



An Institute for Civil Services

IAS PRELIMS 2020

**COMPLETE REVISION OF
CURRENT AFFAIRS
through
500 MCQs**

DAY: 49

**QUESTIONS
with ANSWER HINTS**

GS SCORE

An Institute for Civil Services

IAS 2021-22

GS FOUNDATION

ONLINE CLASSES

LIVE & Interactive

Batch Starts

15

**SEPTEMBER
2020**

Visit:  **www.iasscore.in**



QUESTIONS

1. Recently researchers at IIT Madras developed materials with optoelectronic properties. Consider the following statements in this regard:

1. Optoelectronics is the study of electronic devices that source, detect and control light.
2. Optoelectronic materials find application in optical fibre communication.

Which of the above statements is/are correct?

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

2. Consider the following statements regarding MANAV Human Atlas:

1. It aims at creating a database network of all tissues in the human body from the available scientific literature.
2. It is funded by the Department of Science and Technology.

Which of the above statements is/are correct?

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

3. Russia will deliver the Akula Class Submarine to the Indian Navy by 2025 for a period of 10 years. How will induction of this submarine into Indian Navy benefit India?

1. It uses a nuclear reactor for propulsion, which makes its detection impossible.
2. It will help India in training Arihant and Arihant-class cruise on SSN submarines.

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

4. With reference to the 'The International Energy Agency (IEA)', consider the following statements:

1. It is a Paris based autonomous intergovernmental organization established under the framework of UN.
2. It works for the promotion of alternate energy sources.

Which of the statements given above is/are **incorrect**?

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

5. International Rice Research Institute (IRRI) has recently developed a biofortified crop - 'Golden Rice'. In this regard, consider the following statements:

1. Biofortification improves the nutritional quality of food crops through agronomic practices.
2. Golden Rice is the first purposefully created bio-fortified food to address zinc deficiency.
3. IRRI is an intergovernmental organization dedicated to reduce poverty and hunger through rice science.

Which of the above statements is/are correct?

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

6. Consider the following statements regarding Compressed Bio-Gas:

1. It is exactly similar to the commercially available natural gas in its composition.

2. SATAT Initiative has been launched to set up Compressed Bio-Gas (CBG) production plants.

Which of the above statements is/are correct?

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

7. Consider the following statements regarding the gravitational lensing:

1. It is a natural phenomenon that magnifies light around galaxies.
2. It is based on Einstein's theory of general relativity

Which of the above statements is/are correct?

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

8. Recently, 'K-12 Education Transformation Framework' has been launched in India. In this context, consider the following statements:

1. India is the first country in which this model has been launched.
2. This program has been launched by Google.

Which of the above statements is/are *incorrect*?

- (a) 1 only
(b) 2 only

- (c) Both 1 and 2
(d) Neither 1 nor 2

9. Nipah virus outbreak was reported in Kerala recently. Consider the following statements regarding Nipah virus:

1. It is a zoonotic virus with no human-to-human transmission.
2. It was first recognized during an outbreak among pig farmers in Uganda.
3. Pigs act as a natural host of Nipah virus.

Which of the above statements is/are *incorrect*?

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

10. Consider the following statements:

1. OSIRIS-REx is a planetary science mission for NASA's New Frontiers Program.
2. OSIRIS-REx is the first ever mission to collect a sample from an asteroid and bring it to Earth.

Which of the above statements is/are correct?

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

GS MAINS

FOUNDATION 2021

BASIC TO ADVANCE

①

GS Mains
Paper 1, 2,
3, 4
& Essay

②

GS Mains
Test Series

③

Ethics
Test Series

④

Essay
Test Series

⑤

2 Years
Contemporary
Issues
Covered

⑥

Study
Material

BATCH STARTS**15 SEPTEMBER, 2020****PROGRAMME FEE** ₹ 65,000 + GST**DURATION** 15 September, 2020 to 15 March, 2021**TIMINGS** 5:00 PM to 8:30 PM (4 Hrs. Daily)www.iasscore.in

ANSWER HINTS

Answer Key

| | | | | |
|----------|----------|----------|----------|-----------|
| Q. 1 (c) | Q. 3 (c) | Q. 5 (a) | Q. 7 (c) | Q. 9 (d) |
| Q. 2 (a) | Q. 4 (a) | Q. 6 (c) | Q. 8 (c) | Q. 10 (a) |

1. Correct Option: (c)

Explanation:

- Both statements are correct

Supplementary notes:

Optoelectronics

- Recently researchers at IIT Madras developed material with properties suitable for quantum **optoelectronics (the study and application of electronic devices that source, detect and control light)**
- Materials such as tungsten diselenide (WSe₂) and molybdenum diselenide are being studied keenly for their opto-electronic properties – a combination of optics and electronics.
- A key property of these materials is photoluminescence, in which the material absorbs light and re-emits it as a spectrum.
- Researchers from IIT Madras have found a way of enhancing this property about 30 times in tungsten diselenide, by drop-casting gold nanoparticles on to a two-dimensional film.
- When an electron in a semi-conductor jumps from the valence to the conduction band, it leaves behind a shadow called a “hole.” The electron in the conduction band and the hole in the valence band can bind together and form a composite object (or pseudo-particle) known as an exciton. Photoluminescence in tungsten selenide is a result of such excitons.
- There can be two ways in which an exciton can form – when the spins of the component electron and hole are opposite to each other and when they are aligned in the same direction. The former is called a bright exciton and the latter, a dark exciton.
- When they dropped gold nanoparticles on the surface of the monolayer tungsten diselenide,

they find that the dark excitons couple to the surface fields generated and recombine to give off light quanta. Thus, the dark excitons are “brightened” with the help of the gold nanoparticles.

- Optoelectronics finds application in various fields like:**

- Solar Cells/Photovoltaic Cells, which is the direct conversion of light into electricity.
- Laser Diodes- using stimulated emission are applied in compact disc (CD) players, laser printers, remote-control devices, and intrusion detection systems.
- Light Emitting Diodes- using electroluminescence emits light when current flows through it.
- Optical Fiber- where data is transmitted in the form of light particles or photons that pulse through a fiber optic cable**

2. Correct Option: (a)

Explanation:

- Statement 2 is incorrect:** It is funded by the Department of Biotechnology.

Supplementary notes:

MANAV Human Atlas

- The project aims to create an open and interactive atlas of human biology, compiling, curating and synthesizing data at the molecular, cellular, tissue and organismic level from scientific literature and public databases.
- For the first time, Indian scientists will be mapping every single tissue of the human body to have a deeper understanding of the roles of tissues and cells linked to various diseases.

- With the twin objective of creating a curated research database on human biology and introducing young Indian brains to the world of biological sciences, **the project will be funded by Department of Biotechnology.**
- This one-of-a-kind mega-project aims to create a unified human atlas by mapping the molecular details of every cell, tissue and organ in the human body by curating all the available information present in scientific literature and public databases.
- It will be executed by two of India's major research Institutes, Indian Institute of Science Education and Research (IISER), Pune, and National Center for Cell Sciences (NCCS), Pune.
- It has been proposed that via a citizen-science approach, around 3 – 5 lakh students enrolled in various biological courses in India can be made a part of achieving this goal.
- While undergraduate and post-graduate students can be trained to extract and collate information at the organ, tissue, cellular and molecular level from published literature for making the human atlas, young researchers and senior scientists can keep a check on the quality of collated data.
- The project aims to capture the human physiology in two stages – in a normal stage and in a disease stage.

3. Correct Option: (c)

Explanation:

- **Both statements are correct**

Supplementary notes:

Akula Class Submarines

- **The Akula Class Submarine uses a nuclear reactor for propulsion, allowing it to remain underwater for an extended period of time which makes its detection impossible.**
- This class of Submarine can be used for multiple tasks like hunting enemy submarines, intelligence surveillance etc.

Benefits

- **It will help India in training Arihant and Arihant-class cruise on SSN submarines.**
- **It can be deployed at important focal points in Indian Ocean and thus India will be able to enjoy strategic dynamic of the region. Also, the submarine will have a deterrent impact.**

- Induction of this SSN will make India an Indian Ocean Power with full spectrum of operational capabilities.
- The submarine will act as a supreme board for India's indigenous SSN development program as it will provide clues on submarine designs, nuclear submarine operation and maintenance etc.
- It is also the symbol of deep Indo-Russia relations as no two other countries in the world have exchanged any nuclear element in defence armament yet.

4. Correct Option: (a)

Explanation:

- **Statements 1 is incorrect:** The International Energy Agency (IEA) is a Paris-based **autonomous intergovernmental organization established in the framework of the Organisation for Economic Co-operation and Development (OECD)** in 1974 in the wake of the 1973 oil crisis.

Supplementary notes:

International Energy Agency (IEA)

- The International Energy Agency (IEA) is a Paris-based **autonomous intergovernmental organization established in the framework of the Organisation for Economic Co-operation and Development (OECD)** in 1974 in the wake of the 1973 oil crisis.
- The IEA was initially dedicated to responding to physical disruptions in the supply of oil, as well as serving as an information source on statistics about the international oil market and other energy sectors.
- The Agency's mandate has broadened to focus on the "3Es" of effectual energy policy: energy security, economic development, and environmental protection. The latter has focused on mitigating climate change.
- The IEA has a broad role in **promoting alternate energy sources (including renewable energy), rational energy policies, and multinational energy technology co-operation.**

5. Correct Option: (a)

Explanation:

- **Statement 2 is incorrect:** Golden Rice is the first purposefully created bio-fortified food to address Vitamin-A deficiency.



An Institute for Civil Services

IAS 2021

GS MAINS ADVANCE

GS Paper 1, 2, 3, 4 + Essay + Mains Test Series

A Solution for 1250 Marks

Online Live Interactive Classes

BATCH-2

STARTS

21 SEPTEMBER

6:00 PM to 8:30 PM

Fee ₹ 42,000 + GST

Off. 1B, 2nd Floor, Pusa Road
Karol Bagh, New Delhi-110005,
(Adjacent to Karol Bagh Metro Gate No. 8)

+91 8448496262

info@iasscore.in

/iasscore



www.iasscore.in

5 Months Course to cover Key concepts of GS Mains paper 1, 2, 3 & 4

Complete coverage of contemporary issues of last two years

Detailed Answer Writing session on each subject

Mains Test Series including 25 Tests (10 Sectional + 3 Contemporary Issues + 8 Full Mock + 4 Essay Mock)

Essay Classes + Essay Practice Workbook

Study Material of Contemporary Issues

- **Statement 3 is incorrect:** IRRI is an independent, nonprofit, research and educational institute.

Supplementary notes:

Golden Rice

- **The International Rice Research Institute (IRRI) and its national research partners have developed Golden Rice to complement existing interventions to address Vitamin A deficiency (VAD).**
- Golden Rice regulatory applications are currently under review in the Philippines and Bangladesh, and Golden Rice will only be made available to the public once all necessary permits have been received.
- Golden Rice is a new type of rice that contains beta-carotene (pro-vitamin A), which is converted into vitamin A as needed by the body and gives the grain its golden color. It is developed through genetic engineering and produces two new enzymes that complete the beta-carotene expression in the rice grain.
- It can be grown just like ordinary rice and varieties containing the GR2E Golden Rice trait have the same yield and agronomic performance as their conventional counterparts.
- **Golden Rice is the first purposefully created bio-fortified food.**
- **Biofortification is the process of improving the nutritional quality of food crops. This can be achieved through agronomic practices, conventional breeding or more advanced biotechnology tools such as genetic engineering and genome editing.** These advanced techniques are used for biofortification when micronutrient content cannot be significantly increased through conventional practices.

International Rice Research Institute (IRRI)

- **The International Rice Research Institute (IRRI) is the world's premier research organization dedicated to reduce poverty and hunger through rice science;** improving the health and welfare of rice farmers and consumers; and protecting the rice-growing environment for future generations.
- **IRRI is an independent, nonprofit, research and educational institute,** founded in 1960 by the Ford and Rockefeller foundations with support from the Philippine government.
- The institute, headquartered in Los Baños, Philippines, has offices in 17 rice-growing

countries in Asia and Africa, and more than 1,000 staff.

6. Correct Option: (c)

Explanation:

- **Both statements are correct**

Supplementary notes:

Bio-gas

- Biogas is produced naturally through a process of anaerobic decomposition from waste / bio-mass sources like agriculture residue, cattle dung, sugarcane press mud, municipal solid waste, sewage treatment plant waste, etc.
- After purification, it is compressed and called Compressed Bio Gas, which has pure methane content of over 95%. **Compressed Bio-Gas is exactly similar to the commercially available natural gas in its composition and energy potential.**
- With calorific value (~52,000 KJ/kg) and other properties similar to CNG, Compressed Bio-Gas can be used as an alternative, renewable automotive fuel. Given the abundance of biomass in the country, Compressed Bio-Gas has the potential to replace CNG in automotive, industrial and commercial uses in the coming years.
- There are multiple benefits from converting agricultural residue, cattle dung and municipal solid waste into CBG on a commercial scale:
- Responsible waste management, reduction in carbon emissions and pollution
- The additional revenue source for farmers
- Boost to entrepreneurship, rural economy and employment
- Support to national commitments in achieving climate change goals
- Reduction in import of natural gas and crude oil
- Buffer against crude oil/gas price fluctuations

SATAT Initiative

- **Recently SATAT Initiative has been launched to set up Compressed Bio-Gas (CBG) production plants** and make available CBG in the market for use in automotive fuels.
- This significant move has the potential to boost the availability of more affordable transport fuels, better use of agricultural residue, cattle dung and municipal solid waste, as well as to provide an additional revenue source to farmers.

- Titled SATAT, the initiative is aimed at providing a Sustainable Alternative Towards Affordable Transportation (SATAT) as a developmental effort that would benefit both vehicle-users as well as farmers and entrepreneurs.

7. Correct Option: (c)

Explanation:

- **Both statements are correct**

Supplementary notes:

Gravitational Lensing

- **Gravitational Lensing is a natural phenomenon that magnifies light around galaxies.**
- The phenomenon occurs when a huge amount of matter, such as a massive galaxy or cluster of galaxies, creates a gravitational field that distorts and magnifies the light from objects behind it, but in the same line of sight.
- This makes dim, faraway objects that otherwise would be undetectable, like an individual star, visible. The effect allows researchers to study the details of early galaxies too far away to be seen otherwise with even the most powerful space telescopes.
- **Gravitational lensing is based on Einstein's theory of general relativity (Mass bend light).**
- Using NASA's James Webb Space Telescope as a sort of time machine, researchers plan to investigate how new stars are born. For this, they will take the help of a natural phenomenon called "gravitational lensing". The programme is called Targeting Extremely Magnified Panchromatic Lensed Arcs and Their Extended Star Formation, or TEMPLATES.

8. Correct Option: (c)

Explanation:

- **Statement 1 is incorrect: This model has been adopted in over 50 countries so far.**
- **Statement 2 is incorrect: This program has been launched by Microsoft.**

Supplementary notes:

K-12 Education Transformation Framework

- **Microsoft has launched its 'K-12 Education Transformation Framework' to facilitate comprehensive digital transformation of schools in India, a model which has been adopted in over 50 countries so far.**

- The framework comprises four pillars -- leadership and policy, modern teaching and learning, intelligent environments and technology blueprint.
- To help school principals initiate their journey of digital transformation, the programme will offer a series of workshops based on each of these pillars. Education leaders in more than 50 countries have already adopted the framework to help plan their learning strategies.
- The framework is aimed at providing education leadership, government decision-makers, teachers and most importantly learners, tools to achieve the ambitious change many schools seek, and to thoughtfully integrate technology in powerful and productive ways.

9. Correct Option: (d)

Explanation:

- **Statement 1 is incorrect: It is a zoonotic virus but human-to-human transmission is also possible.**
- **Statement 2 is incorrect: It was first recognized in 1999 during an outbreak among pig farmers in Malaysia.**
- **Statement 3 is incorrect: Fruit bats of the family Pteropodidae – particularly species belonging to the Pteropus genus – are the natural hosts for Nipah virus.**

Supplementary notes:

Nipah Virus

- **Nipah virus is a zoonotic virus (it is transmitted from animals to humans) and can also be transmitted through contaminated food or directly between people.**
- In infected people, it causes a range of illnesses from asymptomatic (subclinical) infection to acute respiratory illness and fatal encephalitis. The virus can also cause severe disease in animals such as pigs, resulting in significant economic losses for farmers.
- **Nipah virus was first recognized in 1999 during an outbreak among pig farmers in Malaysia.** It was also recognized in Bangladesh in 2001, and nearly annual outbreaks have occurred in that country since. The disease has also been identified periodically in eastern India.
- During the first recognized outbreak in Malaysia, which also affected Singapore, most human infections resulted from direct contact

with sick pigs or their contaminated tissues. Transmission is thought to have occurred via unprotected exposure to secretions from the pigs or unprotected contact with the tissue of a sick animal.

- In subsequent outbreaks in Bangladesh and India, consumption of fruits or fruit products (such as raw date palm juice) contaminated with urine or saliva from infected fruit bats was the most likely source of infection.
- During the later outbreaks in Bangladesh and India, Nipah virus spread directly from human-to-human through close contact with people's secretions and excretions.
- **Fruit bats of the family Pteropodidae – particularly species belonging to the Pteropus genus – are the natural hosts for Nipah virus.** There is no apparent disease in fruit bats. It is assumed that the geographic distribution of Henipaviruses overlaps with that of Pteropus category.
- Currently, there are no vaccines available against Nipah virus.
- **In May 2018, a Nipah virus disease outbreak was reported from Kozhikode district of Kerala, India**

10. Correct Option: (a)

Explanation:

- **Statement 2 is incorrect: It is not the first mission to collect a sample from an asteroid and bring it to Earth. In June 2010 the Japan Aerospace Exploration Agency (JAXA) Hayabusa probe returned asteroid samples to Earth.**

Supplementary notes:

OSIRIS-REx

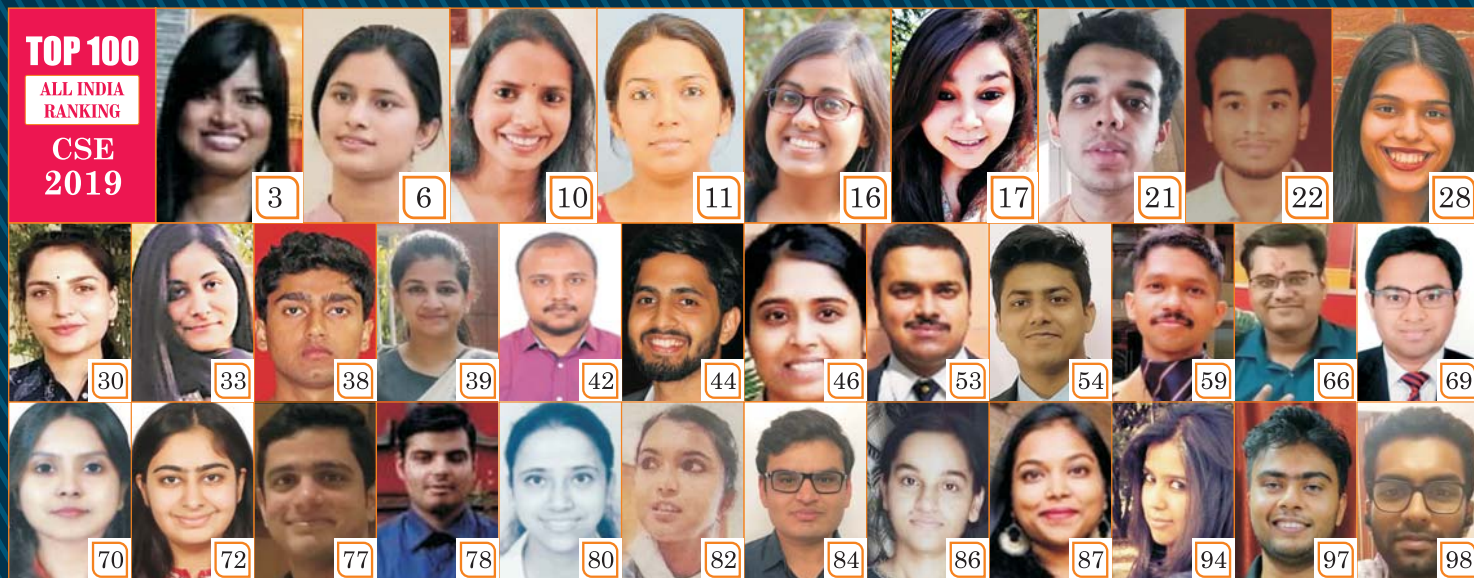
- **OSIRIS-REx is the third major planetary science mission for NASA's New Frontiers Program (after New Horizons launched in 2006 and Juno launched in 2011).**
- OSIRIS-REx is an acronym for "Origins, Spectral Interpretation, Resource Identification, Security-Regolith Explorer." The goal of the mission is to collect a sample weighing 2.1 ounces (59.5 grams) from near-Earth asteroid 101955 Bennu (formerly known as 1999 RQ36) and then to bring the sample to Earth.
- The mission, developed by scientists at the University of Arizona, will give scientists more information about how the early solar system formed and about how life began. It will also help us better understand asteroids that could impact Earth in the future.
- **OSIRIS-REx will be the first U.S. mission to collect a sample from an asteroid and bring it to Earth however it is not the first mission to ever visit an asteroid and attempt a sample return — In June 2010 the Japan Aerospace Exploration Agency (JAXA) Hayabusa probe returned asteroid samples to Earth.**
- OSIRIS-REx won't land on Bennu to gather the sample, but it will get very close. After descending toward the surface, the spacecraft's robotic arm, the TAGSAM instrument, will actually make contact with the asteroid. TAGSAM will release a burst of nitrogen gas to kick up regolith particles (loose dust and rocks) from the surface. The sampler head at the end of the robotic arm will collect the regolith.



TOP 100

ALL INDIA RANKING

CSE 2019



TOP 100

ALL INDIA RANKING

CSE 2018



TOP 100

ALL INDIA RANKING

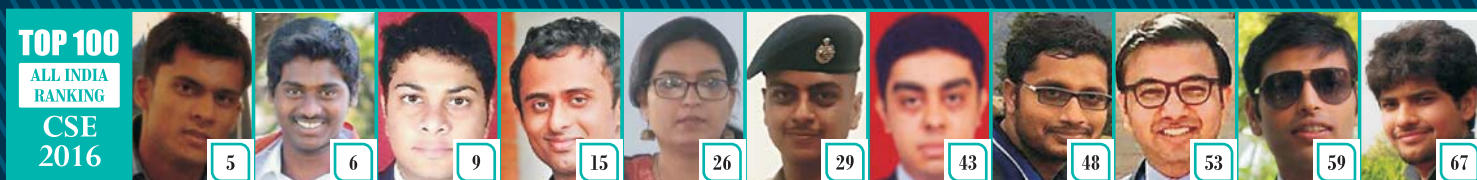
CSE 2017



TOP 100

ALL INDIA RANKING

CSE 2016



TOP 100

ALL INDIA RANKING

CSE 2015



SUCCESS IS A PRACTICE WE DO!