



GS Advanced Program 2023

Generic Booklet

Test Name/Code/No. : 691046

Name

Email ID.

Roll No.

Mobile No.

Date

Allotted Time : 60 Minutes

Instructions to Candidates -

- There are 7 Questions in this Question paper.
- All Questions are Compulsory.
- For all updates, please visit the noticeboard -
<https://noticeboard.forumias.com/gsap-2023/>

Important -

- Answers must be attempted in the QCA Booklet only.
- To upload the Answer Copies please visit to "My Course" section on -
<https://academy.forumias.com/>
- Only those copies will be evaluated which will be submitted before the next class.

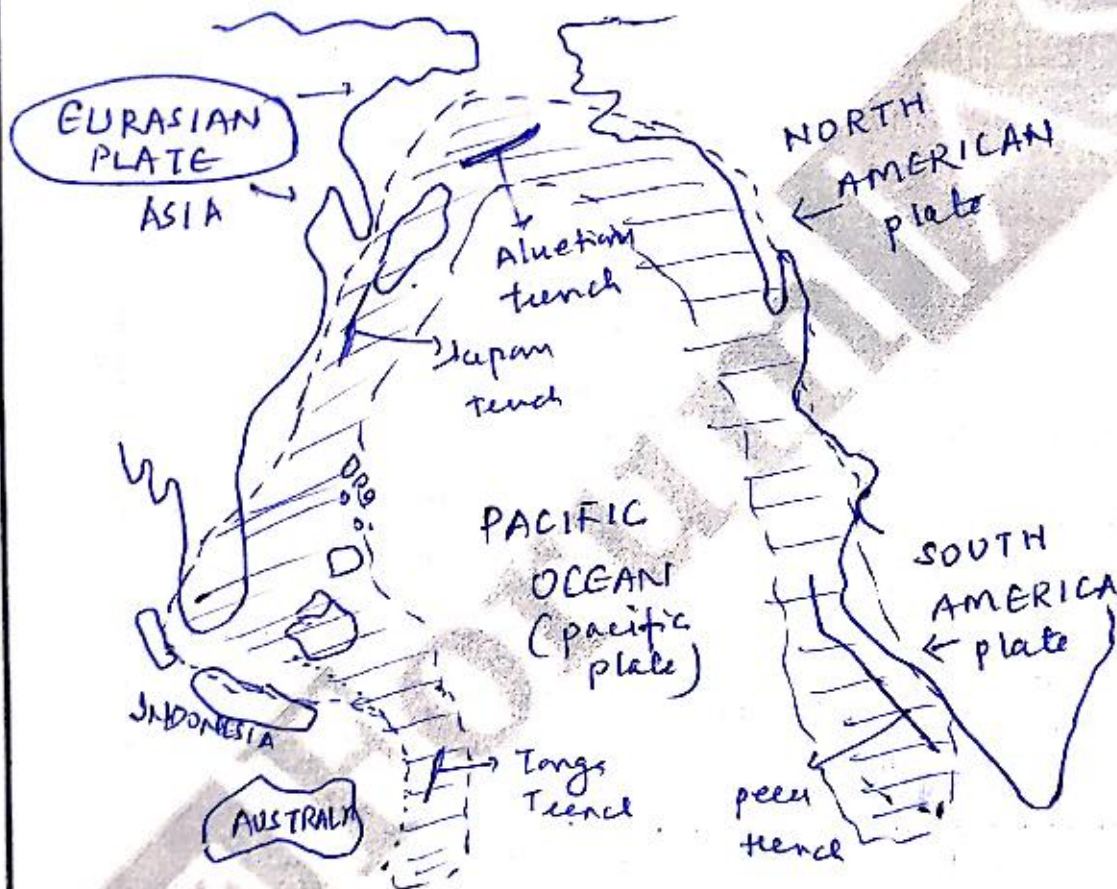
Q. No.	Grade/Score
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2	
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Overall Grade/Score	

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 **ForumIAS**

Start Writing Here

- (1) Circum-pacific zone is the boundary zone of the pacific ocean where the specific characteristics have been created



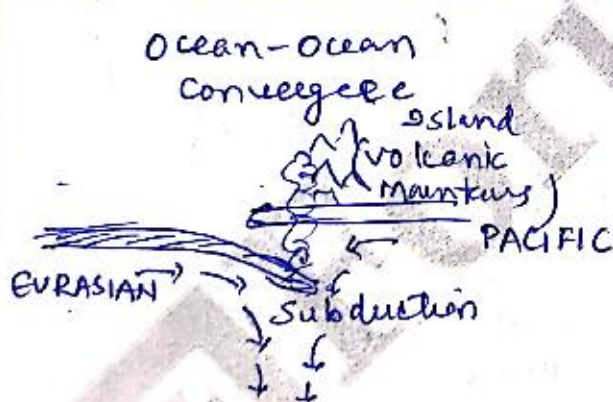
GEOPHYSICAL CHARACTERISTICS

- presence of volcanoes & earthquakes
More than 80% of earth's volcanoes & earthquakes are located in circum-pacific belt.

- presence of trenches along the boundary of continents such as Aluetian, Kuile Japan trench
- presence of Island Arche & Archipelagos such as Phillipines, Indonesia, Kuile Islands, Japan
- Continental boundary has volcanic mountain ranges such as Andes, Rockies.

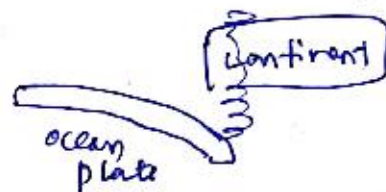
REASONS FOR PECULIARITIES

convergence of plates



- Island arch created
- Archipelagos
- Trenches

ocean-continent convergence



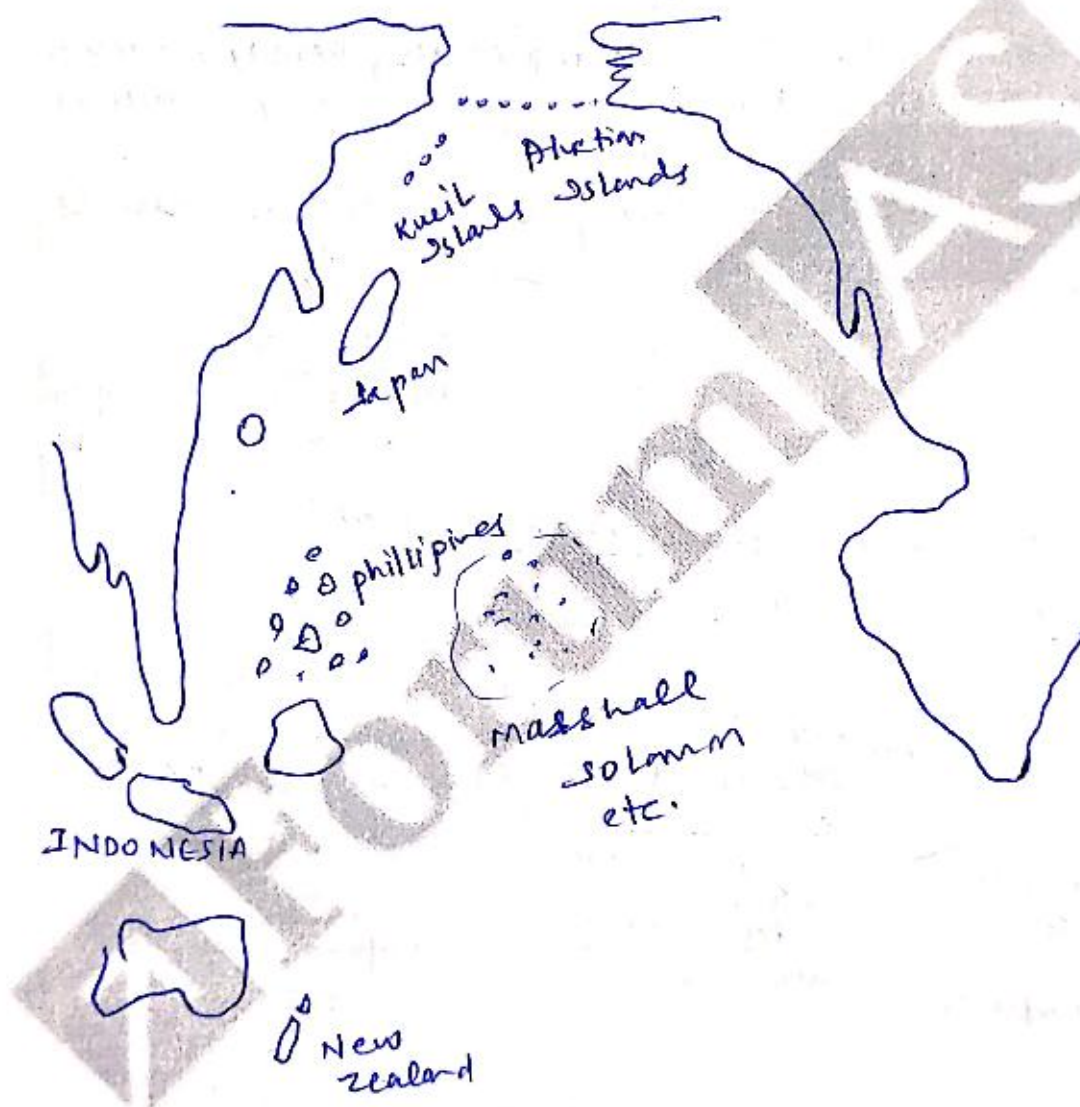
- mountains on boundary
- Trenches
- Deep seated earthquakes

circum pacific belt is one of the most active volcanic region as explained by plate tectonics

Overall Grading (✓)

Poor			Average			Good		
1	2	3	4	5	6	7	8	9

- 2) Pacific ocean has various systems of Island Archipelagos which have various active volcanos & frequent earthquakes are witnessed in the region



The formation of thousands of islands in Pacific are explained by the plate tectonic theory a convention current theory

plates

Lithospheric blocks that float on the Asthenosphere (semi-molten)

- oceanic & continents (on basis of proportion)

Convection currents

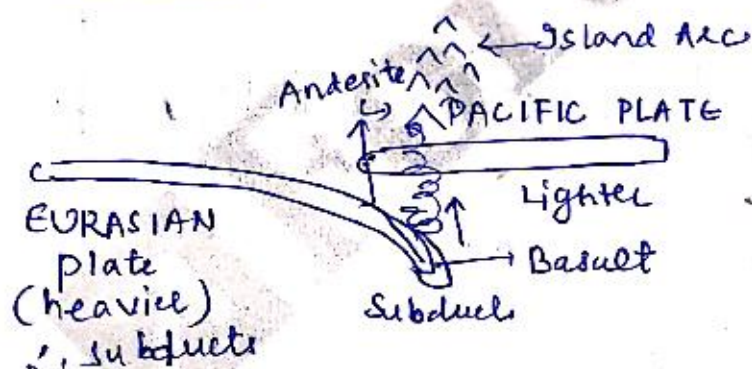
Rise of currents due to residual energy (Heat) & Radioactive Decay

Temperature $\Rightarrow$ Density $\Rightarrow$ convection current change

Such plates are floating on Asthenosphere $\Rightarrow$ convection currents

$\Downarrow$
convergence / divergence / transform boundary

Along the convergence boundary between oceanic & oceanic plate



This convergence subducts heavier plate leading to rise of basalt & formation of Island arc

The circum pacific zone is highly active due to plate convergence leading to formation of Islands & Archipelagos

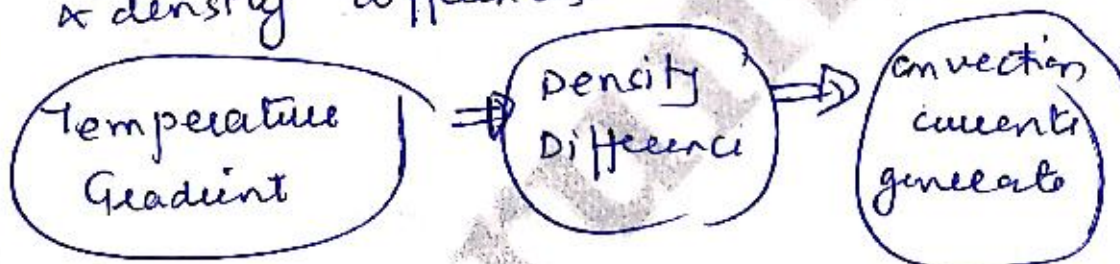
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Convection current hypothesis of Arthur Holmes was given by him in 1930s where the reason for movement of continents (as explained by continental drift theory) was provided

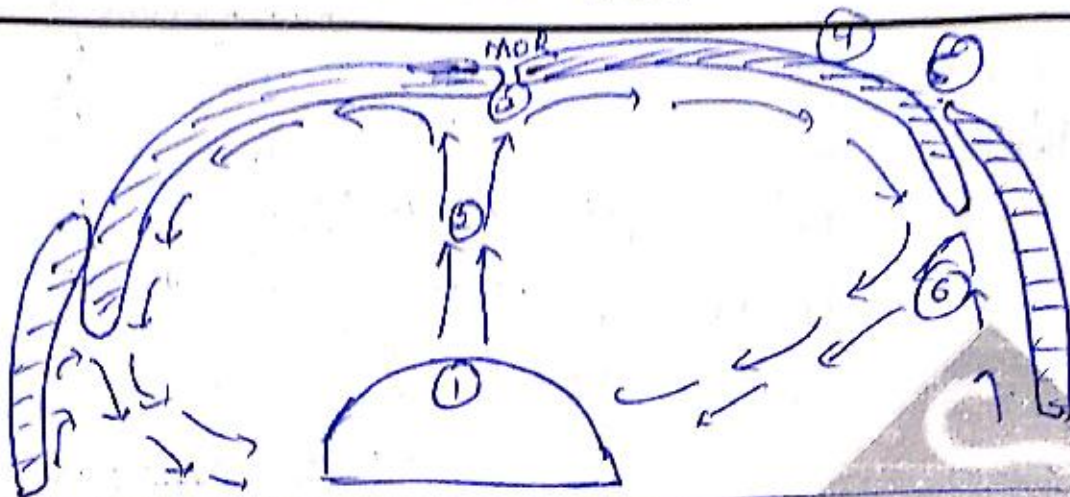
CONVECTION CURRENTS

⇒ are the flowing fluids that operate in the mantle of the earth due to temperature & density differences



Reasons for formation of convection current ⇒ RESIDUAL HEAT OF EARTH
⇒ RADIOACTIVE DECAY

~~State~~ lithospheric plates float on asthenosphere where these convection currents rise due to enormous energy.



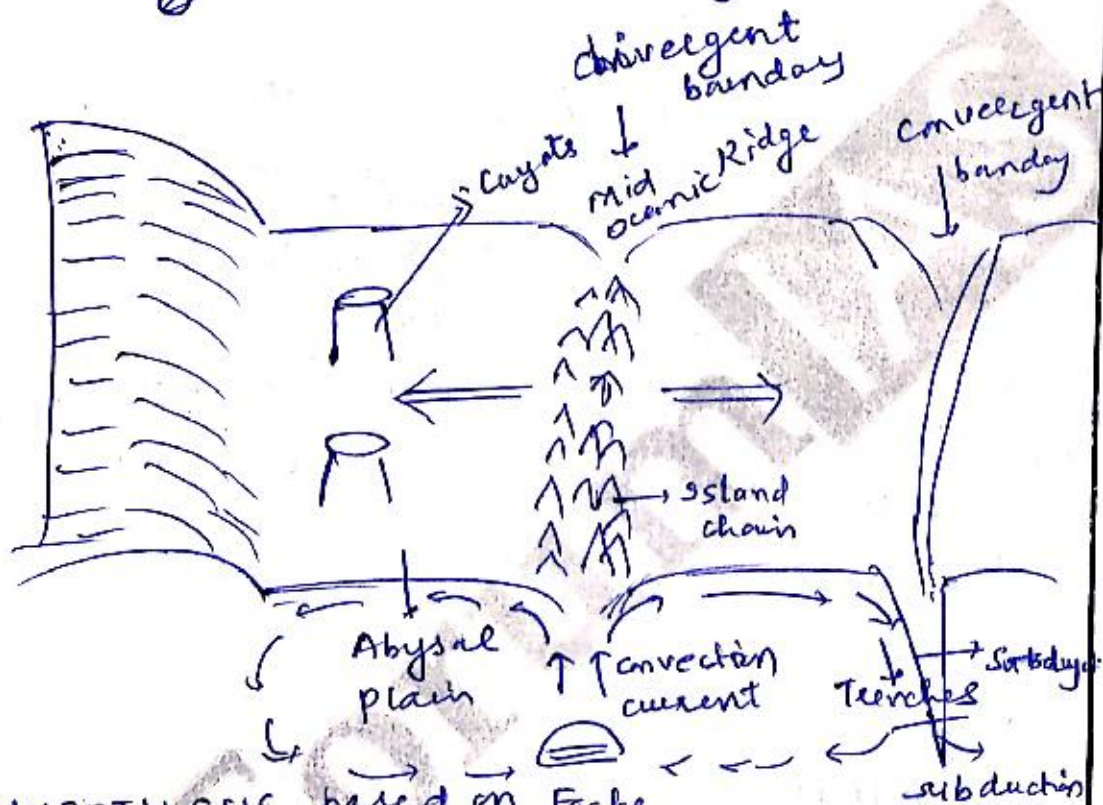
- ① ⇒ convection current generated due to Residual heat & Radioactive decay creating enormous energy
- ② ⇒ Rising of convection currents
- ③ ⇒ divergence of currents (Ridge push) leading to rupture as magma pulls out
- ④ ⇒ plates floaty of asthenosphere
- ⑤ ⇒ subduction of plate (heavier) under lighter ~~ma~~ ^{oceanic} ⇒ destructing older plate
- ⑥ ⇒ convergence boundary of convection plates

convection current hypothesis provides basis for plate ~~tectonic~~ tectonics & explains continental drift.

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sea floor spreading hypothesis was given by Harry Hess during 1940s & 50s after the sea floor was mapped revealing variety of landforms



HYPOTHESIS based on Facts

- The oceanic crust is younger than continental crust
- The rocks along the mid oceanic ridges are similar & equidistant rocks reveal reverse polarity
- Fewer sediments on ocean floor
- volcanic eruptions along the mid oceanic ridge.

- Age along the mid oceanic ridge is youngest & rises as one moves away
- The trenches have deep seated earthquakes while mid oceanic ridge has shallow foci

Hypothesis revealed that convection currents diverge at mid oceanic ridge leading to formation of ridge and the age of rocks thereby is lowest there, creation of new crust at mid ocean ^{compensated} ~~is~~ ^{is} getting ~~destructed~~ ^{destructed} at the trenches where currents converge.

Therefore seafloor spreads & destructs at trenches.

PALEO MAGNETISM → is an evidence for the seafloor spreading. The rocks equidistant on each side of mid oceanic ridge reveals reverse polarity thereby explaining $\swarrow \searrow$ youngest at MOR
Equidistant rocks at same time & getting spreaded

Overall Grading (✓)

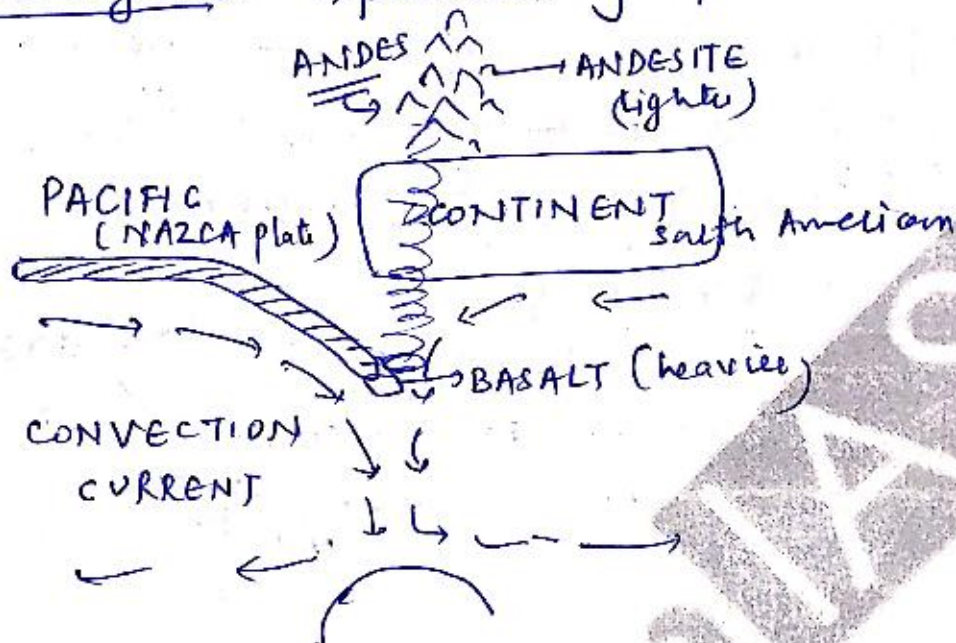
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The mountain systems of the world was left unexplained by the continental drift theory. But the convection current theory (Arthur Holmes) & plate tectonics finally explained the reasons for its formation.



Rockies, Andes are the fold mountains located at margins of the continent due to the oceanic - continental

convergence explained by plate tectonics



The lithospheric plates float on the asthenosphere where the convection current emerges due to residual heat & radioactive decay. These currents originate due to temperature & density difference.

Oceanic plate made of basalt is heavier than continental plate & ~~is~~ subducts due to convergence of plate, due to convection current. Basaltic plate subducts melts & andesitic lava creates magmatic mountains.

The Earthquakes & volcanos are present at various places

- Hotspot plumes
- Circumpacific Belt
- Mid oceanic Ridge
- Mediterranean Region

Fold Mountain regions $\Rightarrow$ are formed due to convergence of plates thereby

Oceanic - continental Region convergence

continental-continental

volcanic mountains at margins along with earthquakes frequency due to instability

non-volcanic mountains but earthquakes are there due to release of energy & friction

Circumpacific region has higher number of marginal islands ~~therefore~~ and unstable plates leading to 700% of earthquakes & volcanos happening there

Overall Grading (✓)

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Q.6) Theory of continental Drift was given by ~~the~~ Alfred Wegener in 1910 which was ~~based on the~~ based on the pin in the reasons for different continents climate

NEED

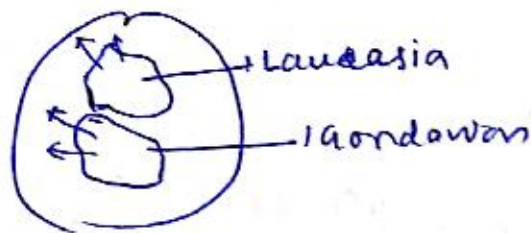
continents stable while climatic zones shift

climatic zones stable but continents shift

Continental Drift Theory

Before 200 million years $\Rightarrow$ Mesozoic Era there was just one landmass called Pangaea & one super ocean called Panthalassa

MESOZOIC ERA $\rightarrow$ started breaking



and the continent broke & started moving towards North west

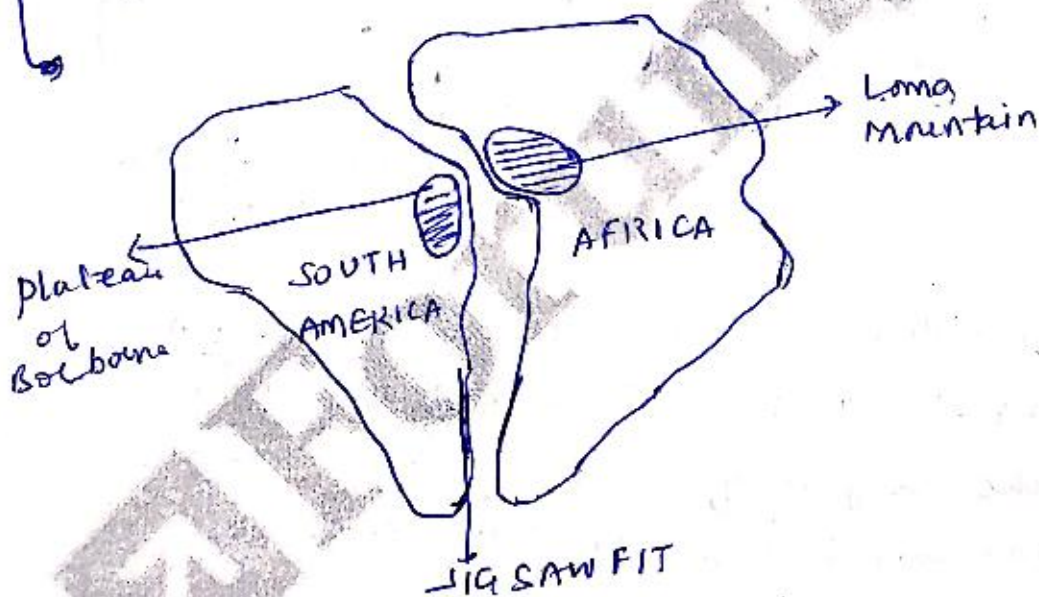
FORCES BEHIND
CONTINENTAL
DRIFT

pole fleeing force
(centrifugal force)

Tidal force (gravitational
pull of sun & moon)

The evidences given by wegnel are

- ① JIG SAW FIT → the boundaries of
continents are roughly aligning with
each other

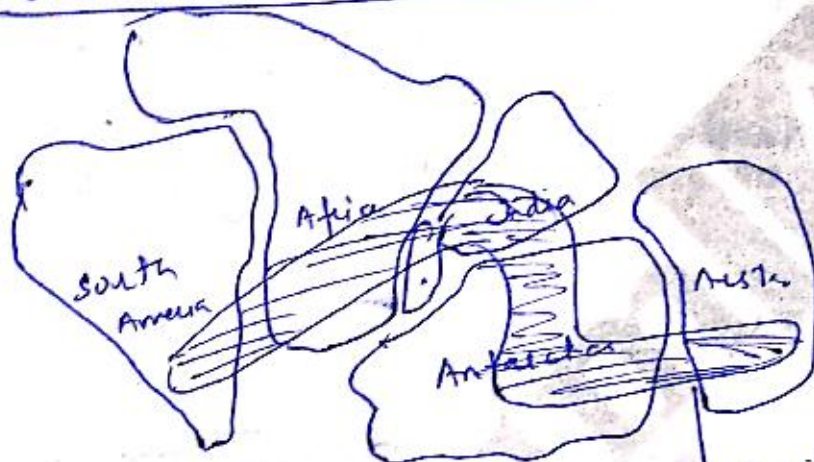


- ② Similar rock ages on the coast

↓
③ Structural fit evidence as shown in
the above picture. ~~The fit.~~

- (3) placer Deposits → The gold deposit of Ghana doesn't have a source rock while Brazil has the same or views of Gold bearing rock

(4) FOSSIL FUEL DISTRIBUTION



↓ Fossils of fern
Glossoptrix
is found

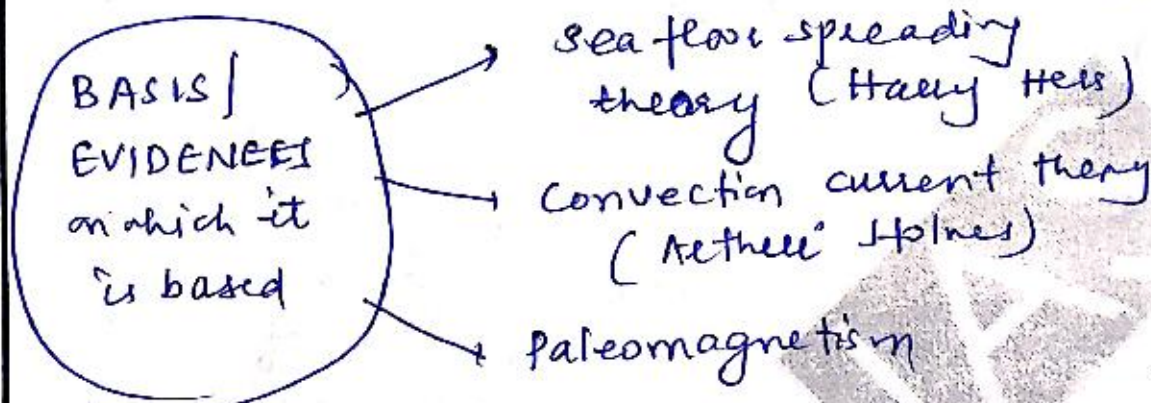
- (5) Paleo-climatic evidence ⇒ Talchee in
Odisha have glacial stratifications evidence
→ Ruhr region of Germany has anthracite
coal which requires equatorial vegetation
in carboniferous.

Despite lack of acceptance of forces & evidences
except tectonics. The theory has been landmark
that paved way for plate tectonics & convection
current

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- 7) Plate tectonic theory was given by Mckenzie, Morgan & Parker in 1960s that remains most acceptable today.



It followed the above theories as drift was explained by convection current & then supported by sea floor spreading.

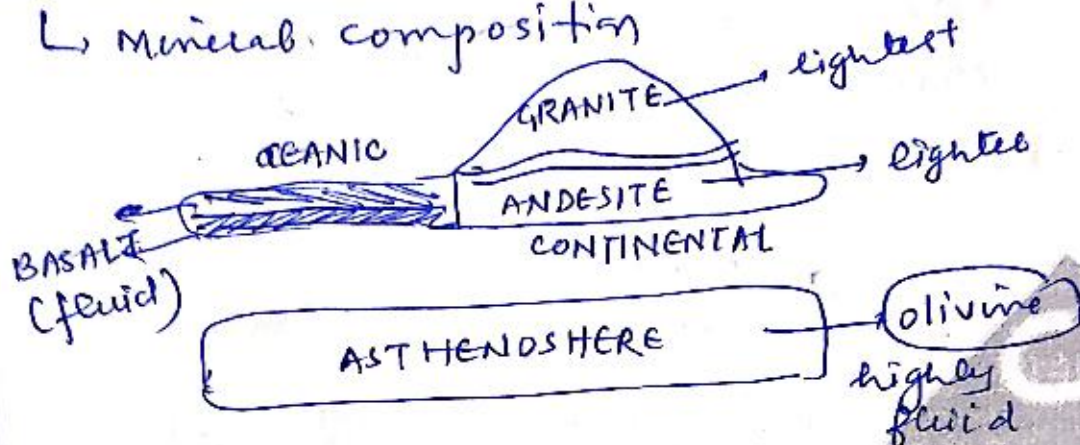


PLATES ⇒ Lithospheric plates are floating on the asthenosphere (semi-molten) where the convection currents rises.

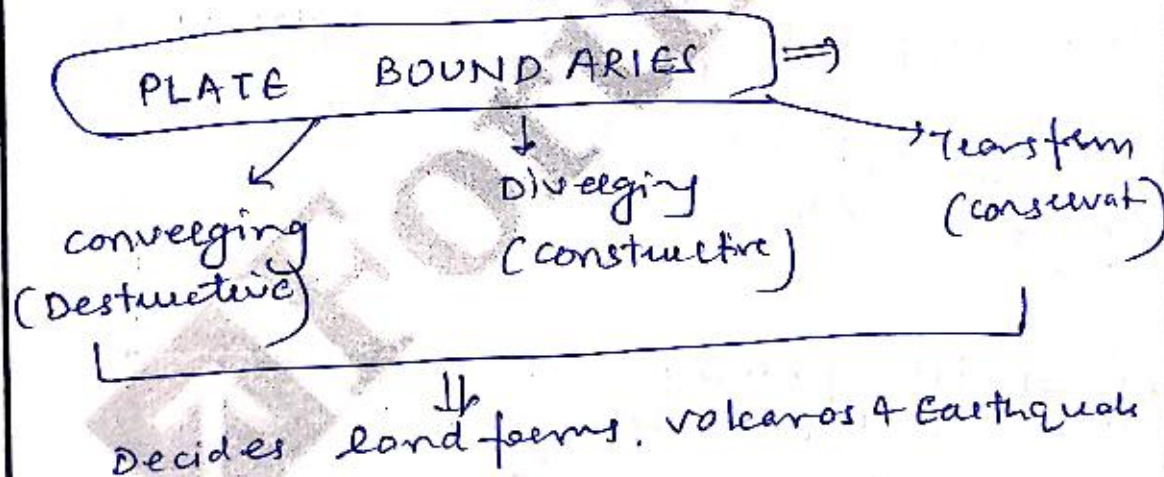
continental & oceanic & are named as per proportion



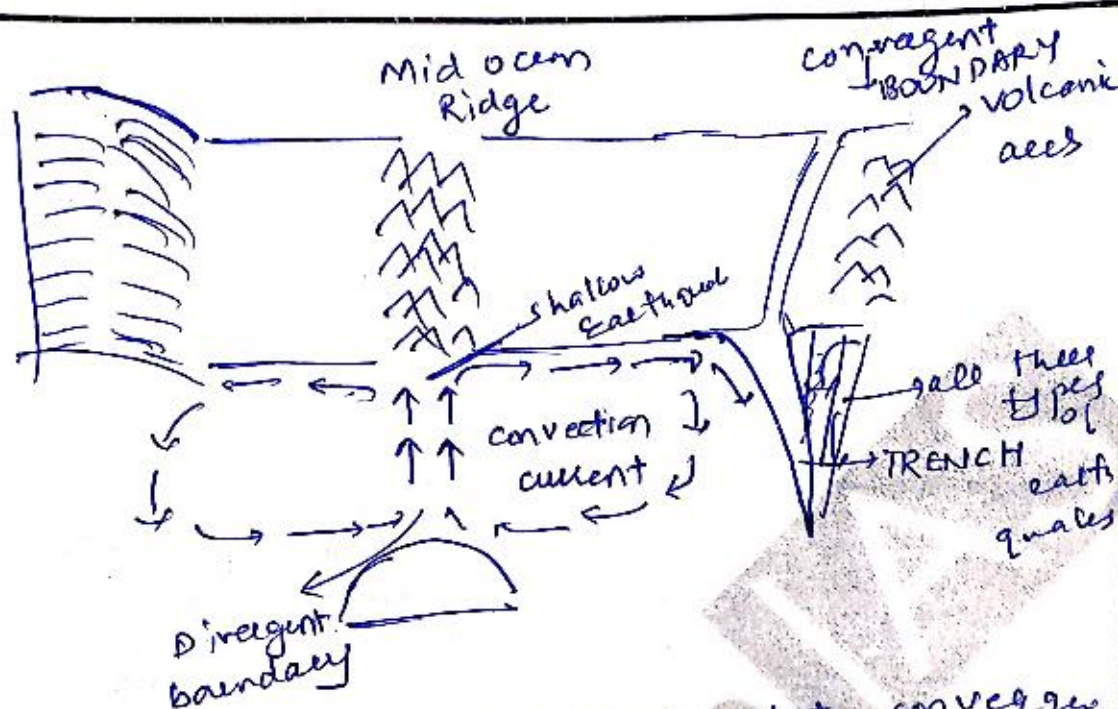
↳ Mineral composition



whole Earth is divided into these plates having different composition of oceanic & continental as explained above
there are 7 major plates & rest minor plates (fill friend)



DIVERGENT BOUNDARY → at diverging limbs or rising limbs of currents
breaks the crust leading to rift valley & nascent sea
↓
African Rift valley ↓
Red sea



- Convergent Boundary** (destruction of crust)
- Oceanic-oceanic plate convergence
heavier plate subducts
creation of island arcs (Japan, Phillipine)
 - Oceanic-continent
volcanic mountains at margin of the continent $\Rightarrow$ Andes, Rockies
 - Continent-continent
fold mountains created $\Rightarrow$ Himalayas, Ural
 - Transform $\Rightarrow$ slide past each other (California, San Andreas)

Plate tectonic is most accepted theory that explains all the questions relating to the landforms & eliminates earlier theories

Overall Grading (✓)

Poor			Average			Good		
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