



Day 33

Latest Technology with Current Developments

The following topics on the latest technology with current developments have been at the forefront of the news headlines, and as UPSC always attempts to test the basics, a basic awareness is required. Questions from this topic are largely asked from the Current Affairs. According to the trend observed, the facts, their contexts, basic background information can be asked by the UPSC from these topics.

Biotechnology

- [Biotechnology and its Applications](#)
- [Covid-19 Specific Memory T Cells](#)
- [Genetically Modified Seeds](#)
- [microRNA](#)
- [Banana Covid: A Novel Fungal Strain](#)
- [Neutralising Antibodies Against Covid-19](#)
- [Alternative Dwarfing Genes in Wheat](#)
- [ELISA Antibody Kits](#)
- [Z-scan Method for Parkinson's Disease](#)
- [National Biomedical Resource Indigenization Consortium](#)
- [Conversion of Surplus Rice to Ethanol](#)
- [Reverse Vaccinology](#)
- [Sequencing Novel Coronavirus](#)
- [Effect of BCG Vaccine on Covid-19](#)
- [Whiteflies Resistant Variety of Cotton](#)
- [National Biopharma Mission](#)
- [Speeding up Generation of RBCs in the Lab](#)
- [Commercial Cord Blood Banking](#)
- [Biofuel from Microorganisms](#)
- [Genome India Project](#)

Previous Year Question

Q. With reference to the Genetically Modified mustard (GM mustard) developed in India, consider the following statements: (2018)

1. GM mustard has the genes of a soil bacterium that give the plant the property of pest resistance to a wide variety of pests.
2. GM mustard has the genes that allow the plant cross-pollination and hybridization.
3. GM mustard has been developed jointly by the IARI and Punjab Agricultural University.

Which of the statements given above is/are correct?

(a) 1 and 3 only

(b) 2 only

(c) 2 and 3 only

(d) 1, 2 and 3

Q. What is the application of Somatic Cell Nuclear Transfer Technology? (2017)

(a) Production of biolarvicides

(b) Manufacture of biodegradable plastics

(c) Reproductive cloning of animals

(d) Production of organisms free of diseases

Q. With reference to agriculture in India, how can the technique of 'genome sequencing', often seen in the news, be used in the immediate future? (2017)

1. Genome sequencing can be used to identify genetic markers for disease resistance and drought tolerance in various crop plants.
2. This technique helps in reducing the time required to develop new varieties of crop plants.
3. It can be used to decipher the host-pathogen relationships in crops.

Select the correct answer using the code given below:

(a) 1 only

(b) 2 and 3 only

(c) 1 and 3 only

(d) 1, 2 and 3

Q. In the context of the developments in Bioinformatics, the term 'transcriptome', sometimes seen in the news, refers to (2016)

(a) a range of enzymes used in genome editing

(b) the full range of mRNA molecules expressed by an organism

(c) the description of the mechanism of gene expression

(d) a mechanism of genetic mutations taking place in cells

Q. The Genetic Engineering Appraisal Committee is constituted under the (2015)

(a) Food Safety and Standards Act, 2006

(b) Geographical Indications of Goods (Registration and Protection) Act, 1999

(c) Environment (Protection) Act, 1986

(d) Wildlife (Protection) Act, 1972

Q. With reference to the use of nanotechnology in health sector, which of the following statements is/are correct? (2015)

1. Targeted drug delivery is made possible by nanotechnology.
2. Nanotechnology can largely contribute to gene therapy.

Select the correct answer using the code given below:

- (a) 1 only
- (b) 2 only
- (c) Both 1 and 2**
- (d) Neither 1 nor 2

Q. Mycorrhizal biotechnology has been used in rehabilitating degraded sites because mycorrhiza enables the plants to (2013)

1. resist drought and increase absorptive area
2. tolerate extremes of pH
3. resist disease infestation

Select the correct answer using the codes given below:

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3**

Q. Recombinant DNA technology (Genetic Engineering) allows genes to be transferred (2013)

1. across different species of plants
2. from animals to plants
3. from microorganisms to higher organisms

Select the correct answer using the codes given below:

- (a) 1 only
- (b) 2 and 3 only
- (c) 1 and 3 only
- (d) 1, 2 and 3**

Frontier Technologies

- [Industrial Revolution 4.0](#)
- [5G](#)
- [CryptoCurrency](#)
- [Big Data](#)
- [Quantum Technology](#)
- [Internet of Things](#)
- [Artificial Intelligence](#)
- [Interdisciplinary Cyber-Physical Systems](#)
- [Globalization 4.0](#)
- [Nanostructures](#)
- [Frontier Technologies](#)

Previous Year Question

Q. "3D printing" has applications in which of the following? (2018)

1. Preparation of confectionery items
2. Manufacture of bionic ears
3. Automotive industry
4. Reconstructive surgeries
5. Data processing technologies

Select the correct answer using the code given below.

- (a) 1, 3 and 4 only
(b) 2, 3 and 5 only
(c) 1 and 4 only

(d) 1, 2, 3, 4 and 5

Q. What is 'Greased Lightning-10 (GL-10)', recently in the news? (2016)

(a) Electric plane tested by NASA

- (b) Solar-powered two-seater aircraft designed by Japan
(c) Space observatory launched by China
(d) Reusable rocket designed by ISRO

Q. When the alarm of your smartphone rings in the morning, you wake up and tap it to stop the alarm which causes your geyser to be switched on automatically. The smart mirror in your bathroom shows the day's weather and also indicates the level of water in your overhead tank. After you take some groceries from your refrigerator for making breakfast, it recognises the shortage of stock in it and places an order for the supply of fresh grocery items. When you step out of your house and lock the door, all lights, fans, geysers and AC machines get switched off automatically. On your way to office, your car warns you about traffic congestion ahead and suggests an alternative route, and if you are late for a meeting, it sends a message to your office accordingly. (2018)

In the context of emerging communication technologies, which one of the following terms best applies to the above scenario?

- (a) Border Gateway Protocol
(b) Internet of Things
(c) Internet Protocol
(d) Virtual Private Network

Q. In the context of digital technologies for entertainment, consider the following statements: (2019)

1. In Augmented Reality (AR), a simulated environment is created and the physical world is completely shut out.
2. In Virtual Reality (VR), images generated from a computer are projected onto real-life objects or surroundings.
3. AR allows individuals to be present in the world and improves the experience using the camera of smart-phone or PC.
4. VR closes the world, and transposes an individual, providing complete immersion experience.

Which of the statements given above is/are correct?

(a) 1 and 2 only

(b) 3 and 4

(c) 1, 2 and 3

(d) 4 only

Q. Consider the following statements:

A digital signature is

1. an electronic record that identifies the certifying authority issuing it
2. used to serve as a proof of identity of an individual to access information or server on Internet
3. an electronic method of signing an electronic document and ensuring that the original content is unchanged

Which of the statements given above is/are correct?

(a) 1 only

(b) 2 and 3 only

(c) 3 only

(d) 1, 2 and 3

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