

GEOGRAPHY

PRELIMS BASED REVISION

<u>PART - 1</u>





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50 IMPORTANT TOPICS FOR PRELIMS 2023

SCHEDULE

27-03-2023	Monday	Polity	06-04-2023	Thursday	Geography
28-03-2023	Tuesday	Science	07-04-2023	Friday	Economy
29-03-2023	Wednesday	Environment	08-04-2023	Saturday	History
30-03-2023	Thursday	Geography	09-04-2023	Sunday	HOLIDAY
31-03-2023	Friday	Economy	10-04-2023	Monday	Polity
01-04-2023	Saturday	History	11-04-2023	Tuesday	Science
02-04-2023	Sunday	HOLIDAY	12-04-2023	Wednesday	Environment
03-04-2023	Monday	Polity	13-04-2023	Thursday	IR
04-04-2023	Tuesday	Science	14-04-2023	Friday	Economy
05-04-2023	Wednesday	Environment	15-04-2023	Saturday	Schemes
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Starting from **27th March** 2023 on YouTube Channel

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Solution Strategy Strategy





Fujiwhara Effect

- Any <u>interaction between tropical storms formed around the same</u> <u>time in the same ocean region</u>
- <u>Conditions –</u>
- 1. Centers or eyes at less than 1,400 km
- Intensity that could vary between a depression (wind speed under 63 km per hour)
- 3. Super typhoon (wind speed over 209 km per hou0r
- Note Sometimes ,the two systems could merge, <u>especially when</u> <u>they are of similar size and intensity</u>, to form a bigger storm.
- Fujiwhara effect was identified by Sakuhei Fujiwhara, a Japanese meteorologist whose first paper recognising the Fujiwhara cases was published in 1921. The first known instance of the effect was in 1964 in the western Pacific Ocean when typhoons Marie and Kathy merged.
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Fujiwhara Effect









Elastic Interaction (EI): Interaction of vortices (storms) of same or different sizes, resulting in changes only in the direction of motion. This is the most commonly seen interaction

Partial Straining-Out (PSO): Interaction of vortices of unequal sizes. Part of the smaller vortex lost to the atmosphere.

t Complete Straining-Out (CSO): Interaction of vortices of unequal sizes. The smaller vortex completely lost to the atmosphere

Partial Merger (PM): Interaction of vortices of unequal sizes Part of the smaller vortex merged to the bigger vortex

Complete Merger (CM): Interaction of vortices of same or different sizes, resulting in complete merger of both the storms

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Freddy Cyclone







Freddy Cyclone

- The <u>World Meteorological Organization is setting up an</u> <u>expert committee to evaluate whether tropical cyclone Freddy</u> <u>has broken the record as the longest-lasting tropical cyclone</u> <u>on record</u>.
- Usually, the sub surface water is colder and when it gets pushed towards the surface due to mixing as a result of cyclonic winds, it creates conditions that don't favour intensification of cyclones.
 "But in Freddy's case, the winds pushed up warm sub surface waters <u>Think about Warm Ocean Currents Mozambique and Aghulas Current.</u>
- <u>Global warming</u>: Around 90 per cent of the warming due to human-induced greenhouse gases is <u>absorbed by the oceans</u>, <u>increasing their heat content and have made them the warmest</u> <u>they have ever been , thus helping to strengthen cyclones.</u>





Freddy Cyclone



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Twin Cyclones

- The interplay of the wind and the monsoon system combined with the Earth system produces these synchronous cyclones.
- <u>Caused by what are called equatorial Rossby waves -</u> these waves arose due to the rotation of the Earth
- Rossby waves <u>huge waves in the ocean with wavelengths of</u> <u>around 4,000–5,000 kilometres</u>.
- Vortex in the northern hemisphere & southern hemisphere
- Mirror image of the other.

<u>**Context</u>** - a pair of tropical cyclones, Asani & Karim</u>



Twin Cyclones









Karakoram Anomaly

- The 'Karakoram Anomaly' is termed as <u>the stability</u> or anomalous growth of glaciers in the central <u>Karakoram</u>, in contrast to the <u>retreat of glaciers in</u> <u>other nearby mountainous ranges of Himalayas and</u> <u>other mountainous ranges of the world.</u>
- <u>**Reasons –**</u> Western Disturbances + Irrigation in Lower Reaches













FAST AND FURIOUS

The extreme weather conditions are a result of a weather phenomenon called western disturbance, which is going to be quite intense



WESTERN DISTURBANCE

Western disturbance is a cyclonic circulation in the mid and lower troposphere (between 2.1 and 7.6 km above sea level) which originates over the Mediterranean Sea, Caspian Sea and Black Sea

 It is one of the most Important weather systems that causes adverse weather conditions over North-West India and particularly over the western Himalayan region
 Western disturbance during winter leads to

during winter leads to occurrence of clouds, rainfall and snowfall

An intense western disturbance usually produces widespread heavy snowfall over the western Himalayan region and rains over northern plains for a day or two and may trigger avalanches

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Azores High

- Resulted <u>in abnormally dry conditions across the</u> <u>western Mediterranean</u>, including the Iberian Peninsula, primarily occupied by Spain and Portugal, according to a new study.
- It is a <u>subtropical high pressure system</u> that extends over the eastern subtropical North Atlantic and western Europe during winter.
- Formed by <u>dry air aloft descending the subtropics and</u> <u>coincides with the downward branch of the Hadley</u> <u>Circulation.</u>





Azores High









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Assam Floods

- Natural
- Intensified Monsoon La Nina
- Climate Change: Global Warming Oceans + Glaciers
- **Topography**: Rivers + Bowl Shaped Topography
- Volatile Nature of Brahmaputra
- Earthquakes/Landslides
- Anthropogenic Causes







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Joshimath Land Subsidence













Joshimath Land Subsidence

- <u>Geographical reasons</u> Ancient landslide site • According to the 1976 Mishra Committee report, Joshimath is a deposit of sand and stone, it's not the main rock.
- It lies on **an ancient landslide.**
- The report added that undercutting by river currents of <u>Alaknanda and Dhauliganga</u> are also playing their part in bringing landslides.
- These <u>rivers washes away debris and thus, start</u> <u>cutting the edges of mountains and inhabitated area</u>



Prone to Earthquakes –



• Joshimath falls under the <u>highest seismic hazard Zone</u> <u>V</u> as it experiences continuous seismogenic stresses.

- Joshimath <u>almost sits</u> on the Vaikrita Thurst (VT), a tectonic fault line. The town is also very close to main geological fault lines, Main Central Thrust (MCT), and Pandukeshwar Thrust (PT).
- Seismic energy generation due to microearthquakes may have weakened the strength of the rocks as Joshimath is located in the <u>earthquake rupture zone of</u> the 1999 Chamoli earthquake.





<u>**Climatic factors**</u> such as excessive precipitation and flow of water from mountains into massive cracks and fractures in the sub-surface rocks lead to the widening of cracks and hastening the slip in rock material.

The impact of extreme rainfall events is visible in latest satellite data, which shows that <u>mountain streams have</u> <u>expanded their channels and changed course</u>, thereby inducing more slope instability in an already fragile belt. <u>Scattered rocks in the area are covered with old landslide</u> <u>debris comprising boulders, gneissic rocks, and loose soil,</u> <u>with a low bearing capacity.</u>

These gneissic rocks are highly weathered and <u>have a low</u> <u>cohesive value</u> with a tendency of high pore pressure when saturated with water, especially during monsoons.





- Improper water drainage • Experts and USDMA pointed out reasons for increase in ground seepage of water from surface, a probable cause for subsidence.
 First, on-surface anthropogenic activities have blocked natural water drainage systems, forcing water to find new drainage routes.
- Second, Joshimath town does not have sewage and wastewater disposal system. The seepage reduces the shear strength of the overburden soil.
- <u>Construction Activities</u> • Increased construction, hydroelectric projects, and the widening of the NH have made the slopes highly unstable in the last couple of decades. • Deforestation





Zombie Ice

- <u>ice that is still attached to thicker areas of ice but is no</u> <u>longer getting fed by larger glaciers.</u>
- That's <u>because the parent glaciers are getting less</u> <u>replenishing snow.</u>
- <u>Without replenishment</u>, it is melting from climate change and will inevitably raise seas.





Zombie Ice









Regenerative Agriculture

 Regenerative agriculture is a holistic farming system that focuses on soil health, food quality, biodiversity improvement, water quality and air quality through methods such as <u>reducing the use of chemical fertilisers and pesticides,</u> <u>reducing tillage, integrating livestock and using cover crops.</u>

Regenerative agriculture adheres to the following principles:

- Minimise soil distribution through conservation tillage
- Diversify crops to replenish nutrients and disrupt pest and disease lifecycles
- Retain soil cover using cover crops
- Integrate livestock, which adds manure to the soil and serves as a source of carbon sink



Special Session - 1



6 chapters 🗸







<u>Khejri Trees</u>

- State tree of Rajasthan
- Can survive in dry weather
- Maintaining the ecosystem of Thar region Source of fodder and firewood, it helps in sustaining the soil's nutrient value, ensuring a good yield of desert crops and food plants
- Its fruit is used to make the popular dish 'Sangri'.
- <u>Note -</u> The Bishnoi community



<u>Khejri Trees</u>









Pokkali Paddy or Pokkali Variety

- <u>Saltwater resistance</u>, grown generally in the paddy fields of coastal <u>Alappuzha</u>, <u>Ernakulam and Thrissur districts of</u> <u>Kerala</u>
- <u>One season of rice farming is alternated with another</u> <u>season of fish culture</u>
- <u>Extensive Aquaculture</u>
- Note Vyttila-11 new variety of Pokkali rice.









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<u>Neelakurinjis</u>

- <u>Shrubs prominently found in the shola forests</u> of the <u>Western</u> <u>Ghats and is also seen in the Shevroys in the Eastern Ghats</u>
- Bloom once in 12 years
- Paliyan tribes (Tamil Nadu) use it as a reference to calculate their age
- <u>Note -</u> The blooming seen recently in <u>Seethalayana Giri hill ranges</u>, <u>Karnataka</u>.





Peninsular Plateau





Neelakurinjis

Banni Grasslands

- largest grassland of Asia Kutch district, Gujarat (Arid climate)
- Two ecosystems, wetlands and grasslands
- <u>Note</u> Wetland largest one is Chhari-Dhandh wetland Conservation Reserve
- <u>Maldhari Tribe</u> continue to hold the right to conserve the community forests in the area, granted to them as per the provisions in Section 3 of Forest Rights Act (FRA), 2006.

Hasdeo Aranya Region - lungs of Chhattisgarh

- Hasdeo Aranya (Aranya means forest) lies in the <u>catchment area of the Hasdeo river</u> and is spread across 1,878 sq km in <u>North- Central Chhattisgarh</u>
- Hasdeo River is a tributary of the Mahanadi river .
- It is the "<u>largest un-fragmented forests in Central India</u> <u>consisting of pristine Sal (Shorea robusta) and teak</u> <u>forests.</u>
- Note Elephant Corridoor

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Mattewara forests- lungs of Ludhiana district.

- <u>**Proposa</u>l Mega Integrated Textile Region and Apparel Park in Ludhiana**</u>
- Red-flagged by locals, environmentalists and some political leaders.
- The Mattewara forest is located on <u>the banks of the river</u> <u>Sutlej, near Ludhiana</u>

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Kelp Forest

- Underwater forests thrive well in cold, nutrient rich waters
- brown algae seaweeds attached to the seafloor
- Eventually grow to the water's surface
- Rely on sunlight to generate food and energy coastal and require shallow, relatively clear water.
- Kelps <u>live further from the tropics</u> than coral reefs, mangrove forests, and warm-water seagrass beds, so kelp forests do not overlap with those systems

Theri desert

- It is a <u>small desert situated in the state of Tamil Nadu</u> which consists of red sand dunes
- The red dunes are called theri in Tamil and contain the sediments dating back to Quaternary Period and are made of marine deposits.
- Low water and nutrient retention capacity.

Theri desert

Kushiyara River

- The Kushiyara River is a distributary river in Bangladesh and Assam
- India-Bangladesh border as a branch of the Barak River
- It later enters Bangladesh where it forks into Surma and Kushiyara rivers

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Special Session - 2

One Shot Series - Complete World Climate Types in One Video - UPSC Prelims 2023

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Presenting the most comprehensive compilation for Geography for UPSC Prelims and Mains. Topics covered are: 1) 00:00 - Hot, ...

1).Hot, Wet Equatorial Climate. | 2).The Tropical monsoon & Tropical Marine Climate. | 3).The... 11 chapters 🗸

River Sukapaika

- Following the directions from the National Green Tribunal (NGT) river which stopped flowing 70 years ago in Odisha is set to be rejuvenated
- Sukapaika distributaries Mahanadi river.

First Carbon Neutral Panchayat

- <u>Palli in Jammu became India's first carbon-neutral</u> <u>panchayat.</u>
- <u>**Carbon neutrality:**</u> Balance between emitting carbon and absorbing carbon from the atmosphere in carbon sinks.

First Carbon Neutral Panchayat

Earthquake observatory

- Ministry of Earth a seismological observatory at Udhampur in Jammu and Kashmir.
- Udhampur will record the data related to the inner activities of the earth's crust and will provide data to various seismological stations across the globe.

Avalanche Monitoring Radar

• Indian Army and the Defence Geoinformatics and Research Establishment (DGRE) have jointly installed the Avalanche Monitoring Radar, first of its kind in India, in **north Sikkim.**

Damini App

- App is monitoring all lightning activity which are happening over India and alert the person if lightning is happening near the person by GPS notification under 20KM and 40KM radius.
- 3 hours in advance.

Special Session - 3

Maha Video -El Nino Modoki , La Nina Modoki, Madden Jullien Oscillation , Bomb Cyclone, Jet Streams

8.7K views • 7 months ago

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India's largest Rubber Dam (Gayaji Dam)

- Built on Falgu River in Gaya, Bihar
- The <u>dam uses rubber making it</u> <u>environmentally friendly</u>

India's largest Rubber Dam (Gayaji Dam)

Biofloc Farming- New Blue Revolution

- <u>high-density fish farming in a controlled environment in</u> which fish wastages are converted into useful nutrients.
- BFT is an environment friendly aquaculture technique based on in-situ microorganism production. Biofloc is the suspended growth in ponds/tanks which is the aggregates of living and dead particulate organic matter, phytoplankton, bacteria and grazers of the bacteria.
- It is the utilization of microbial processes within the pond/tank itself to provide food resources for cultured organism while at the same time acts as a water treatment remedy. Thus, this system is also called as active suspension ponds or heterotrophic ponds or even green soup ponds.

- Eco-friendly culture system.
- It reduces environmental impact.
- Judicial use of land and water
- Limited or zero water exchange system
- Higher productivity (It enhances survival rate, growth performance, better feed conversion in the culture systems of fish).
- Higher biosecurity
- Reduces water pollution and mitigate the risk of introduction and spread of pathogens
- It reduces utilization of protein rich feed and cost of standard feed.
- It reduces the pressure on capture fisheries i.e., use of cheaper food fish and trash fish for fish feed formulation.

• PART – 2 – Next Thursday

Make This Attempt A Successful Attempt

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