

KAPIL SIKKA

**CRACK UPSC
CSE PRELIMS
2022 THROUGH
MCQS**

COURSE HIGHLIGHTS

- This course will cover all the relevant current affairs according to the changing trend of UPSC Prelims.
- Special focus will be on the Environment and Science & Technology section which comprises 30 to 35 questions directly or indirectly.
- Mostly the topics will be from The Hindu, Indian Express, Yojana and Kurukshetra.
- Static syllabus will be covered on the basis of related current news.
- As in 2021 the questions based on sports were asked, this course will cover the sports section from the prelims perspective.

ABOUT ME



- ✓ Mentoring, guiding and teaching UPSC students since 8 years
- ✓ Polity, Indian Economy, Essay, Internal Security & Post Independence India
- ✓ Teaching Political Science Optional



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631. The XENON1T Experiment is associated with:

- a) Quantum Physics
- b) 5G Technology
- c) Dark Matter
- d) Relay Cropping

Answer: c

Explanation:

- The XENON1T experiment is the world's most sensitive dark matter experiment and was operated deep underground at the INFN Laboratori Nazionali del Gran Sasso in Italy.
- Dark energy, the mysterious form of energy that makes up about 68% of the universe, has intrigued physicists and astronomers for decades. Dark energy has been noted as “the most profound mystery in all of science”.

- Everything we see – the planets, moons, massive galaxies, you, me, this website – makes up less than 5% of the universe. About 27% is dark matter and 68% is dark energy.
- While dark matter attracts and holds galaxies together, dark energy repels and causes the expansion of our universe.

632. Consider the following statements with regard to the Pusa Basmati 1979 and Pusa Basmati 1985

1. These are herbicide-tolerant rice varieties developed by the Indian Agricultural Research Institute (IARI)
2. These are Genetically Modified (GM) varieties of rice

Select the CORRECT statement(s) using the codes given below

- a) 1 Only
- b) 2 Only
- c) Both 1 and 2
- d) Neither 1 nor 2

A

- The Indian Agricultural Research Institute (IARI) has developed the country's **first-ever non-GM (genetically modified) herbicide-tolerant rice varieties** that can be directly seeded and significantly save water and labour compared to conventional transplanting.
- The varieties — **Pusa Basmati 1979 and Pusa Basmati 1985** — contain a mutated **acetolactate synthase (ALS) gene** making it possible for farmers to spray Imazethapyr, a broad-spectrum herbicide, to control weeds.

- The new basmati varieties contain an ALS gene whose DNA sequence has been altered using ethyl methane sulfonate, a chemical mutant.

633. Consider the following statements with regard to the Ammonium Nitrate

1. It is a common chemical ingredient of agricultural fertilisers
2. Pure ammonium nitrate is not an explosive on its own
3. It is classified as an reducing agent under the United Nations classification of dangerous goods

Select the CORRECT statement(s) using the codes given below

- | | |
|-----------|------------|
| a) 1 Only | b) 1 and 2 |
| c) 3 Only | d) 2 and 3 |

B

- The Government has amended the rules for Ammonium Nitrate to curb its pilferage, introduce fire-fighting provisions as well as improve ways to handle and store the chemical. These rules have been amended from the lesson learnt from the Beirut Explosion in 2020.
- Ammonium nitrate received at the ports is now required to be removed/transferred to the nearby storage houses situated 500 meter beyond the port area.

- Ammonium Nitrate ($\text{NH}_4 \text{NO}_3$) is a nitrogen-rich white, crystalline chemical which is soluble in water.
- It is a common chemical ingredient of agricultural fertilisers.
- It is the main component of the explosive composition known as ANFO- Ammonium Nitrate Fuel Oil. Pure ammonium nitrate is not an explosive on its own.
- It is classified as **an oxidising content (Grade 5.1)** under the United Nations classification of dangerous goods.

- 634.** Which of the following organizations has unveiled its 'Astro' home robot, which is designed to help customers with a range of tasks like home monitoring and keeping in touch with family?
- a) Flipkart
 - b) Amazon
 - c) Google
 - d) Facebook

B

- Amazon recently unveiled its 'Astro' home robot that comes with a periscope camera to track movements in a given space. The company explains that the robot is “designed to help customers with a range of tasks like home monitoring and keep in touch with family.
- Like most other Echo devices, it can help users with routines and reminders, playing music and TV, and finally, monitoring and surveilling.

- 635.** With regard to the Piezo channels, consider the following statements
1. These are mechano-sensitive ion channels
 2. It has been discovered by David Julius who has been awarded Nobel Prize 2021 in Medicine

Select the CORRECT statement(s) using the codes given below

- a) 1 Only
- b) 2 Only
- c) Both 1 and 2
- d) Neither 1 nor 2

Answer: a

Explanation:

- Two U.S.-based scientists were awarded the Nobel Prize in physiology or medicine for their discovery of the receptors that allow humans to feel temperature and touch.
- David Julius and Ardem Patapoutian focused their work on the field of somato sensation, that is the ability of specialised organs such as eyes, ears and skin to see, hear and feel.

- **Mr. Patapoutian** found separate pressure-sensitive sensors in cells that respond to mechanical stimulation. He discovered two mechanosensitive ion channels known as the Piezo channels.
- **David Julius** discovered TRPV1, a heat-sensing receptor.

- 636.** Recently, Dimorphos was in news. It is a
- a) Asteroid
 - b) Small Moonlet
 - c) Newly discovered star
 - d) Dwarf Planet

B

- **NASA's Double Asteroid Redirection Test (DART)**, the world's first full-scale mission to test technology for defending Earth against potential asteroid or comet hazards has been launched.
- DART will show that a spacecraft can autonomously navigate to a target asteroid and intentionally collide with it – a **method of deflection called kinetic impact**.

- DART's one-way trip is to the **Didymos** asteroid system, which comprises a pair of asteroids. DART's target is the moonlet, **Dimorphos**, which is approximately 530 feet (160 meters) in diameter. The moonlet orbits Didymos, which is approximately 2,560 feet (780 meters) in diameter.
- Moonlet, minor moon, minor natural satellite, or minor satellite is a particularly small natural satellite orbiting a planet, dwarf planet, etc

- 637.** Consider the following statements with regard to the Norovirus
1. It is a group of viruses that leads to gastrointestinal illness
 2. It causes inflammation of the lining of the stomach and intestines
 3. Recently it has been detected in Kerala

Select the correct statements using the codes given below

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

Answer: d

Explanation:

- Kerala has recently confirmed that the highly infectious norovirus was detected in the southern State. The outbreak was detected in 13 veterinary students in the Wayanad district.
- Norovirus is a group of viruses that leads to gastrointestinal illness. It causes inflammation of the lining of the stomach and intestines, in addition to severe vomiting and diarrhoea.

- Sometimes called the "winter vomiting bug" or stomach flu or stomach bug, it is not related to other viruses that cause the flu.
- The virus has a short incubation period of just 24-48 hours, after which patients begin to experience stomach pain, vomiting and diarrhoea.

638. Recently, the Nobel Prize in Physics, 2021 has been awarded for:

1. physical modelling of Earth's climate
2. quantifying variability and reliably predicting global warming
3. discovery of the interplay of disorder and fluctuations in physical systems from atomic to planetary scales

Select the CORRECT answer using the codes given below

- a) 1 and 2
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

D

- The Nobel Prize in Physics 2021 was awarded "for groundbreaking contributions to our understanding of complex systems" with one half jointly to Syukuro Manabe and Klaus Hasselmann "for the physical modelling of Earth's climate, quantifying variability and reliably predicting global warming".
- They demonstrated how increases in the amount of carbon dioxide in the atmosphere would increase global temperatures, laying the foundations for current climate models

- The other half to Giorgio Parisi "for the discovery of the interplay of disorder and fluctuations in physical systems from atomic to planetary scales."
- Parisi "built a deep physical and mathematical model" that made it possible to understand complex systems in fields such as mathematics, biology, neuroscience and machine learning.

639. With regard to the Hypersonic Missiles, consider the following statements

1. Hypersonic Missiles can fly long distances through the atmosphere at speeds greater than five times the speed of sound
2. These are capable of long-distance attacks without being detected by defense systems such as radar and missile shields

Select the INCORRECT statement(s) using the codes given below

- | | |
|-----------------|--------------------|
| a) 1 Only | b) 2 Only |
| c) Both 1 and 2 | d) Neither 1 nor 2 |

D

- Russia has fired its Tsirkon hypersonic cruise missile from a warship in the north of the country.
- Currently, the US, China, and Russia are all competing to develop the most effective long-range hypersonic missiles.
- These advanced weapon systems are capable of long-distance attacks without being detected by defense systems such as radar and missile shields. Moreover, hypersonic missiles can travel at a speed of more than 3,850 miles per hour.

- Hypersonic (literally "excess speed"), in relation to missiles, refers to missiles that can fly long distances through the atmosphere at speeds greater than five times the speed of sound, or faster than Mach 5.

- 640.** Recently, DRDO has successfully flighty tested various systems of Abhyas, its high-speed expendable aerial target (HEAT). Consider the following statements with regard to ABHYAS-HEAT
1. It is being developed at Aeronautical Development Establishment (ADE) under DRDO
 2. It offers a realistic threat scenario for practice of weapon systems
 3. It has been tested at the Integrated Test Range (ITR) in Chandipur, off the coast of Bay of Bengal in Odisha

Select the CORRECT statement(s) using the codes given below

- a) 1 Only
- b) 2 and 3
- c) 1 and 3
- d) 1, 2 and 3

D

- Defence Research and Development Organisation (DRDO) has successfully flighty tested various systems of Abhyas, its high-speed expendable aerial target (HEAT).
- The test was conducted at the Integrated Test Range (ITR) in Chandipur, off the coast of Bay of Bengal in Odisha.
- Abhyas is a High-speed Expendable Aerial Target (HEAT) being developed at Aeronautical Development Establishment (ADE) under DRDO.

- According to information shared by DRDO, it offers a realistic threat scenario for practice of weapon systems. Abhyas is designed for autonomous flying with the help of an autopilot, under development at ADE.
- Abhyas has RCS, visual and IR augmentation systems required for weapon practice.

Thank you 😊

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