5 April 2020 UPSC Exam Comprehensive News Analysis

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A. GS 1 Related

Nothing here for today!!!

B. GS 2 Related

Category: HEALTH

1. ICMR issues rule book on 'large outbreaks'

Context:

- The Indian Council for Medical Research (ICMR) public **guidelines to manage a large outbreak and guidelines on use of rapid antibody test kits.**

Background:

- The Health Ministry has stated that **30% (about 1,000 positive cases spread across 17 States) of India's total case count is attributable to one event**, the Tablighi Jamaat gathering in Delhi.
- Hence India's official position is that there is **no evidence of community transmission in the country.**

Details:

- The plan for large outbreaks, specifies:
    - **Active surveillance** for cases and contacts in the identified geographic zone
    - **Expansion of laboratory capacity for testing** of all suspect cases of high risk contacts and Sever Acute Respiratory Illness cases
    - **Operationalizing surge capacities created for isolation** (COVID-19 hospitals/COVID-19 dedicated blocks) to hospitalize and manage all suspect/confirmed cases
    - Implementing physical distancing measures with **strict perimeter control**
    - Providing **chemoprophylaxis with hydroxy-chloroquine to all asymptomatic healthcare workers** and asymptomatic household contacts of laboratory confirmed cases.
- Given the increasing need for more testing and the fact that hundreds of antibody kit manufacturers have been approved in India to offer tests, ICMR has also issued detailed **guidelines on the use of rapid antibody testing kits**.

Antibody testing kits:

- The **real-time RT-PCR kits are used to detect an ongoing infection**. Unlike RT-PCR kits, the **antibody testing kits can indicate if a person has ever been infected** by the virus and gives authorities an estimate of whether there are **asymptomatic carriers of the infection** in a community.
- The antibody testing kits can **give results within 15 minutes to two hours**.
- However, testing negative via an antibody kit doesn't automatically rule out infection and **needs to be supplemented by a PCR test.**

Significance:

- Though the number of cases and the pattern seem to indicate that the virus spread is under control, Indian Council for Medical Research (ICMR) has issued public guidelines for the management of a large outbreak as a **precautionary measure.**
- Knowing the proportion of asymptomatic carriers to positive cases gives an insight into the infectivity of the disease, transmission patterns and helps **prepare for the long-term management of the epidemic.**

C. GS 3 Related

Category: SCIENCE AND TECHNOLOGY

1. Coronavirus: TCS uses AI for drug discovery

Context:

- **Drug development** for the novel coronavirus (SARS-CoV-2).

Background:

Target proteins:

- The genome of the novel coronavirus codes for several proteins that have important roles in entry of the virus into the host cell, its replication, assembly and host-pathogen interactions.

- These **proteins which help the virus perform its crucial functions are common targets for drug development.**
- Among these drug targets are the **spike protein**, which helps the virus attach itself to the host cell and enter it, and **viral proteases** which help it replicate.

Role of protease protein:

- The protease protein is important for the **virus's replication and hence survival.**
    - The viral RNA synthesises two long polyproteins when it infects human cells. The **role of the protease protein is to cut the polyproteins to individual proteins**, so that new viruses can be assembled.

Details:

- Scientists from TCS Innovation Labs are harnessing the power of **artificial intelligence (AI) to identify new molecules** which might have the potential to target specific parts of the novel coronavirus (SARS-CoV-2).
- The **viral protease protein was the key drug target** in this study.
- Using this method, the scientists have identified **31 candidate small molecules**, which may serve as inhibitors of the protease.

Significance:

- Drug discovery is a complex process, needing several layers of validation before the drug may come in use. In the current study, the researchers have **brought down the time taken for the initial step of designing suitable candidate molecules** for testing from years to just a week, reinforcing the **power of AI in handling huge datasets.**

2. Study lists 69 existing drugs to target novel coronavirus

Context:

- Study of the novel coronavirus (SARS-CoV-2) and effectiveness of available drugs.

Background:

- When virus invades human cells, it **takes over the cells' molecular machinery to replicate itself** because it cannot do this on its own.
- If these molecular machines of the viruses can be inhibited, Viruses cannot survive.

Details:

- In an unprecedented move nearly 100 scientists from across the globe worked together to study the genes of the novel coronavirus (SARS-CoV-2).
- The team identified and studied 26 coronavirus genes that help in the production of proteins that help the virus attach to the human proteins.
    - The **proteins of the virus must attach to the human proteins to cause the infection**.
- The team also studied human proteins and found 332 SARS-CoV-2 and **human protein interactions.**
- The team has listed the human proteins that can be targeted by drugs to fight the infection. This study has helped **publish a list of drugs that can be repurposed to treat COVID-19.**
- The suggested drugs include some common in use drugs.

- o Entacapone used to treat Parkinson's disease
- o **Antiviral medication named ribavirin, which was administered to Nipah patients** in Kerala during the 2018 outbreak
- o **Chloroquine, an antimalarial drug**
- o Metformin, used to treat diabetes.

Category: INFRASTRUCTURE

1. Lights-off event will not harm grid: Ministry

Context:

- The Power Ministry's clarification that the mass switching off of electric lights will not harm India's power grid.

Background:

- There are **apprehensions that the lights-off event can lead to disruptions in power supply**.
- There are concerns that the **sudden dip and spike in supply may cause instability in the grid and fluctuation in voltage and current frequency** which may harm the electrical appliances.

Details:

- The power ministry assuaging fears has stated that the electricity grid is robust and stable and adequate **arrangements and protocols were in place to handle the variation in demand**.

For more information refer to the 4th April 2020 Comprehensive News Analysis.

- Electricity authorities after having studied the power consumption patterns across India have come up with a plan to handle the expected dip and surge in consumption.
- Power System Operation Corporation (Posoco) Ltd, a public sector company in charge of managing the grid load, has stated that it **expects a dip and surge of the order of 12 to 14 gigawatts, which is roughly 10% of electricity consumed** at any given point in time in India.

Power plant characteristics:

- Different types of power plants have different abilities to handle sudden increase or decrease in load. The control we have on these plants varies.
- Unlike, **coal fired plants and nuclear plants, where it is hard to suddenly reduce or increase their power generation**, **hydro plants and gas fired plants are capable of catering to fast changing loads** more effectively.

Measures being taken:

- Based on the inherent characteristics of different power plants, **Power System Operation Corporation (Posoco) Limited** has come up with a strategy to **use hydro and gas resources to help the grid retain its stability.**

Category: ECONOMY

1. Consumption, external trade to see impact

Context:

- KPMG's report titled **Potential impact of COVID-19 on the Indian economy**.

Background:

- India's real GDP decelerated to its lowest in over six years in third quarter of 2019-2020, and the **outbreak of the COVID-19 poses fresh challenges**.

Details:

- The steps taken to contain the spread of coronavirus, such as the **nationwide restrictions** for 21 days have **brought economic activity to a standstill** and could **impact both private consumption and investment.**
- Though **Indian businesses remain largely insulated from the global supply chain disruption** caused by the outbreak due to relatively lower reliance on intermediate imports, their **exports to COVID-19 infected nations could take a hit.**
- According to KPMG's report India's private consumption, investment and external trade, the three major contributors to **GDP will get affected.**

D. GS 4 Related

Nothing here for today!!!

E. Editorials

Category: ECONOMY

1. Bounty from oil plunge

Context:

- Global crude oil price decline.

Background:

- **Saudi Arabia and Russia under the OPEC+ framework** had fallen out on agreements to cut the production of crude oil.
- **Brent crude prices** (**benchmark for crude oil**) have been declining in an unprecedented manner, touching an 18-year low.
- Following an intervention from the U.S. president stating the possibility of large production cuts, the prices have risen moderately.

Details:

U.S. stakes:

- Though there is still a lot of oil in the world left to be extracted, the **cost of extraction is increasing**. Profits that companies make in selling oil depend directly on the cost of extraction, which is **influenced by factors such as the terrain where the oil field is located.**
- **The U.S. is a major producer of the shale gas**, which is extracted through the process of fracking. **Fracking,** which helps extract shale gas from rocks involves **a lot of input cost,** making shale gas costly.
- The spike in production by Saudi Arabia and Russia would drive down oil prices in line with the traditional concepts of supply and demand.
- This would make **Shale gas costlier than oil sources** and lead to **reduction in the demand for shale.**
  - A January 2020 Haynes and Boone's Oil Patch Bankruptcy Monitor report notes that since 2015, when oil prices began to drop, 208 North American producers have filed for bankruptcy involving $121.7 billion in aggregate debt.

COVID-19's impact on crude prices:

Reduction of demand:

- The measures taken to limit the spread of COVID-19 have brought the global economic activity to a near-complete halt. **The demand for fuel has dropped significantly**.
- Even before the virus-induced lockdown, **global economic slowdown** was already in play. The volume growth in consumption was marginally lower.

Indian oil prices:

- Inspite of the falling crude oil prices and the subsequent fall in India's oil bill, **Indian prices of petrol and diesel have remained steady**.
- The Central government has reacted to the declining international oil prices by **raising excise duties**. There have been a series duty increases over the past few years.

Reasons for excise duty hike:

- The government has been battling a **fiscal deficit problem**, since the Goods and Services Tax has not yielded robust collections.
- With international oil prices declining, the government has used the opportunity to keep end-user fuel prices stable while **increasing its collection of excise duty.**

For more information on this topic refer to 10 March 2020 Comprehensive News Analysis.

F. Prelims Facts

Nothing here for today!!!

G. Tidbits

Nothing here for today!!!

H. UPSC Prelims Practice Questions

Q1. The National Strategy for Artificial Intelligence report has been prepared by:

a. NITI Aayog
b. Ministry of Electronics & Information Technology
c. Ministry of Science and Technology
d. PM scientific advisory council

Answer: Option a

Explanation:

- NITI Aayog has prepared a discussion paper on National Strategy on Artificial Intelligence identifying following five sectors to befocused upon: Healthcare, Agriculture,Education, Smart Cities and Infrastructure, Smart Mobility and Transportation.

Q2. Which of the following types of power plants are capable of handling sudden changes in demand loads?

1. Coal based power plants
2. Wind turbine power plant
3. Gas fired power plants
4. Hydropower based plants
5. Nuclear power plants
6. Solar photovoltaic based plants

Options:

a. 1,3 and 5
b. 2,3,4 and 6
c. 3 and 4
d. 1 and 5

Answer: Option c

Explanation:

- Different types of power plants have different abilities to handle sudden increase or decrease in load. The control we have on these plants varies.
- Unlike, coal fired plants and nuclear plants, where it is hard to suddenly reduce or increase their power generation, hydro plants and gas fired plants are capable of catering to fast changing loads more effectively.
- The solar photovoltaic and wind turbine based power plants too are not capable of handling fluctuating demands.

Q3. Which of the following constitutes the largest share among the renewable energy capacity in India?

a. Hydroelectricity
b. Solar power
c. Wind power
d. Bio energy

Answer: Option a

Explanation:

Previously hydroelectric power plants above 25MW (classified as large hydro power plants) were outside the definition of renewable energy. With the reclassification and inclusion of hydro plants above 25MW also under renewable energy, hydroelectricity now constitutes the largest proportion of renewable energy capacity in India. It is followed by wind energy and solar power in terms of installed capacity.

Q4. Which of the following states has the largest percentage of forest cover with respect to its total geographical area?

a. Madhya Pradesh
b. Arunachal Pradesh
c. Mizoram
d. Assam

Answer: Option c

Explanation:

- While Madhya Pradesh has the largest area of forest cover, it is Mizoram which has the largest percentage of forest cover with respect to its total geographical area. It stands around 85% according to the India State of Forest Report (ISFR) of 2019.

I. UPSC Mains Practice Questions

1. As against the unfounded fear of Artificial intelligence leading to job losses, this emerging technology can create better job oppurtunities and increase productivity. Analyze. Discuss the steps being taken by the government to mainstream Artificial intelligence technology in India. (15 marks, 250 words)
2. India's efforts to meet the growing demand for energy, should be accompanied with India's commitment to achieving universal access to modern, affordable, cleaner and sustainable energy. Comment. (10 marks, 150 words)