

## 1. Kailash – Mansarovar Yatra Route from Dharchula to Lipulekh

### Why in News?

- The Border Roads Organisation (BRO) has completed the construction of road from Dharchula to Lipulekh along the China Border, famously known as Kailash-Mansarovar Yatra Route.

### Darchula – Lipulekh Road:

- The road is an extension of Pithoragarh-Tawaghat-Ghatiabagarh road. In this 80 Km road, the altitude rises from 6000 feet to 17,060 feet.
- It originates from Ghatiabagarh in Uttarakhand and terminates at Lipulekh Pass, the Gateway to Kailash Mansarovar.
- With the completion of this project, the arduous trek through treacherous high-altitude terrain can now be avoided by the Pilgrims of Kailash Mansarovar Yatra and the period of journey will be reduced by many days.

### Significance:

- At present, the travel to Kailash Mansarovar takes around two to three weeks through Sikkim or Nepal routes.
- Lipulekh route had a trek of 90 Km through high altitude terrain and the elderly yartris faced lot of difficulties.
- Now, this yatra will get completed by vehicles.

### Border Roads Organisation (BRO):

- The BRO develops and maintains road networks in India's border areas and friendly neighbouring countries and functions under the Ministry of Defence.
- It is entrusted for construction of Roads, Bridges, Tunnels, Causeways, Helipads and Airfields along the borders.
- Officers from the Border Roads Engineering Service (BRES) and personnel from the General Reserve Engineer Force (GREF) form the parent cadre of the Border Roads Organisation.
- It is also staffed by officers and troops drawn from the Indian Army's Corps of Engineers on extra regimental employment.
- The BRO operates and maintains over 32,885 kilometers of roads and about 12,200 meters of permanent bridges in the Country.

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## 2. Tiger Population Rises in Sunderbans

### Why in News?

- The latest estimation of tiger numbers in the Indian Sunderbans indicates an increase in the population of big cats.
- According to the West Bengal Forest Department, the tiger count for the year 2019-20 rose to 96, from 88 in 2018-19.

### Highlights:

- The Sunderbans delta, spread over India and Bangladesh, is the only mangrove forest in the world inhabited by tigers.
- The increase in the number by eight was significant as it was the biggest annual jump reported from the Sunderbans.
- Previously, the highest yearly increase of tigers in the Sunderbans had been seven. The estimation revealed that of the 96 tigers, 23 were identified as male and 43 as female, while the sex of 30 big cats could not be determined. The survey also revealed the presence of 11 tiger cubs.
- The Sunderban mangrove forest is spread over 2,585 sq. km and includes the Sundarban Tiger Reserve and the 24 Parganas (South) Division. While 23 tigers were found in 24 Parganas (South) Division, 73 big cats were recorded inside the four divisions of the Sunderban Tiger Reserve.
- Estimation of the number of tigers in the Sunderbans, a world heritage as well as a Ramsar site, has always been a challenge because of the difficult terrain that comprises dense mangrove forests, with creeks and rivulets, and floods twice a day during the high tides.

### Sunderbans:

- The Sundarbans is a mangrove area in the delta formed by the confluence of the Ganges, Brahmaputra and Meghna Rivers in the Bay of Bengal.
- It spans from the Hooghly River in India's state of West Bengal to the Baleswar River in Bangladesh. It comprises closed and open mangrove forests, agriculturally used land, mudflats and barren land, and is intersected by multiple tidal streams and channels.
- Four protected areas in the Sundarbans are enlisted as UNESCO World Heritage Sites, viz Sundarbans National Park, Sundarbans West, Sundarbans South and Sundarbans East Wildlife Sanctuaries.

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### 3. Hydroxychloroquine Fails Another Test

#### Why in News?

- Anti-malaria drug hydroxychloroquine has failed another test to check its efficacy in treating the coronavirus disease (Covid-19), with patients admitted to hospitals showing no change in their conditions after being administered the medicine.

#### Highlights:

- The observational study showed that doctors reported that the use of hydroxychloroquine neither lessened the need for patients requiring breathing assistance nor the risk of death.
- The study found that the risk of intubation or death was not significantly higher or lower among consecutive patients who were given hydroxychloroquine compared to those who were not given the drug.
- The findings come two weeks after the US Food and Drug Administration warned the public against using hydroxychloroquine and chloroquine without prescription or supervision because of reports of “serious heart rhythm problems” in patients treated with the malaria drugs.
- Hydroxychloroquine is the only drug approved for treating hospitalised Covid-19 patients in India, where it is given in combination with the antibiotic azithromycin. It is also being given to health care workers and people at risk of exposure as a prophylaxis for Covid-19, which leads to potentially fatal complications in some patients.
- The cheap and widely available drug that has been used to treat malaria for at least a century emerged as the most sought-after medicine after two preliminary trials in Covid-19 patients in China in March showed it boosted recovery and lowered the severity of Covid-19.
- Apart from malaria, hydroxychloroquine is prescribed for rheumatoid arthritis and lupus. Several countries including India, China, France, South Korea, Italy, India and the United States are using anti-malarials to treat people severely ill with Covid-19.
- Anti-malarials work by decreasing the acidity in endosomes, which are compartments within cells that some viruses hijack to enter the cell and cause infection. The doorway used by Sars-Cov-2 is the spike protein on its surface that it uses to attach to a receptor on the surface of human cells, but studies in cell culture have suggested chloroquines have some activity against the virus.

- Observational studies aren't considered as conclusive as randomised-controlled trials because clinicians often use several drugs and therapies to treat patients. More rigorous clinical trials are needed to establish the effectiveness of the drug.

#### **4. Au-Si Interface Photodetector**

##### **Context:**

- The scientists from the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) have recently fabricated a wafer-scale photodetector (thin slice-based) device, using gold-silicon interface. It is an autonomous institute under the Department of Science and Technology (DST).

##### **Key Points:**

- They have fabricated gold (Au)-silicon (n-Si) interface, which shows high sensitivity towards light demonstrating the photodetection action.
- It is brought about by galvanic deposition (a technique for electroplating of metals) wherein water-based solutions (electrolytes) are used, which contain the metals to be deposited as ions.
- The nanostructured Au film was deposited on top of p-type silicide (compound that has silicon with more electropositive elements), which acts as a charge collector.
- It enhances the performance of the fabricated detector through trapping the incoming light.
- The detector exhibits a rapid response of 40 microseconds and can detect low light intensities.
- The device covers a broad spectral range from Ultraviolet to Infrared and shows excellent uniformity throughout the entire active area with less than 5% variation in response.
- The **Photodetectors** are used for a wide variety of applications like, Controlling automatic lighting in supermarkets, Detecting radiation from the outer galaxy and in security-related applications.
- Due to high material cost and the intricate fabrication processes, photodetectors become unaffordable for daily applications.

##### **Advantages of Au-Si Interface:**

- The process of fabricating a detector takes only a few minutes, making it a **Quick and Simple** process.

- Being a solution-based technique, the method is **Highly Economical** and enables large-area fabrication without compromising the detector response.
- The device can help detect weak scattered light as an indication of unwanted activity.
- The detector **Operates in self-powered Mode**, which means the device does not require external power for its operation.
- With a commonly available protective coating, the device shows a long-term environmental stability, be under harsh conditions.

## **5. Prime Minister's Research Fellowship (PMRF) Scheme**

### **Why in News?**

- The Ministry of Human Resources and Development has recently carried out various amendments in the Prime Minister's Research Fellowship Scheme to boost research in the country.

### **Highlights:**

- Previously, the fellowship scheme was open only for students from Central Universities, IITs, IISc, NITs, IISERs, IEST and IIITs. Now, students from any recognized university can apply for the fellowship.
- The requirement of GATE score has also been reduced from 750 to 600. As per new guidelines there will be two channels of entries i.e **direct entry and lateral entry**.
- In lateral entry, the students, who are pursuing PhD in PMRF granting institutions, and have completed 12 months or 24 months as per certain requirements, can also apply to become fellow under the scheme.
- The National Institute of Technologies (NITs) which appear in top 25 institutions in the National Institute Ranking Framework (NIRF) ranking can also become PMRF Granting institution.
- To boost research a Division is being created in the MHRD with the name of "Research and Innovation Division". It will be headed by a director who will be coordinating research work of various institutions coming under MHRD.

### **About Prime Minister's Research Fellowship (PMRF) Scheme:**

- To attract meritorious students into research, Government of India, in 2018 launched Prime Minister's Research Fellows (PMRF) Scheme, which offers direct admission to such students in the Ph.D programmes in various higher educational institutions in the country.

- It is aimed at attracting the talent pool of the country to doctoral (Ph.D.) programmes for carrying out research in cutting edge science and technology domains, with focus on national priorities.
- The institutes which can offer PMRF include all the IITs, IISERs, Indian Institute of Science, Bengaluru and some of the top Central Universities/NITs that offer science and/or technology degrees.
- A fellowship of Rs.70,000/- per month for the first two years, Rs.75,000/- per month for the 3rd year, and Rs.80,000/- per month in the 4th and 5th year is provided under the scheme.
- A research grant of Rs. 2 lakh per year is provided to each of the Fellows for a period of 5 years to cover their academic contingency expenses and for foreign/national travel expenses.

