

GEOGRAPHY

Time Allowed: 3 hr.

Max. Marks: 250

Instructions to Candidate

- There are EIGHT question divided in Two Sections.
- Candidate has to attempt FIVE questions in all
- Question No. 1 and 5 are compulsory and out of the remaining, three are to be attempted choosing at least one question from each section.
- The number of marks carried by a question/part is indicated against it.
- Answers must be written in the medium authorized in the Admission Certificate which must be stated clearly on the cover of this Question-cum-Answer (QCA) Booklet in the space provided. No marks will be given for answers written in medium other than the authorized one.
- Word limit in questions, wherever specified, should be adhered to.
- Attempts of questions shall be counted in chronological order. Unless struck off, attempt of a question shall be counted even if attempted partly. Any page or portion of the page left blank in the Question-Cum-Answer booklet must be clearly struck off.



1. Invigilator's Signature _____

2. Invigilator's Signature _____

Name KUNAL SUROTE

Mobile No. _____

Date _____

Signature Kunale

REMARKS

GS SCORE

- ① TRY TO FINISH THE PAPER
- ② Add more spatial aspects, maps and diagrams.
- ③ structure your answers properly.

A-T B $\frac{1}{2}$ 1
—————

SECTION-A

Attempt all questions:

1. Answer the following questions in about 150 words each:

(10 × 5 = 50)

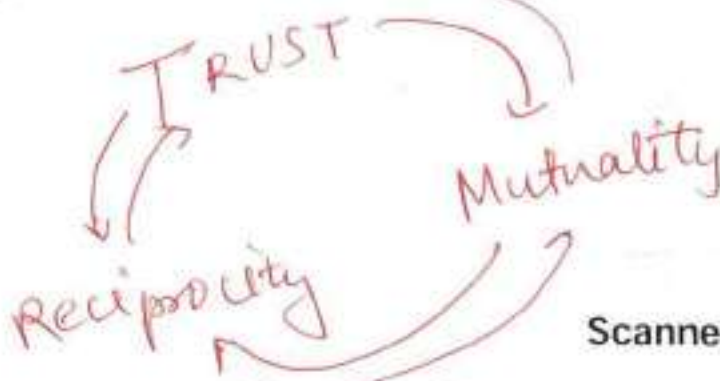
- (a) Write a short note on Ice Crystal Theory.
 ✓ (b) Draw the critical analysis of the concept of social capital.
 (c) Discuss the Koppen's climatic classification in detail.
 (d) Write a short note on sub-aerial erosion theory by Dana and Shephard.
 ✓ (e) Biodiversity assessment must be factored into all economic activity. Comment.

(b) The concept of social capital was given by Professor Hanifan. According to him mutual trust and healthy interaction between members is essential for survival of any society.

Prof. Hanifan was of the opinion that people in rural & areas have better interaction & debate amongst themselves than the people in urban areas.

Similarly people in developing regions of the world are a bigger social capital

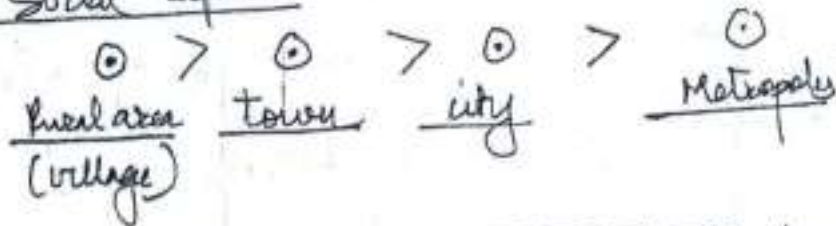
Remarks



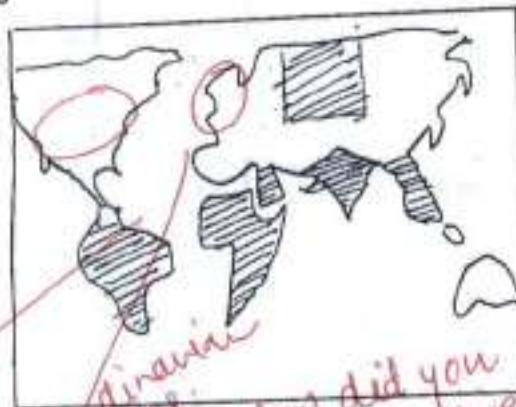
than people in developed world


He was of the opinion that, arrogant, overconfident people destroy social capital and humble kind people build social capital.


Social capital



Clood



 Regions with more social capital

 Regions with less social capital

Outliers

Scandinavian countries

How did you generalise it?

→ give proper reasons

However, It has been observed that, people in rural and areas are not always humble and kind to each other eg: Honor killing cases

Remarks

Mob lynching etc.

Also, people in urban areas are not always arrogant ~~so~~ and are many a times very humble eg: People coming together during terror act.

Despite being overgeneralised in nature, Prof. Hanifan's started debate regarding social capital

(e) Biodiversity assessment is the act of incorporating and calculating the effect ~~and~~ and impact of economic activity on the environment. As survival of human species is linked to the survival of environment, biodiversity is absolutely essential.

Remarks

According to the several reports of UN and IPCC, biodiversity is losing its prominence at a faster rate. 70% of insect

species have already being extinct. Recent

extinction of Bumblebee in Australia marks

the impact of economic activity on biodiversity.

concept of New environmentalism

which was inspired after WWII should be

at forefront of economic development.

Environment and growth are not to separate

entity and ~~soo~~ sustainable development

is only possible by putting biodiversity

assessment into all economic activity.

Remarks

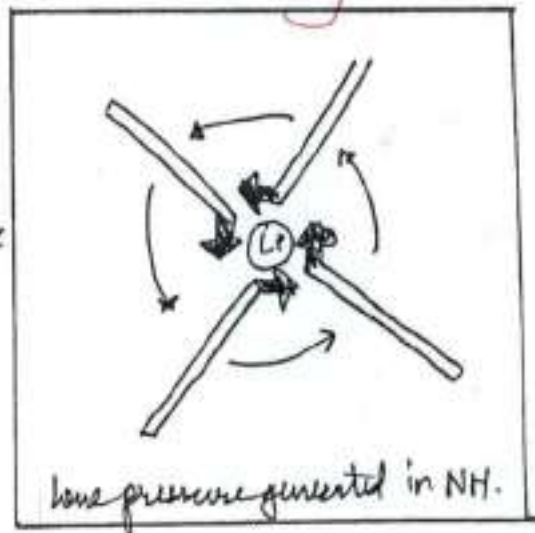
3. Answer the following questions:

- (a) Discuss the formation of Tropical Cyclone. Why cyclone Fani in Odisha is an unusual storm? (250 Words) (20)
- (b) Explain the detailed concept of Airmass and also elaborate its detailed role in macro-climatic changes. (200 Words) (15)
- (c) Write a short note on Biozones of the oceans under Pelagic habitat. (200 Words) (15)

(a)

Tropical cyclones are storm conditions that develop in areas of low pressure and high temperature. These conditions cause ^{write precise info} uplift of air which eventually leads to cyclonic activity. These are clockwise in southern hemisphere and anticlockwise in northern hemisphere.

generation of Low Pressure
in tropical areas of North
hemisphere →



Remarks

features

→ Appears in tropical areas

→ cause sudden burst of rainfall (as except eye of cyclone)

→ often termed to be destructive to humans

→ Isobars are close to each other (steeper pressure gradient)

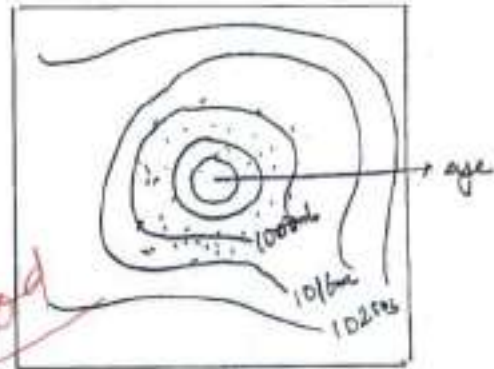
→ windspeeds upto 140 mph

~~cyclone fast is~~

~~cyclone fast~~

→ Temperature conditions above 21°C

→ condensation plays very important role



pressure gradient

☐ Rainy condition

local names of tropical cyclones

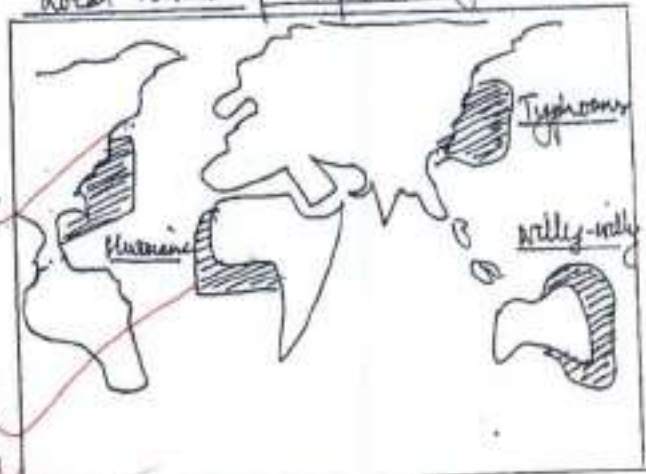


Fig: —

Remarks

label your maps

Why cyclone Fani was unusual storm:-

Majority of cyclones originate in Bay of Bengal season due to following reasons:-

- ① Surface temperature of water above 27°C
- ② Retreating monsoon causes low pressure condition

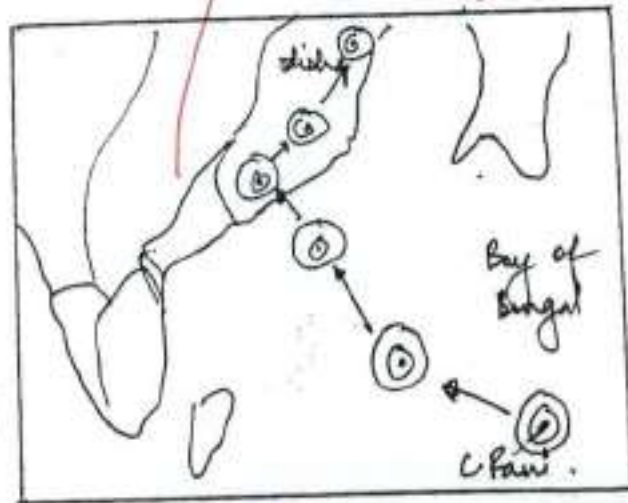
③ Leftover cyclones from Pacific ocean enter

Bay of Bengal

Unusual due:-

→ Permeation to the right hand side after hitting Odisha coast (land area)

→ caused destruction of property along Odisha's coast



Label the regions it affected

Correct
10

Remarks

Since majority of cyclone diffuse (and) after hitting coast, but fail intensified by moving along the coast. Therefore cyclone fail in Odisha is an unusual storm.

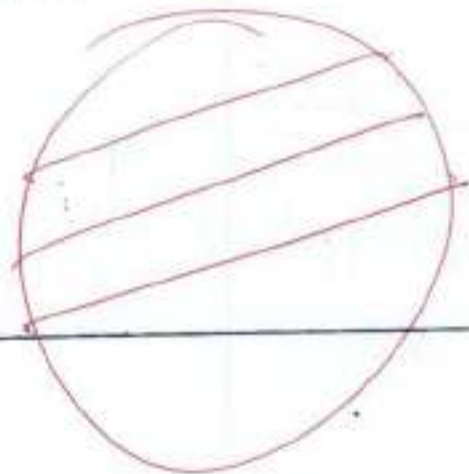
(b) Air mass are defined as homogeneous mass of air which exist over temperate areas.

Homogeneous in terms of temperature and pressure.

Air mass passing over a cold area (eg Siberia) will be called cold air mass,

Similarly one over hot areas are called as hot air mass.

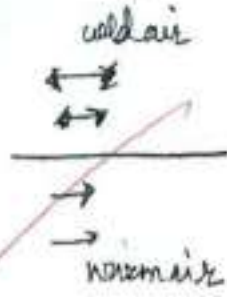
Draw
basic
diagram



Remarks

Air mass leads to the formation of fronts. These phenomenon of frontogenesis causes changes in macro-climate by generation of

o temperate cyclone.



warm front



cold front



occluded front

Initial stage

Add Classification

Continents

rain

4

Formation of temperate cyclones



Initial stage



youth stage



mature stage



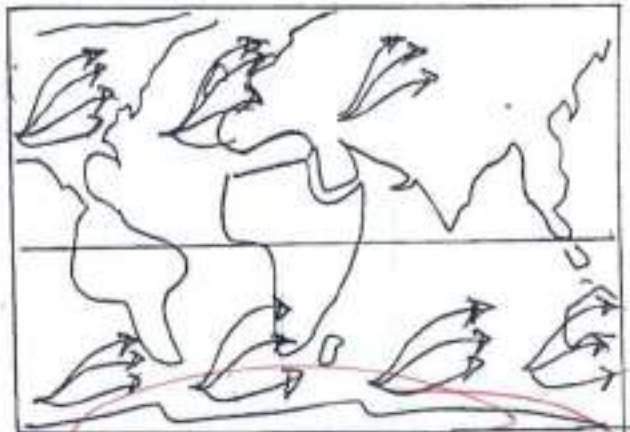
cyclone formation

Remarks

Not directly related to the Q.

Air mass leads to formation of fronts and to cyclones which are beneficial to humans.

eg: Fox hole trap in Indian subcontinent



Distribution of temperate cyclone

??

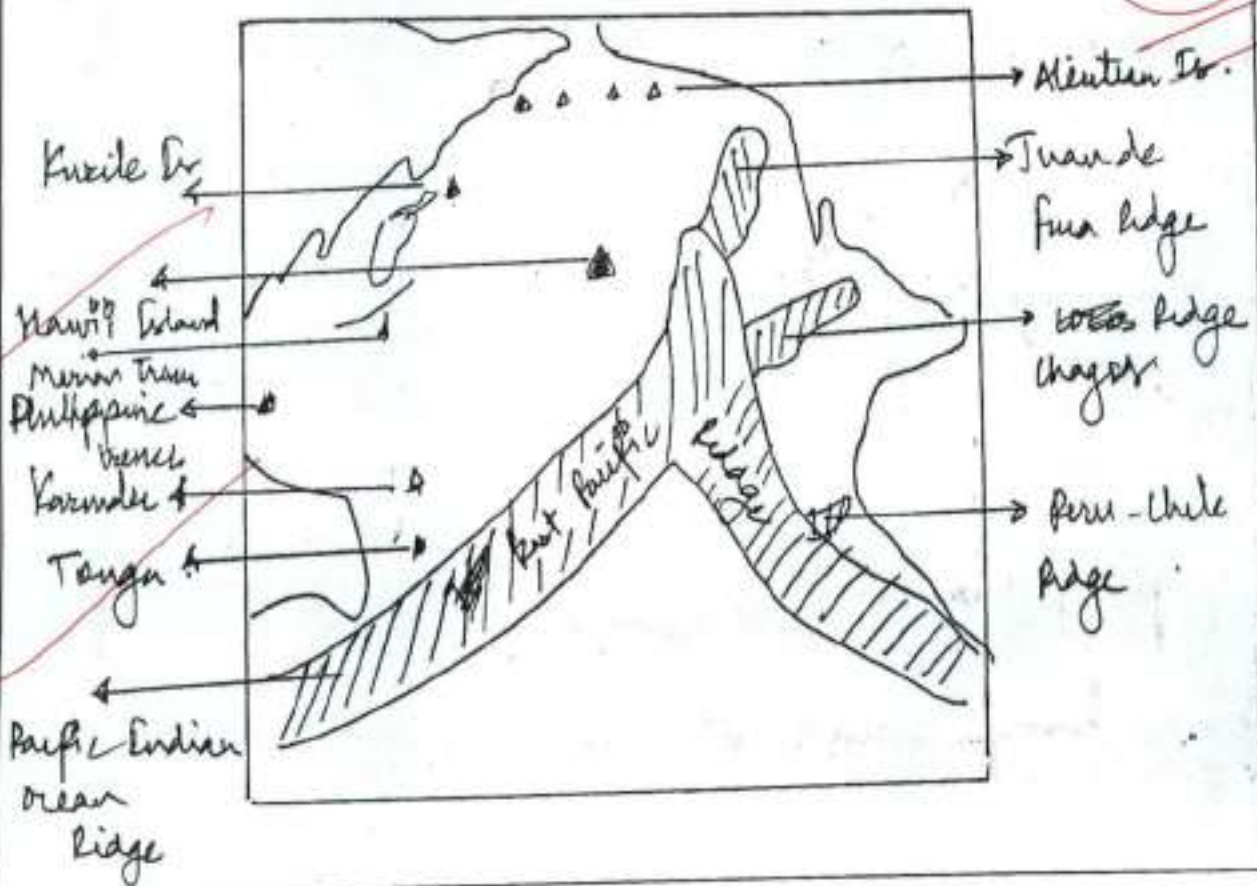
Remarks

4. Answer the following questions:

- (a) Write a detailed analysis of ocean bottom relief of Pacific Ocean. (250 Words) (20)
- (b) Discuss the problems and prospects of weather forecasting in India. (200 Words) (15)
- (c) With respect to GHG and ODS, explain what is meant by global warming potential and lifetime (also called as time horizon), and their relationship along with their effect on overall global warming. (200 Words) (15)

(a) Pacific ocean is the biggest and deepest ocean of the world. It is surrounded by continent land mass on three sides :

6



Good

Remarks

To the North of Pacific ocean there are Aleutian Island (volcanic origin). The Bering Strait connects Pacific ocean with Bering sea.

Use subheads:
 ① TRENCHES

a. island To ~~the~~ North west lies the Japanese island formed due to subduction of Pacific plate.
 b. plate. To the south lies the Mariana trench.

② Small Archipelagos

a. formed due to subduction of Pacific plate under Philippines plate. It is the deepest trench in the world. Similarly Tonga and

③ Ridge

a. Karunadee lies to further south.
 b. To the eastern lies the east Pacific ridge. This gives rise to Hawaii Island.
 c. etc.

Remarks

Other ridges are Juan de Fuca ridge, Nazca ridge, Peru-Chile ridge.

Add more model answer

(b) Weather in India is influenced by

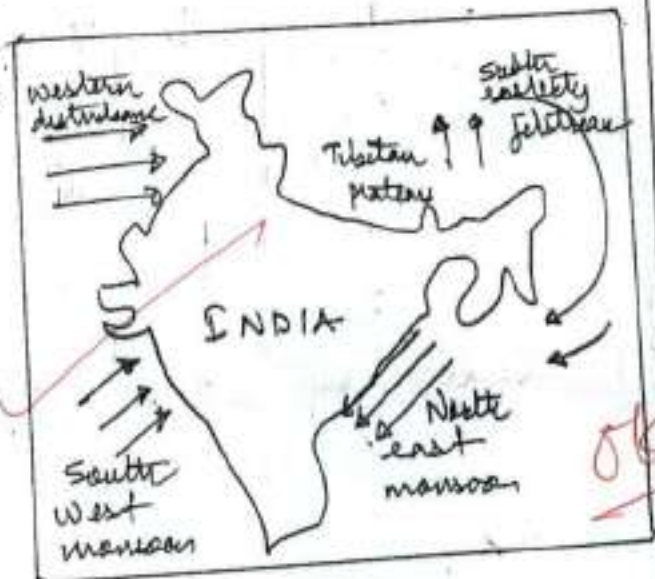
variety of factors:-

- Movement of ITCZ to the subcontinent
- ~~low~~ Movement of high pressure to the North of Himalayas

- Heating of Tibetan plateau

- South west trade winds in summer

- North east winds in winter



Remarks

Due to the large number of variables affecting monsoon in particular and weather in general, weather forecasting is problematic and difficult in India.

7 In 2002, Indian meteorological department (IMD) came up with a new model predicting the weather. 10 of the 16 earlier variables were replaced and new, more refined variables were added.

Air pressure drop, ocean temperature, Indian ocean dipole, El-Nino all these factors are considered making prediction of weather more precise.

Remarks

③ Global warming is defined as the rapid increase in temperature of earth's atmosphere causing both biotic and abiotic changes.

Global warming potential???

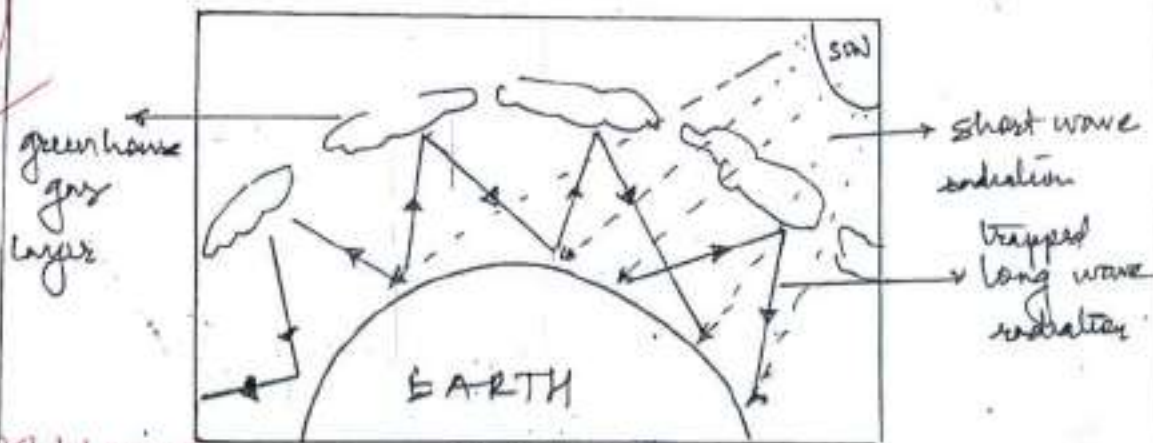
Temperature of the atmosphere increase both naturally and ^{due to} anthropogenic activity.

However, post industrial revolution, anthropogenic factors are playing a dominant role.

certain gases like Nitrogen oxide, methane, carbon monoxide, sulphur dioxide, etc. cause the green house effect i.e. they trap the long wave radiation emitted from the

Remarks

earth surface. This cause general warming of atmosphere. These ~~are~~ ^{are} called as green house gases.



Here your answer begins → greenhouse gas potential is defined as the potential or capability of gases to trap the reflect ground wave radiation.

Green house gas potential of carbon dioxide is considered to be 1. Methane ~~to~~ ^{is} 300 times more potential.

Remarks

Their half life is defined as the time required to reduce the effort to half and the time required for complete dissociation is called as life time.

Remarks

SECTION-B

Attempt all questions:

5. Comment on the following into 150 words:

(10 × 5 = 50)

- (a) Human-mediated causes of biodiversity loss
 (b) Write a short note on Geostrophic Circulation
 (c) Write a short note on Stand Still theory of Murray.
 (d) Write a short note on Lee's Model of Migration
 (e) Pacific Decadal Oscillation

(a) Human mediated cause of biodiversity loss

Humans have played a huge role in loss of biodiversity due to following :-

- Rapid burning of fossil fuels emit huge carbon dioxide leading to rise in global temperature.

Rapid dissolution of carbon dioxide in ocean cause ocean acidification which affects marine life eg coral bleaching.

Remarks

- ~~Deep deforestation~~ has caused loss of forest both floral and faunal species.

- Discharge of waste water in rivers and oceans leads to destruction of food chain.

5.5

eg mercury poisoning of fish in Japan.

Eutrophication of ponds and lakes leaching of nutrients making agricultural soil infertile.

these
Can show issues on world map

Steps to recover biodiversity

- Aligning green growth with economic growth

- Adopting renewable source of energy

- Bio engineering techniques to reduce

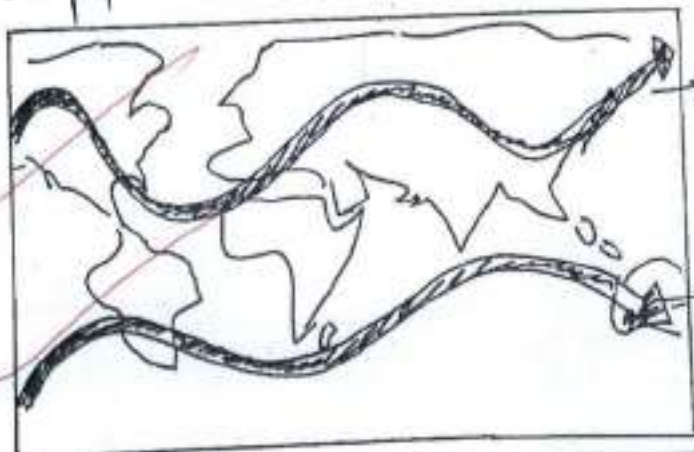
Remarks

global warming .

- Reforestation using corporate social responsibility and CAMPA funds .

Sustainable development should replace pure economic growth .

(b) Geostrophic circulation is the flow and circulation of geostrophic winds around the globe . Jetstreams are ~~good~~ considered to be geostrophic winds which blow from west to east in upper atmosphere .

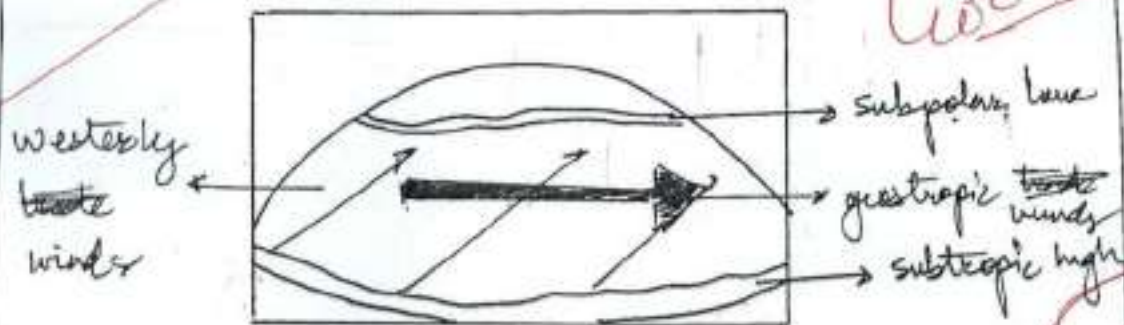


subtropical
jet stream in
North

subtropical
jet stream in
South

Remarks

geostrophic winds are the result of balancing out of coriolis force and pressure force due to difference in pressure gradient.



geostrophic circulation is more prominent in southern hemisphere than northern hemisphere due to absence of land.

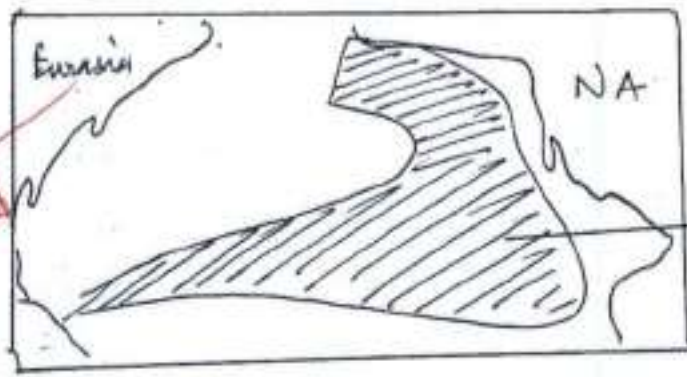
They also affect the weather systems around the world.

eg: bring rainfall in Indian subcontinent due during winter season in form of western disturbances

Remarks

(c) Pacific decadal oscillation is the warming and cooling of Pacific ocean over a cycle of decade.

It is different from EL-Nino and La-Nina due to the northward and southward extension of temperature effect.



Warm water in Pacific Ocean.

20-30 Year Span.
How it is related to ENSO??
explains

The horseshoe type warming and cooling of water has huge effect on weather conditions of North America.

Remarks

Warm period

→ ~~cause~~ rainfall in Alaska and western part of North America.

→ ~~fisheries~~ fishing industry is affected.

→ ~~Drought~~ condition is seen in western Pacific.

5

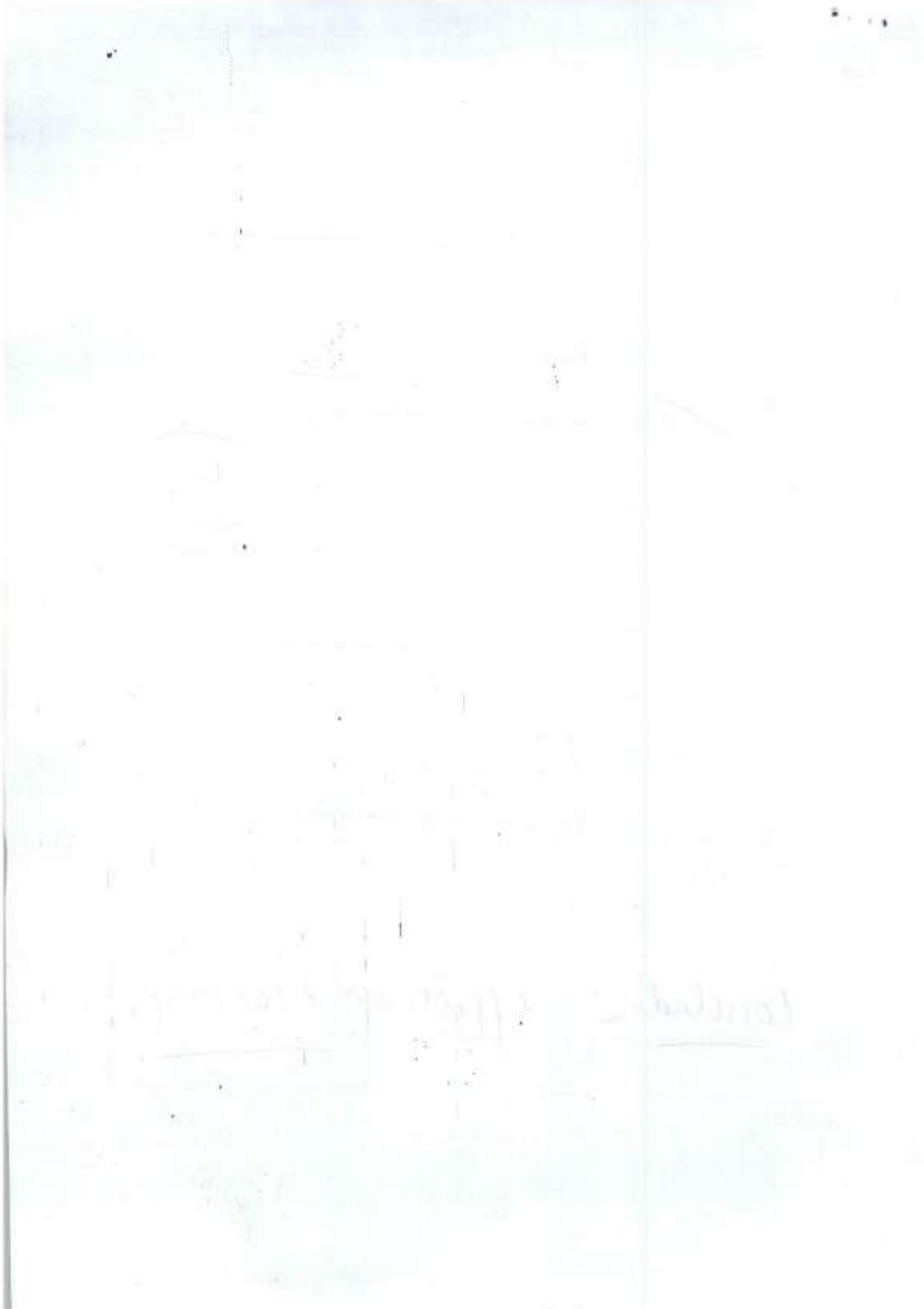
Cold period

→ ~~due to~~ upwelling of cold water, salmon fishing industry is boosted in Alaska and North America.

→ ~~Heavy~~ rainfall and flood condition is seen in western Pacific.

Conclude - Effects on Economy?

Remarks



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Faint handwritten mark or characters in the upper middle section.

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