Department of Civil Engineering
Innovative Teaching Methods

Activity Title	Mistake led (Intentional) Teaching
Faculty Name/Department	Dr R.Someswaran / Civil
Mapped Course Name & Code	GE3451 – Environmental Sciences and Sustainability
Date	10-05-2023
Benefitted Students (Year / Sem / Dept)	II / IV / ECE
Topic	ECO SYSTEM and BIODIVERSITY
Description	The instructor inserts intentional mistakes into their teaching materials (such as misspellings in their presentations) or their speech to: • Check learners' depth of knowledge. • Make memorable teaching moments. • Keep learners critically engaged. For such a teaching strategy to succeed in helping students, three points must be ensured: • That students clearly understand the symbology and labelling in diagrams, • They have a good grasp of the subject, and • They must study the diagrams carefully, and in detail.
Course Outcomes (CO)	CO1: To introduce the basic concepts of environment, ecosystems and biodiversity and emphasize on the biodiversity of India and its conservation.
Performance Indicator (PI)	7.1.2
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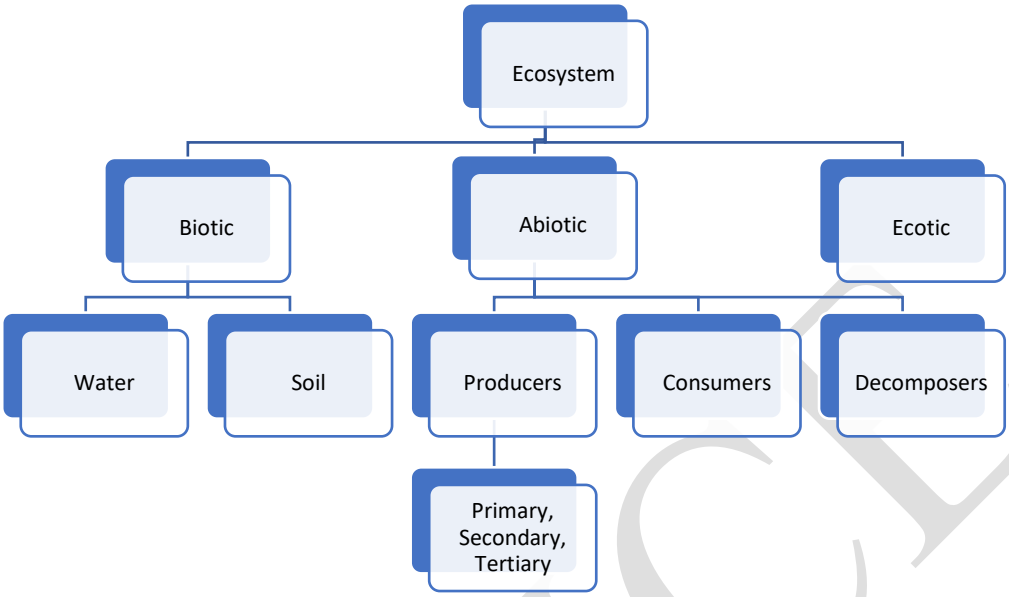
Topics/ Questions:

Q 1. Ecosystem and its components: Find the three errors in the following flow diagram



Q 2. Find the error (Concept & law) in the below paragraph.

Flow of energy in an ecosystem takes place through the food chain and it is this energy flow which keeps the ecosystem going. The most important feature of this energy flow is that it is multidirectional flow. ***Energy flows from the highest trophic level (apex predators) to the lowest trophic level (Primary producers).***

Energy "flows" through the ecosystem in the form of carbon-carbon bonds. When respiration occurs, the carbon-carbon bonds are broken and the carbon is combined with oxygen to form carbon monoxide. All energy comes from the sun and stars, and the ultimate fate of all energy in ecosystems is to be lost as heat and cold. Energy does recycle.

The flow of energy follows the two laws of Thermodynamics:

Ist law of Thermodynamics states that energy can be created and be destroyed but it cannot be transformed from one form to another. The solar energy captured by the green plants (producers) gets converted into biochemical energy of plants and later into that of consumers.
IInd law of Thermodynamics states that energy aggregates as it is used. As energy flows through the food chain, there occurs accumulation of energy at every trophic level. The loss of energy takes
place through respiration, loss of energy in locomotion, running, hunting and other activities. At every level there is about 100% loss of energy and the energy transferred from one trophic level to the other is only about 0%.

Q 3. Identify the errors

Biodiversity is the same kinds of life you'll find in different area—the variety of only animals that make up our natural world. Following are the types of biodiversity.

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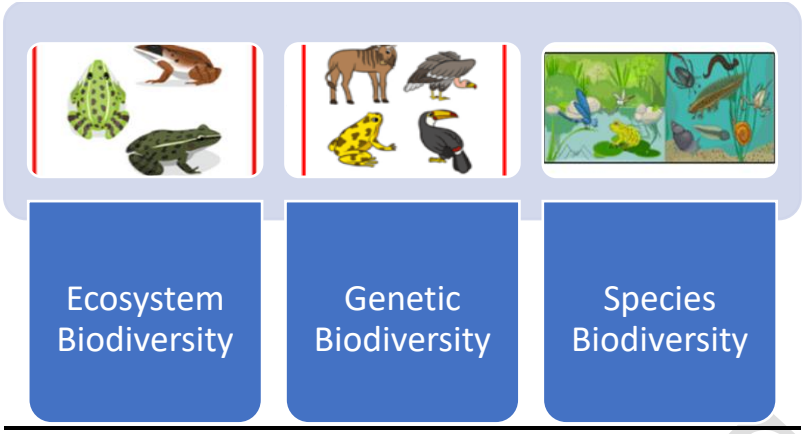

Q 4. Identify the mismatch in Categories of waste

Waste Category	*Description*
Organic waste	*Paper, wood, dried leaves, packaging for relief items etc.*
Combustibles	*Metal, Tins, Cans, bottles, stones, etc*
Non-combustible	*Old medicines, paints, chemicals, bulbs, spray cans, fertilizer and pesticide containers, batteries, shoe polish.*
Toxic waste	*Kitchen waste, waste from food preparation, vegetables, flowers, leaves, fruits, and market places*
Recyclables:	*Paper, glass, metals, plastics.*
Ashes or Dust:	*Residue from fires that are used for cooking.*
Construction waste:	*Rubble, roofing, broken concrete etc*
Hazardous waste:	*Oil, battery acid, medical waste, industrial waste, hospital waste.*
Bulky waste	*Hospital waste such as cloth soiled with blood and other body fluids.*
Soiled waste	*Tree branches, tires etc*

Q 5. Identify the wrong definition:

A. ***Development****: It's a process that creates growth, progress, positive change in economic, environment and social component without changing the resources of the environment.*
B. ***Nominal GDP:*** *This is calculated by dividing the GDP of a country by its population. It provides a measure of the average economic output per person within a country.*
C. ***Sustainability*** *refers to a condition or situation that cannot be maintained over the long term without causing negative consequences, particularly in relation to environmental, social, or economic systems.*
D. ***Economic unsustainability:*** *This refers to economic practices or behaviors that are not viable over the long term, leading to economic instability, inequality, and inefficiencies.*
E. ***LEED (Leadership in Energy and Environmental Design):*** *A green building certification system that evaluates the sustainability of buildings and encourages the use of energy-efficient technologies, renewable energy, and resource conservation.*

Outcome:

1. Learners are more likely to remember when they make a wrong choice and are then prompted to discover the correct solution on their own.
2. Students able to understand the concepts and differences in a memorable way while doing the group activity.