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Logic-

Q3

Symbolic Logic:-

Symbolic logic is a way to represent logical expressions by using symbols and variables in place of natural language, such as English, in order to remove vagueness.

Symbolic Logic sometime called as Modern Logic. Conclusion is based on propositions in deductive arguments. In Symbolic Logic, we use Symbols, assigned to the proposition. This is because sometimes its difficult to draw conclusion from proposition using ordinary language.

In Symbolic Logic, proposition may be represented by capital letters such as A or B or lower case letter such as P, q, or r.

Proposition:-

The smallest logical expression, we can make that if broken down would result in a loss of meaning, is called a Proposition.

For example:-

"Awais and Naveed are in same team."

cannot be broken down without a loss in meaning.

"Naveed are in same team" doesn't even make sense.

Propositions are written in the affirmative (in other words, we don't use the word 'not'. Instead we use the 'not' symbol '¬' to make a negation (Negative Sentence)

"The Mangoes are sweet". represented by A

A= The mangoes are sweet.

making a negation that "the mangoes are not sweet" we simply apply ¬ Negation sign to A become ¬A.

Negation:- The negation of a statement is simply negative sentence. It is represented by symbol '¬' or any variable with ¬x.

⇒ Example:-

-> 'Black people are slaves' represented by A

The negation of A will be:
'Black people are not Slaves' represented by ¬A.

⇒ A = The Earth is round.
¬A = The Earth is not round.

⇒ A = The weather will be hot tommorow.
¬A = The weather will not be hot tommorow.

Conjunction:-

A conjunction is a compound statment representing the word 'and'.
Symbolically conjunction is represented by Dot . or ∧
A . B or A ∧ B

e.g
Fahad washes clothes and bilal presses the clothes.

⑤

P = Fahad washes clothes.

Q = Bilal presses the clothes

These are called conjuncts and its conjunction will be

$P \cdot Q$ or $P \& Q$.

⇒ A = teacher teaches a lesson

B = Student learns a lesson

A teacher teaches a lesson and student learns a lesson.

Conjunction will be → $A \cdot B$ or $A \& B$.

Disjunction:-

— It is sometime called alteration. It is a compound sentence/ statement representing the word 'or'.

In disjunction, two component ~~statements~~ are called disjuncts.

Symbolically, disjunction is represented by 'V'

Examples:-

=> Prays five time a day or you will be punished. (Disjunction).

A = Prays five time a day
or
B = You will be punished
} disjunds

This represent the exclusive sense. You have to follow A or B never both.

=> Symbolically A ∨ B

=> Yousaf is at gym or he is exercising. (disjunction).

p = Yousaf is at gym.
q = He is exercising
} disjunds

(This is inclusive sense | Either p or q) or both.

Symbolically p ∨ q.

Q5.

Argument by Analogy:-

Analogy:-

Analogy is a tool in logic through which we compare two things and we draw a conclusion based on the similarities of two things.

Argumentation:-

Using a comparison between something new and something known, is called analogical reasoning or argumentation. Reasoning by analogy is a way to helps others, understand, to persuade and to reason.

An analogy is a way to understand something new by using what we know as a frame of reference. Using an analogy may be a great way to explain a new concept, to draw conclusion in a new case, or a way to convince someone to change their mind about a particular issue.

For example:-

=> The final of champion trophy-2019

remind us the final match of 1992 World cup.

⇒ Kabali pulao of 'Traskoon' is very delicious as of 'Namkeen'.

⇒

Causual Connection

Casual connection is a genetic connection of phenomena through which one thing (the cause) under certain conditions give rise to, causes something else (The effect).

The effect of one thing is due to the cause of another thing describes the causual connection between these two things.

For Example-

Extreme flood hits the city due to severe raining for the last four days.

Effect → Flood.

Cause → Raining for last four days.

Argumentation through Cause and Effect

⇒ Causual Reasoning:-

In causual reasoning/ argumentation), a person persuade someone through explaining the relationship between cause and effect about that particular thing.

The persuaders often we casual reasoning to booster their claims that their particular solution is the right one.

Example:

⇒ Economy of the world decline due to the covid-19.

Effect ⇒ Destruction of economy.

Cause ⇒ Covid-19.

⇒ Education system of pakistan collaps because of the descrimination of public school system and privat sector school system.

Q4:-

Truth Value:-

Truth value are sometimes called as logical values. It shows the relationship between proposition and truth. Truth values indicates the degree of truth of sentences.

Validity:-

validity is a property of a deductive argument in which an argument succeeds in providing decisive logical support. And the argument is said to be valid argument.

Example: NDMA response if there is ~~any~~ a probability of natural disaster:-

=> NDMA doesn't response
=> "There is no probability of natural disaster.

Truth Table:-

A truth table is a table that lists whether something is true with T and false with an F.

In a truth table, each statement is typically represented by a letter or variables like P, q or θ and each statement also has its own corresponding column in the truth table - that lists all of the possible truth values.

Truth table for negation:-

⇒ "Yasir pretends that he is blind." represented by 'A'

its Negation is

$\neg A$ = Yasir does not pretend that he is blind
Not A.

There is two possibilities.
If A is true then Not $\neg A$ is false
and if Not $\neg A$ is true then A is false.

A	$\neg A$
T	F
F	T

Negation

Truth table for Conjunction:-

A= It is Sunny outside.

B= The temperature is 39°c.

These are two conjuncts and the junction will be

It is Sunny outside and the temperature is 39°c.

The conjunction will be true if both ~~dis~~conjuncts are true.

If anyone of the ~~a~~ conjunct is false then the conjunction will be false.

A	B	A . B
T	T	T
T	F	F
F	T	F
F	F	F

conjunction

Truth table for Disjunction:-

⇒ A= Keep your hard work

B= You will be fail.

These are two disjuncts.

The disjunction will be.

"Keep your hard work or you will be fail.

e.g:- Keep your teeth clean otherwise you will loss it.

The only way for a disjunction to be a false statement if both statements are false. A disjunction is true if either statment is true or if both statements are true.

A	B	A ∨ B
T	T	T
T	F	T
F	T	T
F	F	F

Disjunction

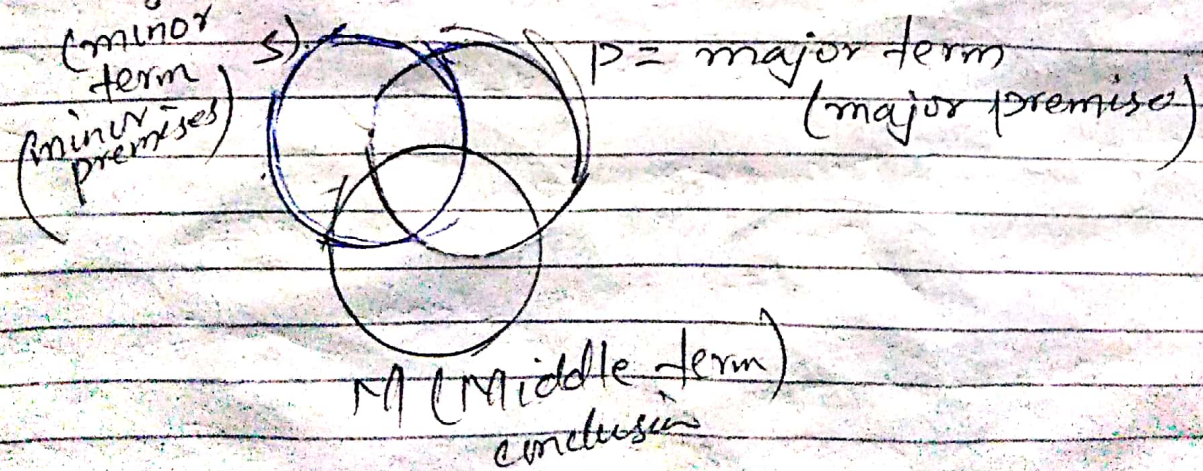
Q2:-

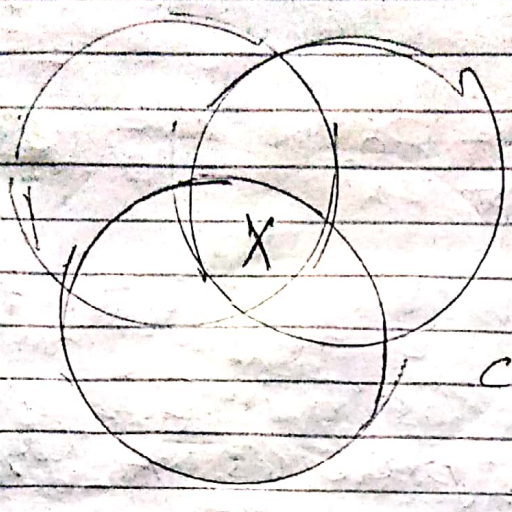
Venn Diagram:-

In a deductively valid argument the content of the conclusion is already contained implicitly in the premises. A venn diagram of the premises enables us to see this explicitly.

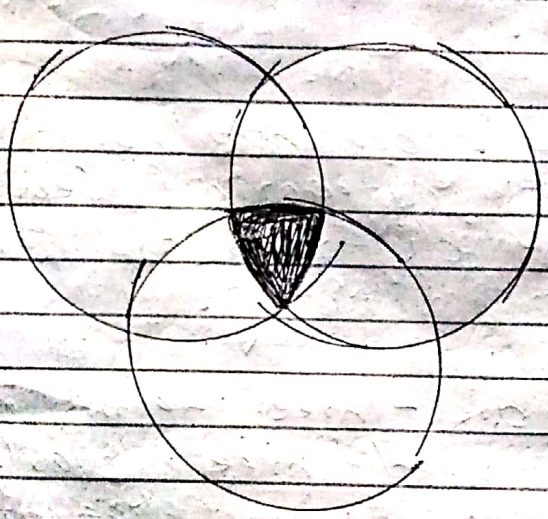
Now that we know how to diagram the four types of categorical sentences, we can use venn diagram to evaluate arguments for validity.

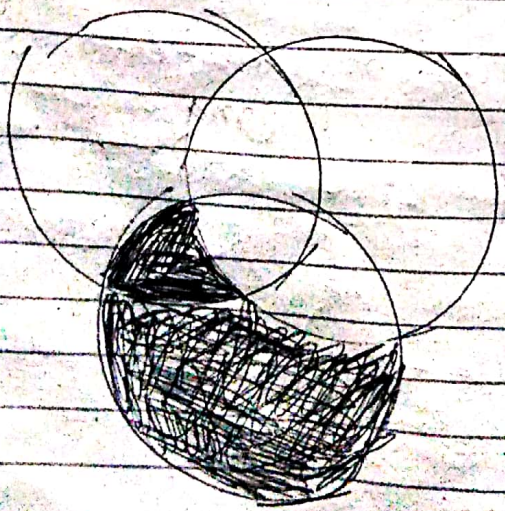
Since there are three terms in every syllogism, we need three overlapping circles in any venn diagram.





categorical syllogism





Determining the validity with Venn Diagram

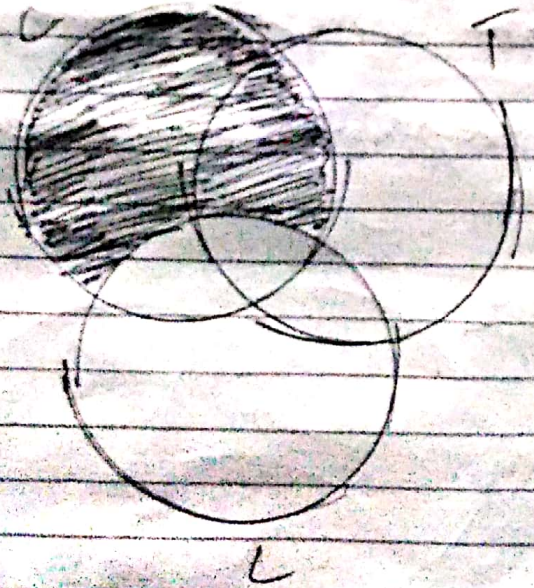
Example:-

(1) People who have beard are good people.

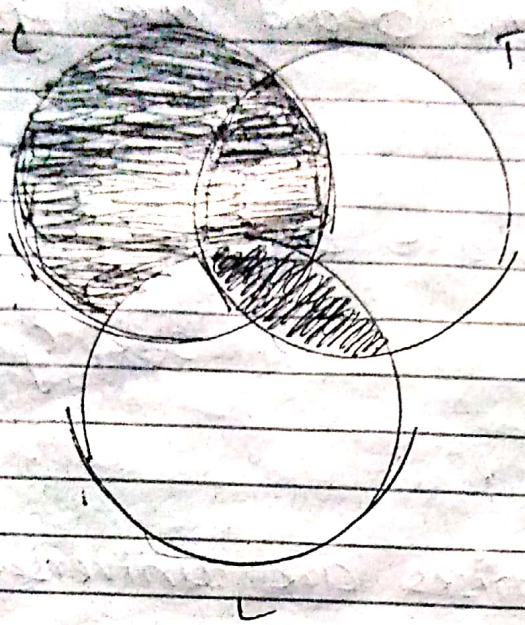
(2) All muslims have beard.

(3) Therefore all muslims are good people.

If both our premises are universal, as in this argument, we can diagram either premise first, so lets diagram the minor premise.



Major premise.



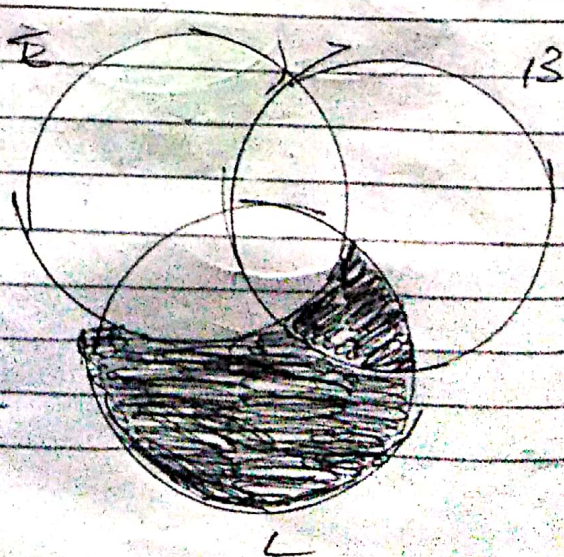
Example:

① Some lawyers are tea lover.

② All lawyers are exceptional people.

③ Therefore some exceptional people are tea lover.

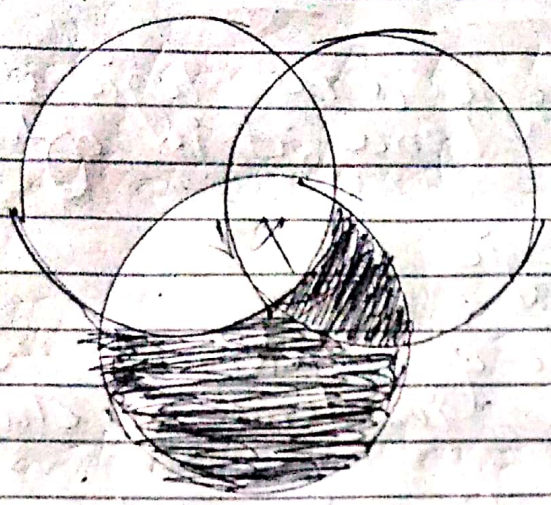
Minor premise.



If two premises of a categorical syllogism differ in quality.

Universal premises first

Major premise.



We have an x in the overlape of exceptional people and tea lowers. So

- the argument is valid.

Q:

Aristotalian Logic

Aristotalian logic is the logic of classes or categories. Hence, it is often called

Categorical Logic

It is the logic of statements that can be represented in term of classes of

Things and relationships between those classes.

Aristotalian logic has been developed in ways that allow us to translate many kinds of natural language statements into statements about relationships between classes.

Categorical Proposition:

A categorical proposition is a simply a statment about the relationship between categories. It states whether one category or categorical term is fully contained with another, is partially contained within another or is completly separate.

There are four types of categorical proposition, each of which is given a vowel letter A, E, I and O.

⇒ Affirmative Universal = A

⇒ Negative Universal = E

⇒ Affirmative particular = I

⇒ Negetive particular = O

⇒ Affirmative or Negative shows the quality of the proposition.

⇒ Quantity :- ⇒ Which refers to all or none are termed universal

proposition which refers to some are termed as particular proposition.

A

⇒ All snakes are danger.
⇒ All cars have red colour.
⇒ All student disobeys the rules.
⇒ All planets are plants.
⇒ All cats are animals.

E

⇒ No birds are fish.
⇒ No all player are good.
⇒ No all snakes are poisonous
⇒ No mammals are Carnivorus.
⇒ No people prays five time.

I

⇒ Few people obeys the laws.
⇒ Some animal saves water in their bodies.

⇒ Some lawyer tells a lie.

⇒ Few animals barks.

⇒ Some years are leap years.

O

⇒ Some people are not good.

⇒ Some jokers are not the real ones.

⇒ Few people does not drinks.

⇒ Few animals are not reptiles.

⇒ Some birds do not lays eggs.