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***SUBJECT: Logic and Critical Thinking***

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**Attempt all questions.**

**Q.No.1: Explain different forms of Fallacy with current examples.**

**Fallacy:**

A fallacy is, very generally, an error in reasoning. This differs from a factual error, which is simply being wrong about the facts. To be more specific, a fallacy is an "argument" in which the premises given for the conclusion do not provide the needed degree of support.

**Fallacies can be divided into two general types.**

* **Fallacies of Relevance:** Arguments in which the premises are logically irrelevant to the conclusion.
* **Fallacies of Insufficient Evidence:** Arguments in which the premises, though logically relevant to the conclusion, fail to provide sufficient evidence for the conclusion.

**Fallacies of Relevance:**

A statement is RELEVANT to another statement if it provides at least some reason for thinking that the second statement is true or false.

There are three ways in which a statement can be relevant or irrelevant to another:

* A statement is positively relevant to another statement if it provides at least some reason for thinking that the second statement is true.
* A statement is negatively relevant to another statement if it provides at least some reason for thinking that the second statement is false.
* A statement is logically irrelevant to another statement if it provides no reason for thinking that the second statement is either true or false.

**Fallacies of Relevance:**

* Personal Attack (Ad Hominem)
* Appeal to Emotion (Ad Populum)
* Attacking the Motive
* Bandwagon Argument
* Look Who’s Talking
* Straw Man
* Begging the Question
* Red Herring
* Scare Tactics
* Equivocation
* Two Wrongs Make a Right

## Personal Attack (Ad Hominem):

## It occurs when one person makes an argument, and the other person replies with a criticism but not one made about the argument, but about the person himself.

**Example:**

“Ali says I should quit smoking because it’s bad for me. But he’s practically a stoner, so who is he to give me advice about my health?” Personal Attack When an arguer rejects a person’s argument or claim by attacking the person’s character rather than examining the worth of the argument.

**Attacking the Motive:**

It occurs when an arguer criticizes a person’s motivation for offering a particular argument or claim, rather than examining the worth of the argument or claims itself.

**Example:**

Donald Trump has argued that we need to build a new campus. But Trump is the owner of Trump’s Construction Company. He’ll make a fortune if his company is picked to build the new campus. Obviously, Trump’s argument is a lot of self- serving nonsense. Attacking the Motive When an arguer criticizes a person’s motivation for offering a particular argument or claim, rather than examining the worth of the argument or claims itself.

**Look who’s talking:**

It occurs when an arguer rejects another person argument or claim because that person is a hypocrite.

**Example:**

**Doctor:** You should quit smoking.

**Patient:** Look who’s talking! I’ll quit when you do, Dr. Smokestack!

Look Who’s Talking (tu quoque) when an arguer rejects another person’s argument or claim because that person is a hypocrite.

**Two Wrongs Make a Right:**

It occurs when an arguer tries to justify a wrongful act by claiming that some other act is just as bad or worse.

**Example:**

“Why pick on me, officer? Everyone else is using drugs.” Two Wrongs Make a Right When an arguer attempts to justify a wrongful act by claiming that some other act is just as bad or worse. Others are committing worse or equally bad acts. Therefore my wrongful act is justified.

**Scare Tactics:**

When an arguer threatens harm to a reader or listener and this threat is irrelevant to the truth of the arguer’s conclusion.

**Example:**

Diplomat to diplomat: I’m sure you’ll agree that we are the rightful rulers of the Iraq. It would be regrettable if we had to send armed forces to demonstrate the validity of our claim. Fear is a powerful motivator so powerful that it often causes us to think and behave irrationally.

**Appeal to Emotion (Ad Populum)**

## Appeal to pity:

## It occurs when an arguer tries to support a conclusion by getting pity or sympathy from the listener.

**Example:**

“Don’t give me a ticket, Sir. My mother has cancer and my aunt just had a stroke!”

**Bandwagon Argument:**

If you don’t go along with th**e argument, you’ll be left out or persuaded to join in** so you can be a part of the crowd or when an arguer appeals to a person’s desire to be popular, accepted, or valued, rather than to logically relevant reasons or evidence.

**Example:**

All the really cool Taylors students smoke cigarettes. Therefore, you should, too.

**Straw Man:**

A straw man fallacy happens when someone appears to be rebutting the original point made, but is actually arguing or creating a fuss over a point that wasn't initially made.

**Example:**

We as community should be doing more and more to introduce and produce cars greener and more fuel efficient." "Our cities are built for cars; do you want to affect the economy?"

**Red Herring:**

[This fallacy](https://examples.yourdictionary.com/red-herring-examples.html) comes about when someone uses unrelated information to divert from the main argument.

**Examples:**

* How is talking about vaccinations going to help us find a cure for covid19.
* There are starving children in Africa. Eat your carrots.

**Equivocation:** When an arguer uses a key word in an argument in two (or more) different senses. Fallacies of Equivocation can be difficult to spot because they often appear valid, but they aren’t.

**Example:**

In the summer of 1940, Londoners were bombed almost very night. To be bombed is to be intoxicated. Therefore, in the summer of 1940, Londoners were intoxicated almost every night. Equivocation Remember

**Begging the Question:**

It occurs when an arguer states or assumes as a premise (reason) the very thing he is seeking to probe as a conclusion.

**Example:**

I am entitled to say whatever I choose because I have a right to say whatever I please.

**Fallacies of Insufficient Evidence:** Arguments in which the premises, though logically relevant to the conclusion, fail to provide sufficient evidence to support the conclusion.

**Fallacies of Insufficient Evidence:**

* **False Authority**
* **False Cause**
* **Appeal to Ignorance**
* **Slippery Slope**
* **False Dilemma**
* **Weak Analogy**
* **Loaded Question**
* **Inconsistency**
* **Hasty Generalizations**

**False Authority:** Citing a witness or authority that is untrustworthy.

**Example:**

My dentist told me that aliens built the lost city of Atlantis. So, it’s reasonable to believe that aliens did build the lost city of Atlantis.

**Appeal to Ignorance:** Claiming that something is true because no one has proven it false or vice versa. “Not proven, therefore false” If such reasoning were allowed, we could prove almost any conclusion.

**Example:** Yoda must exist. No one has proved that he doesn’t exist.

**False Dilemma:** Posing a false either/or choice. Fallacy of false dilemma can involve more than two (2) alternatives. It can also be expressed as a conditional (if-then) statement.

**Example:**

The choice in this MPP election is clear: Either we elect Zakir as our next president, or we watch our MPP unity slide into anarchy and frustration. Clearly, we don’t want that to happen. Therefore, we should elect Zakir as our next president.

**Loaded Question:**

To respond to a loaded question effectively, one must distinguish the different questions being asked and respond to each individually.

**Example:**

Ahmed: Are you still friends with that loser Richard? Ali: Yes. Ahmed: Well, at least you admit he’s a total loser.

**False Cause:** Claiming, without sufficient evidence, that one thing is the cause of something else.

**Example:**

Maria gets a chain letter that threatens her with dire consequences if she breaks the chain. Maria laughs at it and throws it in the garbage. On her way to work she slips and breaks her arm. When she gets back from the hospital she sends out 200 copies of the chain letter, hoping to avoid further accidents.

**Hasty Generalization:** Drawing a general conclusion from a sample that is biased or too small. 1. A biased sample is one that is not representative of the target population. 2. The target population is the group of people or things that the generalization is about. 3. Hasty generalizations can often lead to false stereotypes.

 **Example:**

Pakistanis are lazy. I have two friends who are from Pakistan, and both of them never prepare for class, or do their homework.

**Slippery Slope:** Claiming, without sufficient evidence that a seemingly harmless action, if taken, will lead to a disastrous outcome.

**Example:**

“The Pakistani militarily shouldn't get involved in other countries. Once the government sends in a few troops, it will then sends in thousands to die.

**Weak Analogy:** Comparing things those aren’t really comparable. It occurs when an arguer compares two (or more) things that aren’t really comparable in the relevant respect. – e.g., Lettuce is leafy and green and good on burgers poison Ivy leafy and green it would be good on burgers too.

**Inconsistency:** Asserting inconsistent or contradictory claims. It is also a mistake to cling stubbornly to an old idea when new information suggests that the idea is false.

**Example:**

Note found in a Forest Service Suggestion box: Park visitors need to know how important it is to keep this wilderness area completely pristine and undisturbed. So why not put up a few signs on the trees to remind people of this fact? Inconsistency open minded to new ideas.

**Q.No.2: Identify common flaws in belief construction.**

**Common flaws in belief construction are as follows.**

* **Overgeneralization** is a common cognitive bias that causes people to mistakenly conclude that things are worse than they really are. Overgeneralization occurs when a person develops an exaggerated or distorted appraisal about an event or situation. "I failed to get a second interview", says the overgeneralizing depressed person, "so that must mean that I am a failure as a person". It does not follow that failure at one event means that a person is therefore a failure at all events, but this is exactly the sort of trap into which many depressed people fall. There are a few different ways of overgeneralizing:
* The **Mental Filter** bias (also known as Selective Attention) occurs when someone systematically attends only to a portion of the information present in an event while forming their appraisal of that event. generally, this occurs when people learn to only take the negative information about an event seriously, and discard any positive information as irrelevant "Our vacation is ruined because of this rain!" says the depressed person, failing to pay attention to the fact that he is on vacation in the first place. "I got a C in that subject on the report card and that is terrible" says the depressed person, failing to give proper credence to the fact that she earned A’s and B’s in other subjects.
* **Magnification** (otherwise known as Catastrophization) bias occurs when a negative event is blown out of proportion and takes on layers of meaning it does not actually contain. "That woman looked at me funny" says the depressed person, "and that must mean that she hates me because I am ugly". The original event is perhaps uncomfortable, but the finished catastrophized event is "terrible, awful, and unbearable".
* A related bias, **Minimization**, occurs when people deflate the actual meaning of a very positive event. "It's great that I just graduated from medical school", says the depressed person, "but all I can think about now is those enormous loans I have to pay back." "Besides, continues the new doctor, "I'm not really much of a doctor after all - I only passed my tests because they were being kind to me".
* Related to Minimization is the **Disqualifying the Positive** bias, which occurs when people pay attention to positive information but then find a reason to not count it as they form their appraisals. "It is true that Ali calls me all the time and asked me out on a date last week", says the depressed person, "but he's only doing that because someone put him up to it. Really, he doesn't like me and I'm a loser."
* **All-or-Nothing Thinking** occurs when appraisals become highly polarized. Where there were originally shades of meaning in a variety of whites, grays and blacks, there is now only black or white, but nothing in between. "I did not get that A on the test, says the depressed person, "So that means I am a total failure".

**Q.No.3: What are the questions of logic in critical thinking?**

To answer this question properly let’s use a simple example of applying logic to a critical-thinking situation. In this proposed scenario, a man has a PhD in political science, and he works as a professor at a local university. His wife works at the university, too. They have three young children in the local school system, and their family is well known in the community. The man is now running for political office. Are his credentials and experience sufficient for entering public office? Will he be effective in the political office? Some voters might believe that his personal life and current job, on the surface, suggest he will do well in the position, and they will vote for him. In truth, the characteristics described don’t guarantee that the man will do a good job. The information is somewhat irrelevant. What else might you want to know? How about whether the man had already held a political office and done a good job? In this case, we want to think critically about how much information is adequate in order to make a decision based on *logic* instead of *assumptions.*

The following questions, below, one may apply to formulate a logical, reasoned perspective in the above scenario or any other situation:

* What’s happening? Gather the basic information and begin to think of questions.
* Why is it important? Ask yourself why it’s significant and whether or not you agree.
* What don’t I see? Is there anything important missing?
* How do I know? Ask yourself where the information came from and how it was constructed.
* Who is saying it? What’s the position of the speaker and what is influencing them?
* What else? What if? What other ideas exist and are there other possibilities?