as a form of Immediate Inference.

Ans: Conversion is a form of immediate inference in which the subject and the predicate terms are legitimately transposed in the conclusion. In other words, the subject of the premise becomes the predicate and the predicate of the premise becomes the

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subject in the conclusion. In Conclusion, the premise is called the convertend and the conclusion is called the converse. We can state the rules of Conversion as follows :-

- i) The Subject of the Convertend becomes the predicate of the converse and the predicate of the Convertend becomes the Subject of the Converse.
- ii) The quality of the Convertend is retained in the converse.
- iii) No term can be distributed in the converse unless it is distributed in the Convertend.

The first rule is involved in the very definition of the Conversion. The second rule is concerned with the quality of the convertend and converse. Since the term remains same their interchanging of places does not necessitate qualitative changes. The third rule is a general principle of all deductive inference. In any conclusive inference we cannot go beyond the evidence, cannot assert anything not implied in the original proposition. So, a term which is distributed in the Convertend cannot be distributed in the Converse.

Now, if we apply these rules to four standard form Categorical Proposition

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We will find that only 'E' and 'I' proposition can yield valid conclusion.

The converse of 'E' and 'I' propositions are their respective equivalent.

But the converse of an 'A' proposition does not in general follow validly from 'A' proposition. The converse of 'A' is 'I'. It cannot be 'A' because in that case predicate term which is not distributed in the conclusion. The converse of A is not the equivalent but its sub-implicant. This form of conversion is called Conversion by limitation. In this process we interchange the subject and predicate and change the quantity of the proposition from universal to Particular. Thus, from the premise "All dogs are animals", the conclusion "Some animals are dogs" can validly be inferred. Finally, it should be observed that converting an 'O' proposition is not in general valid. From the true 'O' proposition "Some animals are not dogs" has its converse false proposition "Some dogs are not animals". We see then that an 'O' proposition and its converse are not in general equivalent.

The following table gives a complete picture of a Valid Conversion:

Convertend	Converse
$A \rightarrow \text{All } S \text{ is } P$	$I \rightarrow \text{Some } P \text{ is } S$ (by limitation)
$E \rightarrow \text{No } S \text{ is } P$	$E \rightarrow \text{No } P \text{ is } S$
$I \rightarrow \text{Some } S \text{ is } P$	$I \rightarrow \text{Some } P \text{ is } S$
$O \rightarrow \text{Some } S \text{ is not } P$	- Not Valid

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Obversion**31. State and explain**

Ans: Obversion is a form of immediate inference in which from a given proposition a conclusion is drawn by taking the complement of original predicate as predicate. And also by changing its quality. In this form of inference, the premise is called the obvertend and the conclusion is called obverse. We can formulate the rules of the process of inference in the following manner :-

i) The original subject remains as the predicate becomes the predicate in the conclusion.

ii) The quality of the obverse is the opposite of the quality of the obvertend.

iii) The quantity of the obvertend and the obverse is the same.

We can proceed to give the obverse of the form Categorical proposition. Thus the 'A' proposition "All politicians are liars" has its obverse the 'E' proposition "No politicians are not liars". These two propositions are logically equivalent, so either one can validly be inferred from the other. Obversion is a valid immediate inference when applied to any standard form of Categorical Propositions. Thus,

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Obvertend

A $\rightarrow$ All S
E $\rightarrow$ No
I $\rightarrow$ Some
O $\rightarrow$ Some

32. State a

Ans: Contrapo
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Obversion

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the 'E' proposition, "No politicians are honest" has its obverse, the logically equivalent 'A' proposition, "All politicians are non-honest". Similarly, the Obverse of 'I' proposition "Some students are intelligent" is the 'O' proposition "Some students are not non-intelligent". And finally the 'O' proposition "Some students are not industrious" has its obverse, the 'I' proposition "Some students are non-industrious".

Every standard form categorical proposition is logically equivalent to its Obverse. So, obversion is a valid form of immediate inference for any standard form categorical proposition. To obtain the obverse of a proposition we leave the quality and the subject unchanged, change the quality of the proposition and replace the predicate term by its complement.

The following table gives a complete picture of all valid obversions:-

<u>Obvertend</u>	<u>Obverse</u>
A $\rightarrow$ All S is P	E $\rightarrow$ No S is non P
E $\rightarrow$ No S is P	A $\rightarrow$ All S is non P
I $\rightarrow$ Some S is P	O $\rightarrow$ Some S is not non P
O $\rightarrow$ Some S is not P	I $\rightarrow$ Some S is non P

32. State and explain Contraposition.

Ans: Contraposition is a kind of immediate inference which introduces new principles.

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It can be reduced in a sense to conversion and obversion. To form the contrapositive of a given proposition, we replace the subject term by the predicate term and replace its predicate term by the subject term. Contraposition is most useful in working with A proposition and O

A proposition to its contrapositive by first obverting it, next applying conversion and then applying obversion again. Thus, beginning with "All S is P", we obvert it to obtain "No S is non P", which converts validly to "No non-P is S", whose obverse is "All non P is non-S". Thus the contrapositive of any A proposition is the obverse of the obvertend converse.

The Contrapositive of the 'O' proposition "Some students are not idealists" is "Some non-idealists are non-students" which is logically equivalent to the first. Their logical equivalence can be shown by deriving the contrapositive in the following schematic form - "Some S is not P" obversed to "Some S is ^{non} ~~not~~ P is S" where obversion is "Some non-P is not non-S".

Contrapositive of 'E' proposition "No S is P" is "No non-P is non-S" which does not follow validly from the

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original. If we attempt to derive the contrapositive of an 'E' proposition by successive Obversion, Conversion and obversion, we find the reason for the invalidity. The obverse of E proposition 'No S is P' is the A proposition 'All S is non-P'. And it cannot validly be converted except by limitation. If we do convert it by limitation to obtain 'Some non-P is S'. Then the latter can be obverted to obtain 'Some non-P is not non-S' which we may call the contrapositive by limitation.

Contrapositive of I proposition is not in general valid. The reason that contraposition is not generally valid when applied to I proposition can be seen when we attempt to derive the contrapositive of an I proposition. The obverse of I proposition 'Some S is P' whose conversion does not in general follow validly from it.

Thus, we see that Contraposition is a valid form of immediate inference only when applied to A and O propositions. Contraposition is not valid at all for I proposition and for E proposition only by limitation. This may also be presented in form of a table:

Premise

A $\rightarrow$ All S is P

E $\rightarrow$ No S is P

I $\rightarrow$ Some S is P

O $\rightarrow$ Some S is not P

A $\rightarrow$ All non P is non-S

O $\rightarrow$ Some non-P is not non-S

not Valid [by limitation]

O $\rightarrow$ Some non-P is not non-S

33. Explain the structure of Standard form Categorical Syllogism.

Ans: A Syllogism is a deductive argument in which a conclusion is inferred from two premises. A Categorical Syllogism is a deductive argument consisting of the categorical proposition that contain three terms, each occurring twice in the two of the constituent propositions. A Categorical Syllogism is said to be in Standard form when its premise and conclusion are all standard form Categorical Propositions.

The Conclusion of a Standard form Syllogism is a Standard form Categorical proposition which contains two of the Syllogism's three terms. The term that occurs as the predicate of the conclusion is called the major term and the term which occurs as the subject of the conclusion is called the minor term. Thus, in the Standard form Syllogism:

All men are mortal
All Kings are men
∴ All Kings are mortal

The term 'Kings' is the minor term and the term 'Mortal' is the major term. The third term of the Syllogism which occurs in both the premises but does not occur in the conclusion is called the Middle Term.

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In our example, the term "Men" is the middle term.

The premises of the standard form Syllogism are named after the terms that appear in them. The major and the minor terms must each occur in a different one of the premises. The premise containing the major term is called the major premise and the premise containing the minor term is called the minor premise. In our example, stated above, the major premise is "All men are mortal" and the minor premise is "All kings are men".

In a standard form Categorical Syllogism its major premise is stated first, the minor premise second and the conclusion last. It should be emphasised that the major premise is not defined in terms of the premise but as the premise that contained the major term and similarly the minor premise is defined accordingly as it contains its minor term.

34. Write a note on the mood of Syllogism

Ans: The mood of a standard form of Syllogism is determined by the forms of the standard form Categorical Propositions, it contains. It is represented by 3 letters, the first of which names the form of the Syllogism's major premise, the second that of

the minor premise and the third that of the Conclusion. In our example, stated below Since its major premise is an A proposition, the minor premise is also an A proposition and so also its conclusion, the mood of the Syllogism is AAA, E.g;

$A \rightarrow$ All men are mortal
 $A \rightarrow$ All kings are men
 $\therefore A \rightarrow$ All kings are mortal.

35. Explain the figure of Syllogism.

Ans: The mood of standard form Syllogism does not completely characterise its form. Let us consider the two following Syllogisms :-

i) All great Scientists are College Graduates $L \rightarrow A$
Some Professionals athletes are College Graduates $L \rightarrow I$
 $\therefore$ Some professionals athletes are great Scientists $\rightarrow I$

ii) $A \rightarrow$ All Artists are Egoists
 $I \rightarrow$ Some Artists are Pampers
 $\therefore I \rightarrow$ Some pampers are Egoists.

Both are of mood AII but they are of different forms. We can bring out the difference in their forms. Most clearly by displaying their logical skeletons. Abbreviating the minor term by S, classmate

the major term by P and the middle term by M. The logical skeletons of these two syllogisms are :-

- | | |
|---|---|
| 1) All P is M
Some S is M
∴ Some S is P | 2) All M is P
Some M is S
∴ Some S is P |
|---|---|

In the first the middle term is predicate of both the premises while in the second the middle term is the subject of both the premises. Thus, the mood of the syllogism does not completely describe the form of a syllogism.

The form of a syllogism may be completely described by stating its mood and figure where figure indicates the position of the middle term in the premise. It is clear that there are four possible figures a syllogism may have. The middle term may be the subject of the major premise and the predicate of the minor premise and the predicate of both or it may be the predicate of both the premises or it may be the predicate of major premise and subject of the minor premise. This different possible position of the middle term constitute the first, second, third and fourth figures respectively. This can be represented in the following way :

1ST2ND3RD4TH

MP

PM

MP

PM

SM

SM

MS

MS

∴ SP

∴ SP

∴ SP

∴ SP

Thus, a complete description of the form of any standard form Syllogism can be given by naming its mood and figure.

36. State the rules of Categorical Syllogism.

Ans: i) A valid Standard form Categorical Proposition must contain exactly three terms, each of which is used in the same sense throughout the argument. Any Categorical Syllogism that contains more than three terms is invalid and is said to ~~and~~ consist the fallacy of four terms.

ii) In a valid standard form Categorical Syllogism, the middle term must be distributed at least once in the premise. The violation of this rule will commit and it is said to commit the fallacy of undistributed terms.

iii) In a valid Standard form Categorical Syllogism if either term is distributed in the Conclusion then it must be distributed in the conclusion. If neither term is distributed in the conclusion then it must be distributed in the

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iv) No standard form having valid.

v) If either form the

vi) No valid Syllogism can be. The commit

37. Explain Propositional Diagrams

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premises. The violation of this rule will lead to either the fallacy of illicit major or fallacy of illicit minor.

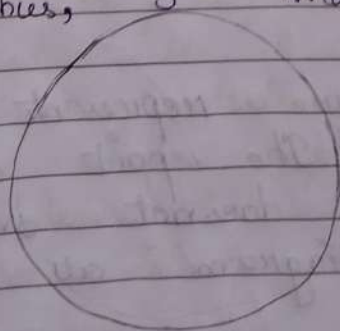
iv) No standard form Categorical Syllogism having two negative premises is valid.

v) If either premise of a valid standard form Categorical Syllogism is negative, the conclusion must be negative.

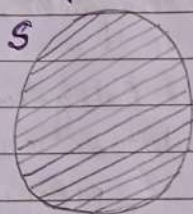
vi) No valid standard form Categorical Syllogism with a particular conclusion can have two universal premises. The violation of this rule will commit the existential fallacy.

37. Explain the Standard form Categorical Proposition with the help of Venn Diagram Technique.

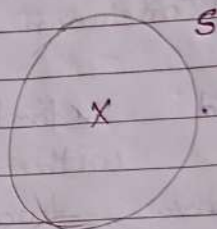
Ans: Standard form Categorical Proposition refer to two classes. Proposition can be expressed diagrammatically by diagramming the classes to which they refer. All class may be represented by a circle dwelled with the term that designate the class. Thus, 'S' may be diagrammed as :-



This diagram represent a class, not a proposition. To diagram that 'S' has no members, we shade all interior of the circle representing S. To diagram the proposition there are 'S's' we place an 'x' anywhere in the interior of the circle representing S. Thus, the two proposition "there are no S's" and "there are S's" can be represented by the two diagrams are:

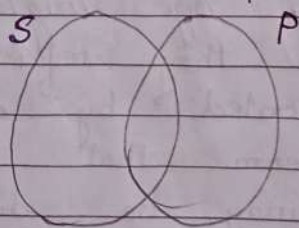


$$S = 0$$



$$S \neq 0$$

To diagram a standard form categorical proposition two circles are required. The framework for diagramming any standard form proposition whose subject and predicate terms are abbreviated by S and P is constituted by drawing two intersecting circle is shown below:

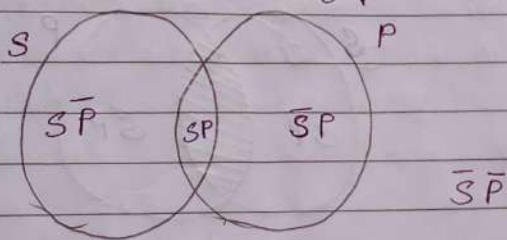


This figure represents more than two classes. The part of the circle labelled that does not overlap. The circle P diagram all S's that are

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not P 's represents the product of the classes S and P and diagrams all things belonging to both of them is labelled as SP . The part of the circle labelled P that does not overlap the circle labelled as diagrams all P 's that are not S 's and represents the product of the class S is P and labelled as SP .

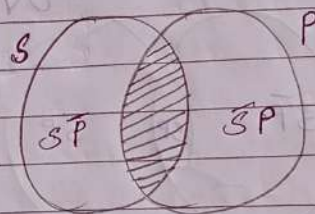
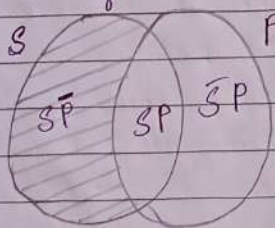
Finally the part of the diagram external to both circles represents all things that are neither in S nor in P and diagrams fourth class labelled as $\bar{S}\bar{P}$. These labels ~~inserted~~ inserted, our figures stands



By shading or inserting 'x' in various parts of the above figure we can diagram anyone of the four standard form Categorical proposition. To diagram the A proposition 'All S is P ' symbolised as $\bar{S}\bar{P} = 0$. We simply shade out the part of the diagram that represent the class $\bar{S}\bar{P}$ indicating that it has no members or is empty. To diagram the 'E' proposition 'No S is P ' symbolised as $SP = 0$, we shade out the part of the diagram which represents the class SP to indicate that it is empty. To diagram the I proposition 'Some S is P '

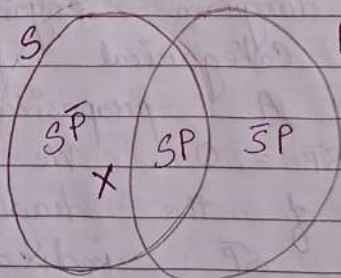
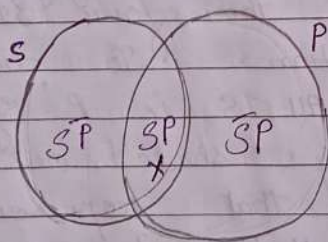
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symbolised as $SP \neq 0$, we insert 'x' into that part of the diagram which represents the class SP. This insertion indicates that the class product is not empty but has at least one member. Finally for the 'o' proposition 'Some S is not P' symbolised as $S\bar{P} \neq 0$, we insert 'x' into that part of the diagram which represent the class of $S\bar{P}$ to indicate that it is not empty, but has at least one member. Now the four standard form of Categorical proposition may be shown in the following way :-



A $\rightarrow$ All S is P
 $S\bar{P} = 0$

E $\rightarrow$ No S is P
 $SP = 0$



I $\rightarrow$ Some S is P
 $SP \neq 0$

O $\rightarrow$ Some S is not P
 $S\bar{P} \neq 0$

The above diagramming is based on John Venn's explanation of Standard form Categorical Proposition and is known as Venn diagram after the classmate English Mathematician.

38. Distinguish Inference

Ans: i) Deductive Inference Particular Inference particular

ii) In ded necessary but i conclusion

iii) The cannot premis inductiv genero

iv) Deducti the inferer with propo

v) In a cann induc beyon

39. What First

Ans: The cla

38. Distinguish between deductive and Inductive Inference.

Ans: i) Deductive Inference is mainly an inference from the general to the Particular. On the other hand, Inductive Inference is a Inference from the particular to General.

ii) In deductive inference the Conclusion necessarily follows from the premises but in Inductive inference the conclusion does not necessarily follow.

iii) The conclusion of a deductive inference cannot be more general than the premises. But the conclusion of an inductive inference is always non-general than the premises.

iv) Deductive inference is concerned with the formal truth or validity. Inductive inference, on the otherhand is concerned with material truth of its constituent proposition.

v) In a deductive inference the conclusion cannot go beyond the premises but in inductive inference the conclusion goes beyond the premises.

39. What is Perfect Figure? Why is the First Figure called the perfect figure?

Ans: The figure in which "The Dictum de Omni
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"et mello" is directly applicable to the mood is called the perfect figure.

The first figure is called the perfect figure because the Dictum de Omni et Mello is directly applicable to the mood of the first figure. This Dictum lays down that -

- (a) The major premise must be universal and, (b) The minor premise must be affirmative. In the first figure only the major premise is universal and the minor premise is affirmative in all valid moods. However, in the first figure only all the propositions, i.e., A, E, I, O can be deduced as conclusion. It is the only figure which proves A proposition.

40. Prove that "From two negative premises, no conclusion can be drawn".

Ans: A negative proposition is that in which the predicate is denied of the subject. If both the premises are negative then no relation between the major term and minor term can be established.

The major premise is negative. This means that there is no connection between the middle term and major term. Similarly if the minor premise is negative then also there is no connection between the minor and

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middle term. And consequently if both the premises are negative then the major term and the minor term cannot be compared by means of the middle term as a result, no conclusion can be drawn. Eg; No men are dogs. No cats are men.

For the joint function of this from two negative premises no conclusion can be drawn. This combination leads to the fallacy of negative premises.

41. Prove that 'Every Syllogism must have three and only three terms'.

Ans: The analysis of structure of Syllogism shows that there are three propositions each of them is containing two terms. So, the total number of terms in a Syllogism is six. But all these six terms are not new terms. Only three are new and each used twice. So, in every Syllogism there are actually only three terms, viz; Major term, minor term and middle term.

In every Syllogism, a relation between the major term and the minor term is established in the conclusion with the help of the middle term. Now, an argument having more than three terms cannot be a Syllogism for there will be no common element between the premises; Eg; All men are rational animals. All chalks are white.

Hence, there is no common

band or middle term. So, it leads to the fallacy of four terms. Again if an argument has only two terms, it will be only repetition of the same proposition in the premises as well as in the conclusion, so in every syllogism there must be three and only three terms.

12. What is the process of Converting, definition, Tautologous Proposition and the like?

Ans: When in an A proposition, the subject and the predicate have the same denotation, it can be converted Simply:

a) Definition :

$A \rightarrow$ All men are rational animals
 $\therefore A \rightarrow$ All rational animals are men.

b) Tautologous Proposition :

$A \rightarrow$ All men are human beings
 $\therefore A \rightarrow$ All human beings are men.

c) Proposition in which the subject and the predicate are definite Singular terms.

$A \rightarrow$ Everest is the highest mountain
 $\therefore A \rightarrow$ The highest mountain is Everest.

d) Proposition in which the predicate is the peculiar quality possessed only by the subject.

$A \rightarrow$ All men are laughing animals
 $\therefore A \rightarrow$ All laughing animals are men.

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43. Is material obversion a real type of obversion?

Ans: Material obversion cannot be regarded as a real type of obversion on the following grounds:

- i) According to the rule of the obversion the ~~the~~ subject of the obvertend becomes the subject of the obverse. But in material obversion the contrary of the subject of the obvertend becomes the subject of the obverse.
- ii) Rule of obversion requires that the predicate of the obverse should be the contradictory of the predicate of the obvertend. But in case of material obversion the predicate of the conclusion is the contrary of the predicate of the given proposition.
- iii) The quality of the obvertend should be changed in the obverse. But in case of material obversion quality of the premise and the conclusion is the same.
- iv) In deductive inference the conclusion is implicitly contained in the premise and necessarily follows from the premises. But this is not applicable in case of material obversion.
- v) Inference through material obversion requires some practical knowledge or experience of the nature of the subject and the predicate.

But obversion is a deductive inference as concerned with formal truth and not with material truth.

44. What are the characteristics of deductive Inference?

Ans: a) The conclusion follows from one or more premises.

b) The conclusion necessarily follows from premises as the conclusion is implicitly contained in the premise.

c) The conclusion cannot be more general than the premises as the conclusion necessarily follows from the premises.

d) As the conclusion is implicitly contained in the premises and necessarily follows from the premises. So, if the premises are true, the conclusion must be true.

e) It is not concerned with the material truth of the conclusion. If the conclusion necessarily follows from the premises by following all the rules of premises the inference will be formally true or valid.

45. What are characteristics of Inductive Inference?

Ans: a) The conclusion follows from more

than one premise.

- b) As the conclusion is not implicitly contained in the premises, so the conclusion does not necessarily follow from the premises.
- c) The conclusion is more general than the premises.
- d) As the conclusion goes beyond the premises so the truth of the premises cannot prove the truth of the conclusion.
- e) Although the conclusion of the inductive argument cannot prove the truth, yet it can help in the discovery of truth.

46. What are the different forms of Syllogism?

Ans: According to the nature of the constituent propositions ~~for~~ from the point of view of relation, Syllogism is classified into two, viz; Pure Syllogism and mixed Syllogism.

A pure Syllogism is that in which the constituent propositions are of same relation; Eg;

All Crows are Black

This is a Crow

∴ This is black.

Here, all the propositions are of the same relation, that is, all are categorical.

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A mixed Syllogism is that in which the constituent propositions are of different relation. Eg;
If there is fever then there is rise in temperature.
There is a fever.
∴ There is rise in temperature.

Here, the propositions are of different relation, i.e.; the major premise is hypothetical and the minor premise and the conclusion are categorical.

47. What are the different kinds of Pure Syllogisms?

Ans: Pure Syllogism is of 3 kinds, viz;

- i) Pure Categorical Syllogism
- ii) Pure Hypothetical Syllogism
- iii) Pure Disjunctive Syllogism.

(A Pure Categorical Syllogism is that in which all the three propositions are categorical Syllogism.)

(A Pure Hypothetical Syllogism is that kind in which all the three propositions are hypothetical Proposition.)

(A Pure Disjunctive Syllogism is that in which all the three propositions are Disjunctive Proposition.)

48. What are the different kinds of mixed Syllogism?

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Ans: Mixed Syllogism is of 3 kinds, viz;
Hypothetical Categorical Syllogism, Disjunctive Categorical Syllogism, Disjunctive Categorical Syllogism and Dilemma.

A Hypothetical Categorical Syllogism is that kind of Mixed Syllogism in which the major premise is hypothetical proposition and the minor premise and the conclusion are Categorical Propositions.

A Disjunctive Categorical Syllogism is that kind of Mixed Syllogism in which its major premise is disjunctive proposition and the minor premise and the Conclusion are Categorical Propositions.

A Dilemma is that kind of Mixed Syllogism in which the major premise is a compound hypothetical proposition, the minor premise is a disjunctive proposition and the conclusion is either Categorical or Disjunctive Proposition.

A. Obvert the following :-

1. All Scientists are Philosophers - A
 $\therefore$ No Scientists are non-Philosophers - E

2. Some poets are idealists - I
 $\therefore$ Some poets are not non-idealists - O

3. Some leaders are good politicians - I
 $\therefore$ Some leaders are good politicians - O

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4. No sinners are great man - E
 $\therefore$ All sinners are non-great man - A
 5. Some Scientists are not democratic - O
 $\therefore$ Some Scientists are non-democratic -
 6. Some Cats are Black - I
 $\therefore$ Some Cats are not non-black - O
 7. All trees are useful - A
 $\therefore$ No trees are non-useful - E
 8. Some politicians are not wise - O
 $\therefore$ Some politicians are non-wise - I
 9. Some people are happy - I
 $\therefore$ Some people are not non-happy - O
 10. All happy men are virtuous - A
 $\therefore$ No happy men are non-virtuous - E
 11. No Circle are Squares - E
 $\therefore$ All Circles are non-square - A
 12. Some honest men are happy - I
 $\therefore$ Some honest men are not non-happy - O
 13. No gentleman are dishonest - E
 $\therefore$ All gentleman are non-dishonest - A
 14. All mother are loveable - A
 $\therefore$ No mother are non-lovable - E
 15. Some diseases are not dangerous - O
 $\therefore$ Some diseases are non-dangerous.
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13. Conve

1. Some

 $\therefore$ 'C

2. All

 $\therefore$ So

3. No

 $\therefore$ J

4. All

 $\therefore$ c

5. Some

 $\therefore$ c

6. All

 $\therefore$ -

7. Some

 $\therefore$ -

8. All

 $\therefore$ -

9. No

 $\therefore$ -

10. Some

 $\therefore$ -

12. Convert the following :

1. Some men are not industrious - O
∴ 'O' proposition cannot be converted
2. All Crows are black - A
∴ Some black beings are Crows - I
3. No Colours are Sound - E
∴ No Sounds are colours - E
4. All men are rational - A
∴ Some rational beings are men - I
5. Some tigers are white - I
∴ Some white beings are tigers - I
6. All Saints are men - A
∴ Some men are saints - I
7. Some Swans are not white - O
∴ 'O' proposition cannot be converted.
8. All Polite Persons are religious - A
∴ Some religious persons are polite - I
9. No writers are fool - E
∴ No fools are writers - E
10. Some persons are healthy - I
∴ Some healthy beings are persons - I

C. Contradpose the following :

1. Some students are obedient - I
∴ Not possible
2. All good rulers are philosopher kings - A
∴ All non-philosopher kings are non-good rulers - E
3. Some diseases are not dangerous - O
∴ Some non-dangerous things are not disease - O
4. Some politicians are not wise - O
∴ Some non-wise beings are not non-politicians - O
5. No honest men are happy - E
∴ Some non-happy beings are not non-honest - O
6. Some poets are idealist - I
∴ Not possible
7. No sinners are great men - E
∴ Some non-great men are not non-sinners
8. No N.R.I are Voters - E
∴ Some non-Voters are not non-NRI - O
9. Some Socialists are not democratic - O
∴ Some non-democratic are not non-Socialist - O
10. Some cats are black - I
∴ Not Possible

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Q. Test the following Syllogisms :-

1. My hand touches the table. The table touches the floor. Therefore my hand touches the floor.

Ans: The Syllogistic form of the argument :

A $\rightarrow$ The table is that which touches the floor

A $\rightarrow$ My hand is that which touches the table

A $\rightarrow \therefore$ My hand is that which touches the floor.

This Syllogism is invalid because there are four terms instead of three. The terms are - i) the table, ii) that which touches the floor, iii) my hand, iv) that which touches the table. So, it commits the fallacy of four terms.

2. He must be intelligent, for he is straight forward and all intelligent beings are straight forward.

Ans: The Syllogistic form of the argument :

A $\rightarrow$ All intelligent beings are straight forward

A $\rightarrow$ He is straight forward.

A $\rightarrow$ He is intelligent.

This Syllogism is invalid because here the middle term 'straight forward' is not distributed.
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is not distributed in any of the premises being the predicate of A proposition. So, it commits the fallacy of undistributed middle.

3. All educated persons are intelligent, he is not intelligent, since he is not educated.

Ans: The Syllogistic form of the argument:

A $\rightarrow$ All educated persons are intelligent.

E $\rightarrow$ He is not educated

E $\rightarrow \therefore$ He is not intelligent.
Minor

This Syllogistic argument is fallacious because the major term 'intelligent' is distributed in the conclusion being the predicate of E proposition without being distributed in the major premise being the predicate of A proposition, so it commits the fallacy of Illicit Major.

4. No kings are poor but all kings are man, Therefore, no man are poor.

Ans: The Syllogistic form of the argument:-

E $\rightarrow$ No kings are poor

A $\rightarrow$ All kings are men

E $\rightarrow \therefore$ No men are poor.
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ent, he
s not

Argument:

gent

proposition

SM

proposition,
it major.

AMP

17.

Ans:-

	7	8
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This Syllogistic Argument is fallacious because the minor term 'men' is distributed in the conclusion seeing the subject of A E proposition; ~~the~~ it commits the fallacy of illicit major without being distributed in the minor premise being the predicate of A proposition. So, it commits the fallacy of Illicit Minor.

5. No men are quadrupeds, no quadrupeds are rational animals, therefore all rational animals are men.

Ans: The Syllogistic form of the argument Subject :-

E → No men are quadrupeds
p M

$E \rightarrow$ No quadrupeds are mammals.

A $\rightarrow$ $\therefore$ All rational animals are men.

This Syllogism is invalid because from two negative premises no conclusion can be drawn. So, it commits the fallacy of Negative Premises.

6. He has broken his word which no honest men even does. So, he is not honest.

Ans: ~~A~~ The Syllogistic form of the argument :

E $\rightarrow$ No honest men are those who break their word.

A → He is one who has broken his word.

$E \rightarrow \text{He}$ is not honest.

This Syllogism is valid as it follows all the rules of categorical Syllogism and it is in 2nd figure and the mood is EAE, so the name of the valid mood is CESARE.

* E. Test the following arguments with the help of Venn diagram.

1. EAE - 2

$E \rightarrow$ No P is M

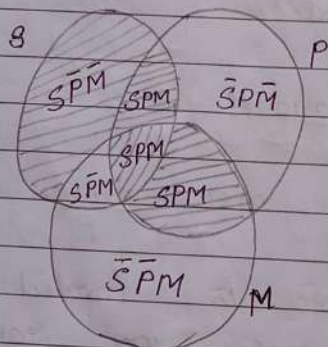
$PM = 0$

$A \rightarrow$ All S is M

$S\bar{M} = 0$

$\therefore E \rightarrow$ No S is P

$SP = 0$



Valid $\rightarrow$ CESARE

2. EAO - 3

$E \rightarrow$ No M is P

$MP = 0$

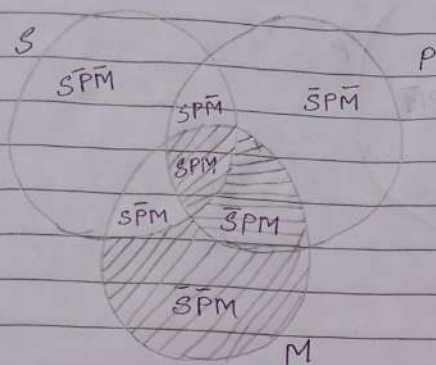
$A \rightarrow$ All M is S

$M\bar{S} = 0$

$\therefore O \rightarrow$ Some S is not P.

$S\bar{P} \neq 0$

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Invalid
[Fallacy of Illicit Major]

3. AII - 4

$A \rightarrow$ All P is M

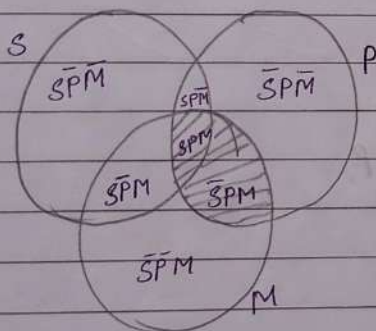
$$PM = 0$$

$I \rightarrow$ Some M is S

$$MS \neq 0$$

$I \rightarrow$ Some S is P

$$SP \neq 0$$



Invalid
[Fallacy of Undistributed Middle]

4. EAE - 3

$E \rightarrow$ No M is P

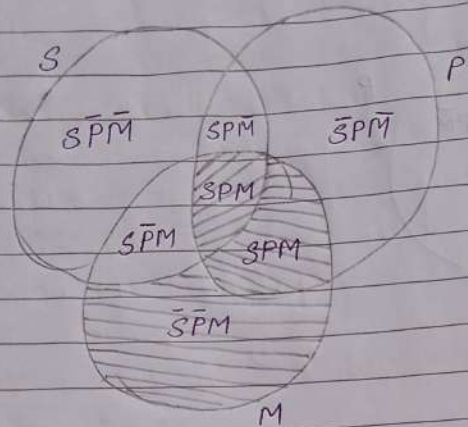
$$MP = 0$$

$A \rightarrow$ All M is S

$$MS = 0$$

$E \rightarrow$ No S is P

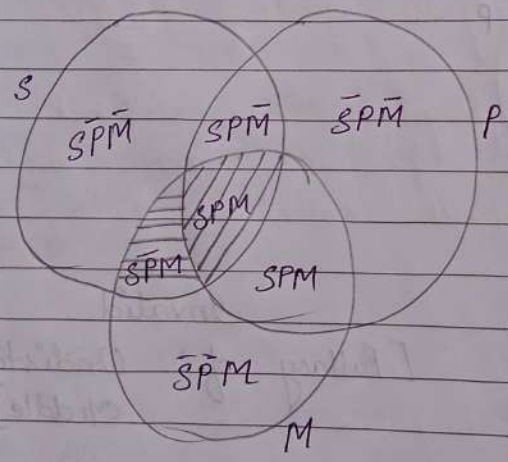
$$SP = 0$$



Invalid
[Fallacy of Illicit Minor]

5. IEO - 1

- | | |
|-------------------------------------|-------------------|
| $I \rightarrow$ Some M is P | $MP \neq 0$ |
| $E \rightarrow$ No S is M | $SM = 0$ |
| $O \rightarrow$ Some S is not P | $S\bar{P} \neq 0$ |



Invalid
[Fallacy of Illicit Major]