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TODAY'S IMPORTANT CURRENT AFFAIRS

UPSC PRELIMS

Date: 04.07.2025

Source: The Hindu

TODAY'S DROPS OF NEWS:

SUBJECT	IN NEWS
POLITY	---
ECONOMY	---
GEOGRAPHY	---
HISTORY AND ART & CULTURE	---
ENVIRONMENT	---
SCIENCE & TECH	1)'Rare earth' crunch a bigger issue for auto firms than expected. 2)COVID-19 vaccines not linked to sudden deaths: AIIMS doctors.
MISCELLANEOUS	---

SCIENCE & TECH

In news: 'Rare earth' crunch a bigger issue for auto firms than expected.

Rare earth elements: The **rare-earth elements** (**REE**), also called the **rare-earth**

metals or **rare earths**, and sometimes the lanthanides or lanthanoids and scandium and yttrium, which do not belong to this series, are usually included.

Element	Symbol	Applications
Scandium	Sc	Metal alloys for the aerospace industry
Yttrium	Y	Capacitors, metal alloys, lasers, sensors, superconductors
Lanthanum	La	Ceramics, batteries, car catalysts, phosphors, pigments, X-ray
Cerium	Ce	Catalysts, polishing, metal alloys, UV filters
Praseodymium	Pr	Pigments, lightning, lenses, glasses
Neodymium	Nd	Permanent magnets, lasers, catalysts, infrared filters
Promethium	Pm	Beta radiation source, fluid-fracking catalysts, phosphors
Samarium	Sm	High-temperature magnets; nuclear reactor control rods
Europium	Eu	Liquid crystal displays, fluorescent lighting, glass additives, phosphors
Gadolinium	Gd	Magnetic resonance imaging contrast agent, glass additives
Terbium	Tb	Phosphors, electronics
Dysprosium	Dy	High-power magnets, lasers, guidance systems
Holmium	Ho	High-power magnets, nuclear industry
Erbium	Er	Lasers, glass colorant, optical fibers, ceramics
Thulium	Tm	High-power magnets
Ytterbium	Yb	Fiber-optic technology, solar panels, alloys, lasers, radiation source for portable X-ray units
Lutetium	Lu	X-ray phosphors, single crystal scintillators

SCIENCE & TECH

In news: COVID-19 vaccines not linked to sudden deaths: AIIMS doctors.

A vaccine is a biological product intended to protect humans from disease-causing microbes. It reduces your probability of contracting an illness by strengthening your immune system.

1)Inactivated vaccine:

- Use viruses or bacteria that have been killed or rendered non-functional.
- Dead pathogens are identified as foreign invaders by the immune system.
- Production of antibodies and memory cells ensures response to future exposures.

2)Attenuated Vaccine:

- Made from a live pathogen that's been weakened.
- They replicate within the body. mimicking a natural infection
- Stimulating a robust immune response.

3)Toxoid vaccines:

- They are derived from toxins targeting the toxin bacteria produce.
- The immune system recognizes the detoxified toxin as a threat.
- Specific antibodies are produced to neutralise the actual toxin.

4)Subunit vaccine:

- It contains only specific pieces rather than whole organism.
- The immune system responds to the fragments by producing antibodies.
- The body swiftly recognizes and combats it using these antibodies.

5)Conjugate vaccine:

- Fight bacterial infections, caused by bacteria with polysaccharides (sugar) coatings. Develop a carrier protein which is more recognizable to the immune system.
- The immune system responds more vigorously to the protein-linked polysaccharide.

6)Heterotypic vaccine:

- Immunises the host with a different but related pathogens or antigens.
- The Immune system that recognises certain similarities between the vaccine agent and the targeted pathogen.

7)mRNA vaccine:

- Uses synthetic mRNA to produce a protein that mimics a part of the target pathogen.
- The vaccine delivers mRNA sequences into cells.

- Host cells produce the target protein.
- The production of antibodies and the activation of T-cells.
- Formation of memory cells

8)Viral vector vaccine:

- Utilise an altered form of another virus as a vector to provide protection.
- The virus's genetic material is modified.
- Human cells are used to produce the target protein.
- An immune response which produces antibodies

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