

GS SCORE

TEST - 7

GS MAINS MOCK 2021

#54 mins

GEOGRAPHY - 1

Time Allowed: 50 Mins.

Max. Marks: 60

| Q. | Marks | Instructions to Candidate |
|-------|-------|--|
| 1. | | <ul style="list-style-type: none"> • There are 05 questions. • All questions are compulsory. • The marks carried by a question is indicated against it. • Keep the word limit indicated in the questions in mind. • Answers must be written within the space provided. • Any page or portion of the page left blank in the Question-cum-Answer Booklet must be clearly struck off. |
| 2. | | |
| 3. | | |
| 4. | | |
| 5. | | |
| 22/50 | | |

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Date 25/11/2021

Signature Anendya Rajeshre

1. Invigilator Signature _____

2. Invigilator Signature _____

REMARKS

GS SCORE

| | |
|---------------------------------------|-----------------|
| <p>[Faint, illegible handwriting]</p> | <p>02/16/28</p> |
|---------------------------------------|-----------------|

Q1. Discuss the role of albedo of ice caps in maintaining heat budget of earth. Analyze the impact of deposition of black carbon on ice caps on their albedo.
(10 Marks) (150 Words)

global heat distribution across earth is varied due to variation in solar insolation and earth's rotation. The balancing of this variation by earth is known as heat budget of earth.

* also add about the concept of albedo as it is the key theme of ques.

Role of albedo of ice caps →

- ① Albedo of ice caps is low → this allows less absorption of sun rays & thus heat.
- ② Most ~~sun~~ of the sun rays are reflected back to the atmosphere.
- ③ This reflection helps in maintaining the cold temperature in the polar regions needed ~~to~~ for survival of the glaciers.
- ④ It also helps in maintaining the polar cell

quote time fault

①

Remarks

by creating high pressure conditions.

(5) This pressure difference helps in transfer of heat from Tropical & Ferrel cells to polar cell & cold winds to the equatorial region.

• Black carbon - partial combustion of fossil fuels leads to its generation

Reasons for deposition of Black carbon

• Burning of coal, petroleum by vehicles etc.

• Movement of planetary winds → distributes it over polar regions; on ice caps

Impact ⇒

(1) Black carbon has high albedo → leads to higher absorption of heat & sun rays.

(2) Leads to melting of snow caps → exposes the black rocks underneath.

(3) This creates a vicious cycle → as the rocks further increase the albedo & melts the ice.

(4) Leads to increase in water level of oceans, fresh water scarcity (glaciers are melting) and increasing the overall temperature of the earth.

Remarks

(i) address first half with more points

(ii) address second half with factually correct statements, more relevant points

* Discuss with more points on role of albedo → do
→ eg. balancing polar ecosystem, prevents flooding, triphouse of CO₂.

* understand the concept of albedo, read notes

* Conclusion

decreases albedo of snow ⇒ absorption melting

(2)

Q2. Most scientists agree that climate change is making events driven by the jet stream worse. Explaining the phenomenon of jet streams, discuss how climate change affects the jet streams?
(10 Marks) (150 Words)

* address the introduction with definition of jet streams.

Climate change is a phenomenon where the overall climatic conditions of the earth are altering, which are leading to increased frequencies of cyclones, storms etc.

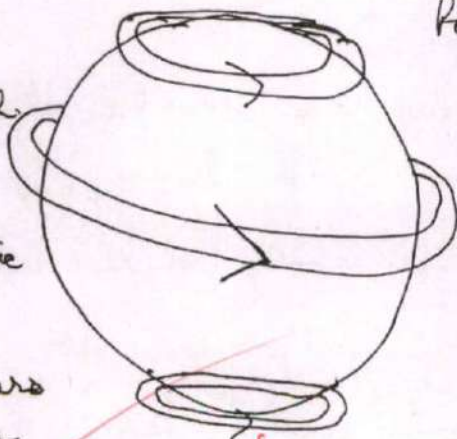
Jet streams are global winds that are geostrophic in nature. They are high speed winds that are responsible for a lot of phenomena like India Monsoon, Winter season in North America & Europe etc.

* Explain the phenomenon of jet stream - how are they formed?

• General speed ~ 200 km/h

• Blow in the upper tropospheric region

• Movement occurs due to pressure difference created by planetary winds



Polar jet-streams

Sub-tropical jet streams

good

Remarks

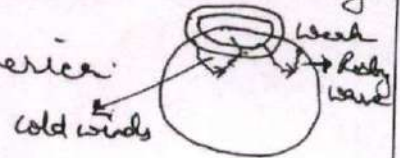
fig: ?

Affect of climate change →

① Increasing temperature in the Arctic region → due to global warming.

↳ Reducing pressure difference and thus weakening the Polar jet streams.

↳ Weakens polar vortex & thus leads to recently extreme winters in North America.



② Impacting the direction & speed → of the Easterly jet stream & sub-tropical jet stream.

↳ This impacts the monsoon system in India.

↳ Affects the onset of monsoon as delays the shift in position of sub-tropic jet streams.

? add more points.
eg) blocking of Jet streams, more wavy and meandering, etc.

Thus, we should strive to enhance research into the effects of climate change on jet streams, while also reducing global warming by following our Nationally Determined Targets under Paris deal (COP 26)

03

Remarks

Q3. Major ocean currents are greatly influenced by the stresses exerted by the prevailing winds and Coriolis force. Discuss the forces which influence the major currents of oceans. Explain with examples why oceanic circulation pattern roughly corresponds to the earth's atmospheric circulation pattern. (15 Marks) (250 Words)

Ocean currents are global phenomena that helps to transfer heat from the surplus area (Tropical region) to deficit area (Temperate & Polar region).

introduction should contain the definition of ocean currents

Forces behind ocean currents ⇒

① Air system ⇒ prevailing winds exert force on ~ 100 m depth of water and pushes it water in its direction. Ex:- Somali water current changes direction with the monsoon winds.

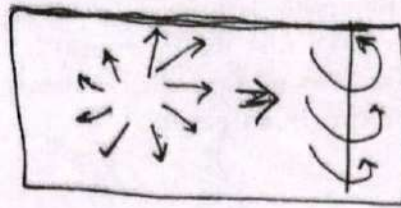
② Coriolis force ⇒ leads to deflection of water in the right direction for the north hemisphere & left for south hemisphere.

↳ Each layer of water gets deflected more and more and thus creates an Ekman

Good points

Remarks

Spiral..



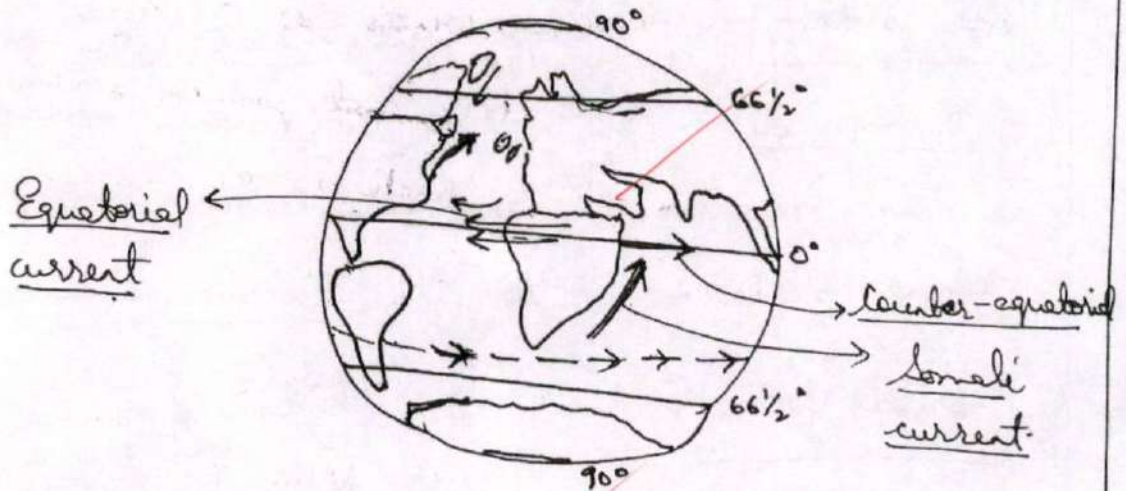
Ekman spiral

* Explain forces which influence ocean currents

- 1) Pressure gradient force
- 2) Coriolis force
- 3) Frictional f.

③ Pressure difference → created due to difference in volume of water. Ex:- low-latitude equatorial current.

④ Salt concentration → impacts density of water and it travels from high density to low density region.



• The eastern trade winds push the equatorial water westwards. This leads to formation of Equatorial current travelling in west direction

Remarks

- The Somali current becomes a cold current during S-W monsoon season, as these monsoon winds push the water not northwards.
- The same Somali current becomes a warm current during N-E monsoon season, as the retreating winds take the water southwards.

good example!

* also quote more examples and subsequently explain as done above.

These examples show the influence atmospheric circulation have on the global ocean current system. Though, with climate change, this system is getting weak and thus disrupting the heat budget of earth.

05

Remarks

correct me if you want first 3 marks in 2

Q4. Apart from thermal gradient factors other factors such as relief, orography and upper air circulation are responsible for onset of monsoon in the Indian subcontinent. Elucidate. (15 Marks) (250 Words)

Monsoon is seasonal reversal of winds that is seen in the South Asian region. In the summer season, there is advent of south-west monsoon, and in winters, these winds retreat & become north-west monsoon.

* can briefly explain mechanism of monsoon in phenomena

Factors responsible for Monsoon ⇒ Monsoon is a complex phenomena that is affected by lot of factors :-

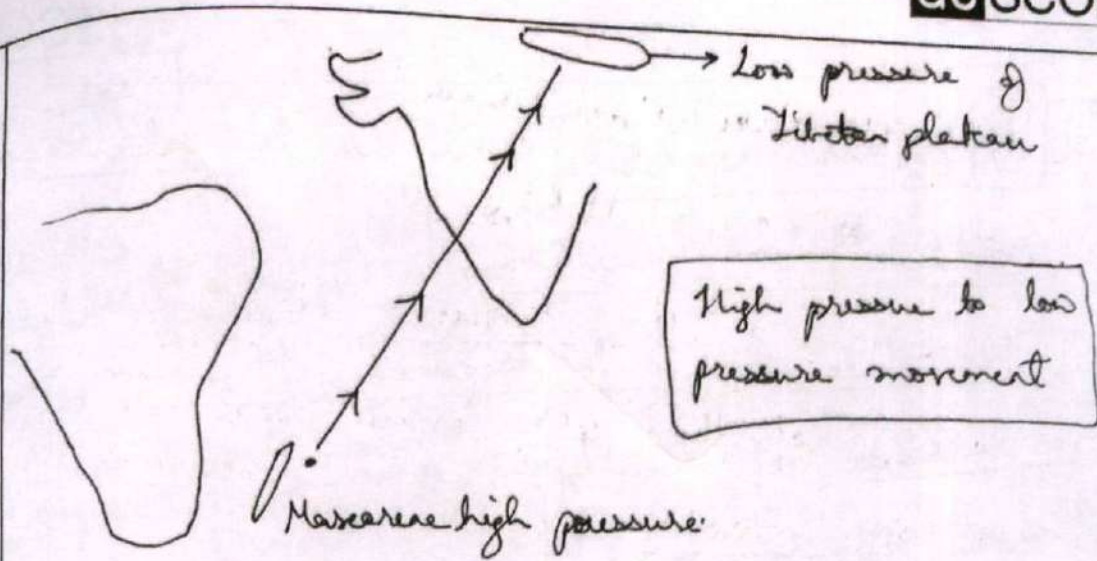
① Pressure difference due to thermal gradient

↳ Heating of Tibetan plateau cause low pressure in the north.

↳ While there is high pressure system at Mascarene.

? explain further

Remarks



② Relief factors → presence of towering Himalayas

help to block the monsoon rains in the Indian continent. It also helps in orographic

rainfall 90

Northeast hills

③ orographic factors → similar phenomena seen in Western Ghats, where the windward side (coastal region) receive high rainfall while the leeward side remains dry.

↳ Positioning of Aravallis is parallel to monsoon winds & thus it doesn't block the rain-bearing winds ⇒ deficit rainfall

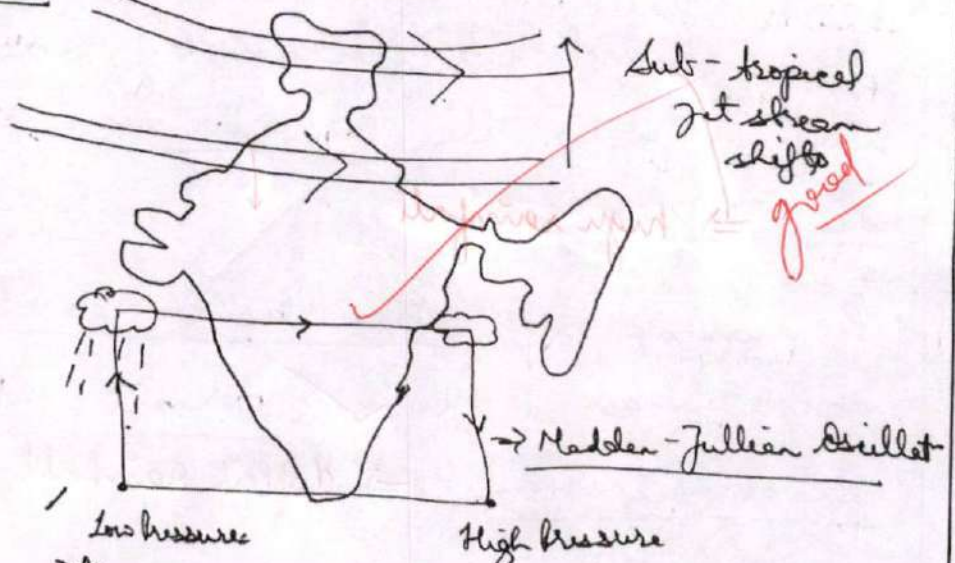
Remarks

③ Upper air circulations → includes the jet streams & Madden-Julian oscillations.

↳ Jet streams → sub-tropical jet stream shifts northward of Himalayas, which leads to onset of monsoon.

↳ Easterly jet streams facilitate the movement of winds towards India.

↳ Madden-Julian Oscillations → influences the break pattern of monsoon. It creates a cell of high pressure & low pressure, and can influence 2-3 times in a season.



Thus, monsoon being a complex phenomenon is impacted by many factors.

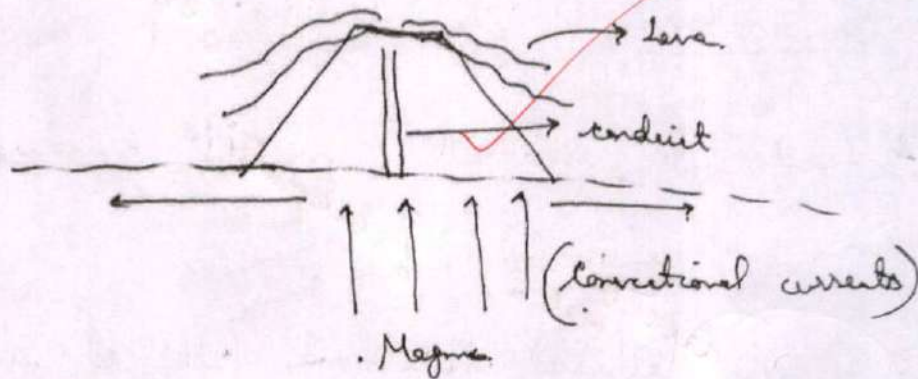
Remarks

07
- good attempt
- very well addressed the questions with relevant content + examples.

Q5. "On the one hand volcanoes cause harm to life and property, displacement of people and air and water pollution, but at the same time it provides benefits to people in different ways". Elucidate.
(10 Marks) (150 Words)

Volcanoes are a natural phenomena where the internal forces of earth leads to the release of hot magma from the surface of the earth.

Good!



Harm to life → ① Destruction of property & houses by hot lava.

② Death of people, animals and plants.

③ Destroys the grounds, thus impacting the agriculture, by making the soil infertile.

④ Causes lot of pollution in the atmosphere.

Remarks

which makes the region inhospitable & lot of respiratory diseases (sulphur, particulate matter etc.)

⑤ Water pollution → as it seeps down the ground & pollutes the groundwater, with metals released in lava.

Benefits → ① Leads to decrease in temperature of the region. *? explain*

② Leads to rainfall, as it causes formation of clouds. *? elaborate*

③ Metals released with lava are of great value like iron etc. *deposit / ore*

④ Soil formation → like the Deccan traps & Black soil in Maharashtra. *→ explain further how these are beneficial?*

This volcanic eruption is a natural process of earth, which has positive & negative consequences.

Remarks

05

*Good
very well
linked! the
points with
impact!*

*Give conclusion
w.r.t prevention
mis happenings
associated with
volcano.*