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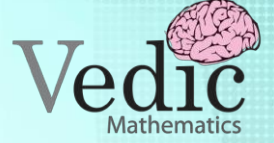
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## Environmental Science & Other Innovations:

### Environmental Science

**Counting Fish Without Catching Them:** Scientists from Australia's national science agency, CSIRO, are developing new techniques to monitor fish populations. Instead of traditional methods, they're using environmental DNA (eDNA) and whole cells shed by fish into the water. By analyzing these genetic and cellular traces, they can identify and count different species. This innovation aims to make marine monitoring faster, cheaper, and more accessible, especially in remote areas.

**Natural Preservatives for Sugarcane Juice:** A joint research team from Australia and Pakistan has found a natural way to extend the shelf life of sugarcane juice, a highly perishable but popular drink. By adding microwave-dried extracts of mint and coriander, they can extend the juice's shelf life from three days to up to 14 days. These natural herbs act as antioxidants, preventing microbial growth and off-flavors, offering a simple and low-cost solution for the global beverage industry.

### Innovations & Technology

**Plastic Waste to Climate Solution:** Scientists at the University of Copenhagen have developed a new material called BAETA, which is made by upcycling ordinary PET plastic bottles and textiles. This material can efficiently capture carbon dioxide (CO<sub>2</sub>) from the air or from industrial exhaust gases. It's a dual-purpose innovation that tackles both plastic pollution and climate change simultaneously,

transforming waste into a valuable tool for carbon capture.

**India's Carbon Capture Program:** India's government is preparing a new carbon capture, utilization, and storage (CCUS) program with a planned cost of approximately ₹38,900 crore (about \$4.7 billion USD). The program aims to capture CO<sub>2</sub> emissions from major industrial sources like power plants, steel mills, and cement factories to help the country meet its net-zero commitments. The program is expected to roll out in phases over the next six years, with government support for research and commercial projects.

**New Investment in Sustainable Real Estate:** The Confederation of Real Estate Developers' Associations of India (Credai) in Pune has partnered with Singapore's Building and Construction Authority to adopt sustainable and innovative building practices. This collaboration will facilitate Green Mark certifications for Indian buildings, promoting super low energy buildings (SLEB) and encouraging the use of advanced construction techniques to help meet India's net-zero goals.

**Promoting Innovation in India:** The first-ever CSIR Startup Conclave 2025 was inaugurated in Lucknow, bringing together over 50 startups supported by the Council of Scientific and Industrial Research (CSIR). The event aims to promote innovation, entrepreneurship, and the transfer of technology from research labs to the market, with a special focus on empowering farmers and entrepreneurs.





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## MCQS

1: What natural ingredients are being used to extend the shelf life of sugarcane juice?

- a) Lemon and ginger
- b) Turmeric and cumin
- c) Microwave-dried extracts of mint and coriander
- d) Basil and rosemary

**Answer:** c) Microwave-dried extracts of mint and coriander

A joint research team from Australia and Pakistan found that "microwave-dried extracts of mint and coriander" can extend the juice's shelf life.

2: What is the new material called that is made from upcycled PET plastic and can capture CO2?

- a) Green-C
- b) Plastisorb
- c) BAETA
- d) Carbon-X

**Answer:** c) BAETA

The news states that scientists have developed a new material called "BAETA, which is made by upcycling ordinary PET plastic bottles and textiles" and can capture carbon dioxide.

3: India's new carbon capture, utilization, and storage (CCUS) program is planned to cost approximately what amount?

- a) ₹10,000 crore
- b) ₹25,500 crore
- c) ₹38,900 crore
- d) ₹50,000 crore

**Answer:** c) ₹38,900 crore

The news report specifies that the new CCUS program has a "planned cost of approximately ₹38,900 crore (about \$4.7 billion USD)."







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**4: What is the primary purpose of the new technique using environmental DNA (eDNA) for marine monitoring?**

- a) To clean polluted water bodies
- b) To track the migration of whales
- c) To identify and count different species of fish
- d) To detect new types of bacteria

**Answer:** c) To identify and count different species of fish

The news explains that scientists are using eDNA to "identify and count different species" of fish, making marine monitoring faster and cheaper.



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