



RAS

GENERAL STUDIES PAPER-II

Volume-III

NATURAL RESOURCES & GEOPHYSICAL
PHENOMENA | WORLD GEOGRAPHY
INDIAN GEOGRAPHY



CONTENTS	PAGE NO.
Natural Resources Across the World and Geophysical Phenomena	1-8
Structure of Earth	9-15
Volcanism	16-18
Rocks	19-22
Plate Tectonics	23-27
Climatology	28-33
Temperature Anomaly	34-36
Pressure & Winds	36-44
Humidity	44-45
Types of Clouds	46-47
Types of Rainfall	47-48
Air Mass	49
Fronts	50-52
Cyclones	53-55
Climatic Classification	56

CONTENTS	PAGE NO.
Oceanography	57-64
Tides	65-67
Coral Reefs	68-70
Indian Geo	71-80
Climate of India	81-91
Drainage System & Pattern	92-95
Indian Rivers	95-98
Flood & Drought	99-104
Agriculture	105-109
Soils	110-114
Green Revolution	115
Irrigation	116-117
Env. Impact of G.R.	118-119
Location of Primary, Secondary & Tertiary Industries	120-123
Paper Industries	124
Cotton & Jute Industries	125-127

CONTENTS	PAGE NO.
Landforms & Landscape	128-135
Himalayan Drainage System	136-143
Natural Vegetation	144-151
Ocean Current	152-154
Population	155-159
Agriculture	160-161

World Geography

Major Climate Types	162-169
Major Soils of World	170-174
Oceanic Currents	175-182
Coral Reefs	183-186
Tides & Ebbs	187-191
Agricultural Types of the World	192-201
Major Minerals	202-215

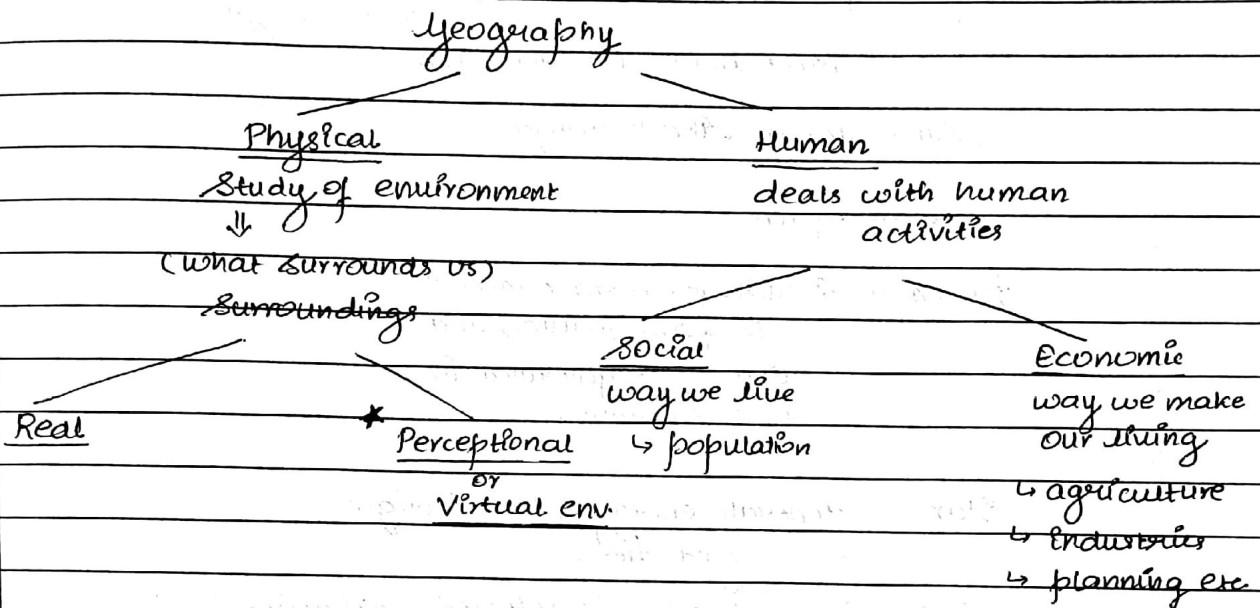
CONTENTS	PAGE NO.
Major Industrial Cities Of Worlds	216-225
World Transport	226-245

Indian Geography

Climate of India	246-255
Distribution of Rainfall in India	256-262
Agriculture in India	263-274
Minerals	275-284
Major oil Refineries of India	285-286
Major Industries	287-301
Transport in India	302-325
Energy in India	326-334
Geography of India	335-341

 Toppersnotes
 Unleash the topper in you
GEOGRAPHY

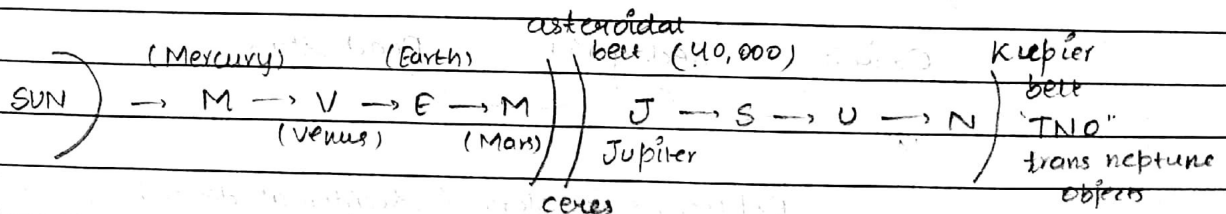
Geo + graphy = Spatial Science
 (talking about surface)
 Earth to have discourse
 ↓
 discussion / describe



EARTH → planet

In 2006, IAU - 8 planets
(Pluto was excluded)

Any celestial body revolving around a star and have enough mass and gravity not only to maintain its shape but also have capacity to clear its own orbit.



Universe = Cosmos = Space
(Greek) (UK)

Astronomy cosmology

Space Science
(Space & outer space)

beyond the earth atmosphere system.

Universe - collection of galaxies

↓
 collection
 of stars
 ←
 Star system.

galaxy in which we live - Milky way
(Akash ganga)

More than 2.6 billion stars.

Sun - star in Akash ganga.

↓
Solar system.

Fusion → 2 hydrogen atom combined
to form helium, and
energy is generated in
form of light.

Star - generate energy, have origin
and dies.

Red giant - ^{when} pressure is released, expansion happens
(i.e. it swells)

↓
Old star, dead stars

↓
→ White dwarf

→ Neutrinor / Pulsar

→ Black hole

(densest)

energy
increases
↓

Intense in
gravitational
force

Star eater

Origin

Red giant

Dead stars

Explosions in stars (Accidental death)
of stars.

only upper part
have experienced
explosion

Partial

complete

Super
Nova

Nova.

hydrogen over the
surface has been
converted to He.

Entire hydrogen
exploded

- 27

Ans.

ORIGIN :-

Nebulae

huge clouds of gases

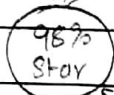
aphelion - far from sun

~~perihelion - close to sun.~~

Interparticle collision in Nebulae.

motion

generation
of heat.



Satellite

 $2\frac{1}{2}$

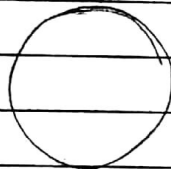
~~place~~

mercury

Venus - 98% CO_2 .
(heavy gas)

05/08

Shape of Earth :-



→ bulging centre part

bottom

Geold

(because of rotation)

Gild system

longitudes

latitudes

Any arc or part of circle which divides earth into equal halves is called great circle.

Distance b/w latitude = 1113 kms

Total latitudes = 181

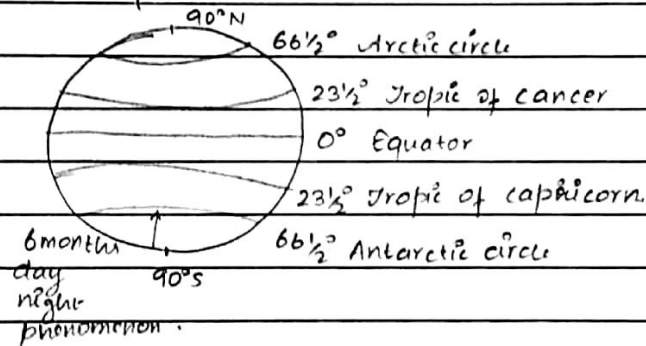
Total longitudes = 360

Along with latitude, dist b/w longitude is same.

Longitudes - $0^\circ \Rightarrow$ Prime Meridian

$180^\circ \Rightarrow$ International date line → not a perfect arc
zig-zag.
(because of data change)

Latitude - $0^\circ \rightarrow$ Equator



Movements of Earth :-

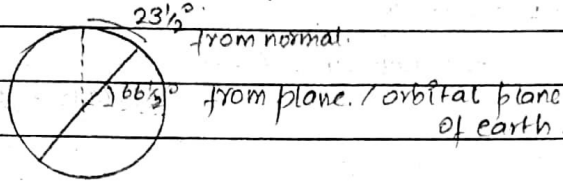
- ① Galactic movement
- ② Rotation
- ③ Revolution

Earth as a member of solar system revolves around centre of its own galaxy, i.e. milky way and is called galactic movement with speed of 250 km/sec, it takes 250 million years to complete one revolution, which is called solar year.

Spinning of earth on its own axis is called rotation.

↓
Imaginary line passing
through centre of earth
and connecting 2 poles.

Axis - Inclined - $23\frac{1}{2}^\circ$
 (22° to 24°)



Impact : ① day and night
 position of time
 Time of a place.
 ② Coriolis force
 ③ Tides.

alternate
rise and fall
in ocean

Duration = 24 hrs.

(speed of ^{rotation of} latitude decreases from equator to pole - due to circumference of latitudes)

Speed of Spinning of pts. located on different latitudes are different because of variation in circumference of latitude.

It is max. at equator and keep on decreasing towards pole
 at 60° latitude, it is exactly half of equator and at 75° latitude it is $\frac{1}{4}$ th of equator.

Direction of rotation - West to east

Parallelism of Earth $\Rightarrow$ Axis

Characteristic of axis

pointing
towards
north
star

The axis of earth remains parallel to its previous position throughout period of revolution and plays very significant role in various earth atmospheric phenomenon.

Revolution :

law's
of
deflection

An apparent force is generated because of rotation of earth called Coriolis force. It affects the direction of moving fluids and causes deflection. Rightward in northern hemisphere and leftward in southern hemisphere.

Magnitude of Coriolis force $\propto$ latitudes i.e (max. at poles and min. at equator)

$\propto$ speed of moving fluid.

(It does not affect speed of fluid)

Movement of earth around centre of solar system i.e. Sun.

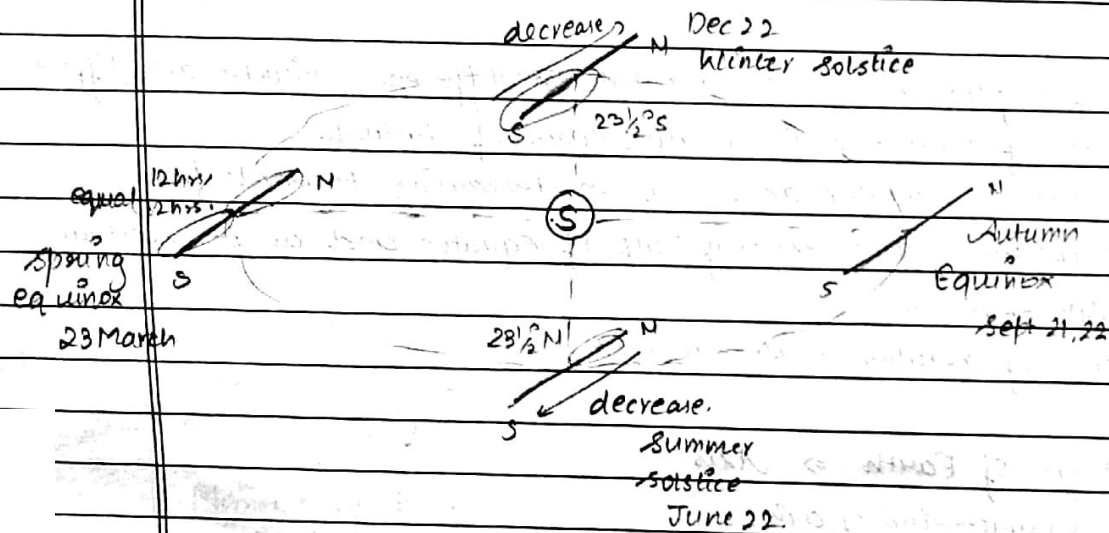
Speed - 29 km/s

$= 365 \text{ days and } 6 \text{ hrs.}$

$+ 24 \text{ hrs} = 366 \text{ days} = \text{leap year.}$

Impact :-

- Duration of sunshine - length of day and night decreases from pole to pole.



Q On 15 Dec, longest shadow of person will be formed at which of the following latitude -

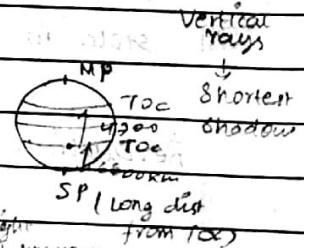
(a) Tropic of Capricorn

(b) Tropic of Cancer

(c) South Pole

(d) North Pole

6 months day-night phenomenon

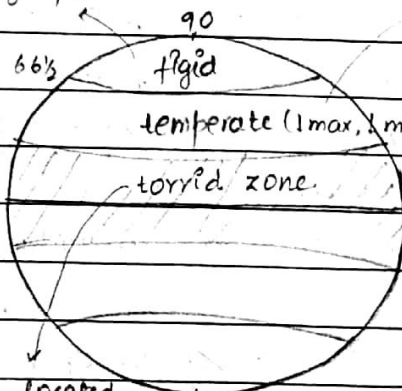


availability of sunlight whole year. No vertical sun rays.

Modern classification :-

Old classification

Insulation - temp. based zone.



Eq. belt - $10^{\circ} \text{N} - 10^{\circ} \text{S}$

Tropical - $10^{\circ} \text{N} - 25^{\circ} \text{N}$

Sub tropical - $25^{\circ} \text{N} - 35^{\circ} \text{N}$

Temperate - $35^{\circ} \text{N} - 55^{\circ} \text{N}$

Sub polar - $55^{\circ} \text{N} - 65^{\circ} \text{N}$

Polar - $65^{\circ} \text{N} - 90^{\circ} \text{N}$

All the places located in this belt will exp. 2 maxima and 2 minima associated with their exp with vertical rays of sun which will be twice a year. Annual avg. temp. is highest from where it keeps on decreasing towards polar.

Time Zone :-

3 types of time :-

- Local time Rotation - 24 hrs. - 360°
- Standard time $1^\circ = 4 \text{ mins}$
- International time

For finding time :-

- (1) Find out difference b/w given longitudes.
- (2) Find out difference of time
 - Same hemisphere - Subtract
 - different hemisphere - Add.

$$\text{Longitude} \Rightarrow \times 4$$

$$\div 15$$

$$\frac{24}{15} \times 2$$

- (3) Find out exact time

Add → eastward

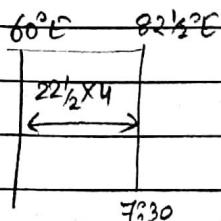
Subtract → westward

$$6:15 \quad 7:00 \quad 7:54$$

Indian Standard time - $82\frac{1}{2}^\circ \text{E}$

(near Allahabad)

Q If it is 7:30 am in India, what would be the time at 60°E longitude?

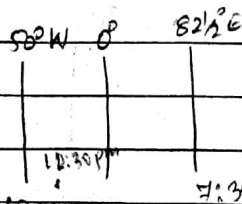


$$22\frac{1}{2} \times 4 = 90 \text{ mins.}$$

→ Subtract

$$= 6:00 \text{ am.}$$

Q If it is 7:30 am in India, find out time at 50°W longitude?



$$132\frac{1}{2}$$

$$15 \times 9 = 135$$

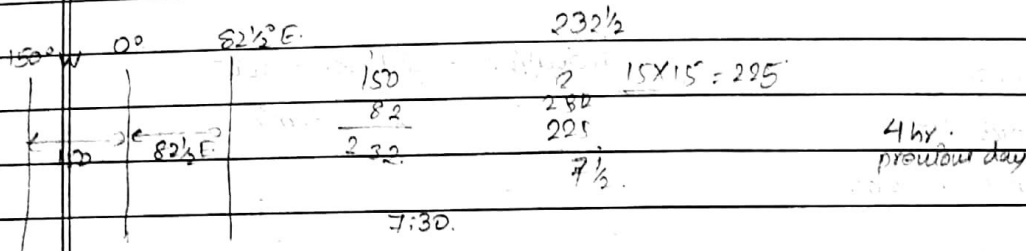
$$8:50 \text{ am}$$

10:40 pm

(6 July)

Q

7:30 am Sunday in India. What will be the time, date & date at $150^\circ W$.



Q

If a person crossing international date line in east west direction if he started on Monday, he will reach on -

(a)

Sunday (b) Tuesday (c) Wednesday (d) Saturday
 Initially - western hemisphere.
 and moving in eastern hemisphere.

Q

Discuss advantages and disadvantages of India having 2 time zones?

France - 15 time zones

Day light saving :- completing all work in day light for saving energy.

Structure of Earth

Surface

The configuration of surface of earth is largely product of processes operating in interior of earth

Internal (6400 kms)

our reach - 12 kms

Indirect Sources

Indirect Sources :-

Physical

→ Conditions of earth interiors.

↳ Density, pressure and temperature

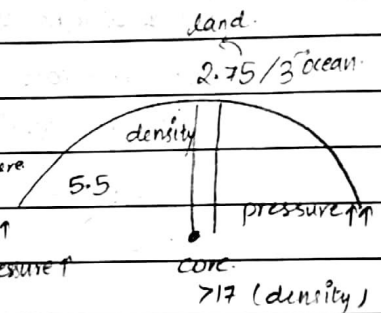
↳ Volcanoes

→ The study of meteoroids

Any solid particle entering earth's atmosphere

→ Seismology: Earthquake wave (study)

density ↑
when pressure ↑



Avg. increase = $1^{\circ}\text{C} / 32 \text{ mtr}$
in temp.
↓
 2000°C
(temp. of core)

for maintaining this density
core is made up of heavy
material like Ni, Fe - NiFe

100-200km → zone

The temp. is exceptionally high

but not higher than core.

Pressure ↑

↓
Melting pt. ↑

presence of radioactive
minerals - Radiogenic heat

Rocks - aggregates of minerals.
(partial heating of rocks)

Meteoroid - Source - Asteroid belts

Partial / complete explosion → due to friction force

↓
shooting
star

↓
fire ball

↓
temp ↑

~~Meteoroids~~

For source / explanation of core

← meteoroids
density

Comets head/coma

tail

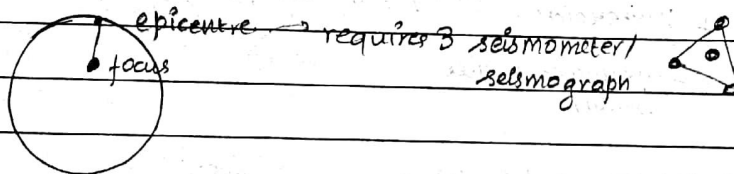
Earthquake :- displacement of rocks

Vibration produced below earth surface because of displacement of rocks.

Fault
↓
sharp
break
in
crustal
rocks.

Force shock, main shock, after shock

The pt. of origin of an earthquake is known as focus or hypocentre.
Closest pt. from hypocentre on surface is called epicentre,
which is vertically above the focus.



On the basis of ^{depth} density :-

Shallow foci $< 60 \text{ km}$

Intermediate foci $60 - 300 \text{ kms}$

Deep foci $> 300 \text{ kms}$

Deepest - 720 kms (Chile)
deep

Size of earthquake is measured by 2 terms

→ Magnitude

→ Intensity

Amt. of energy released during earthquake is called magnitude.

Severity of ground motion produced is called intensity

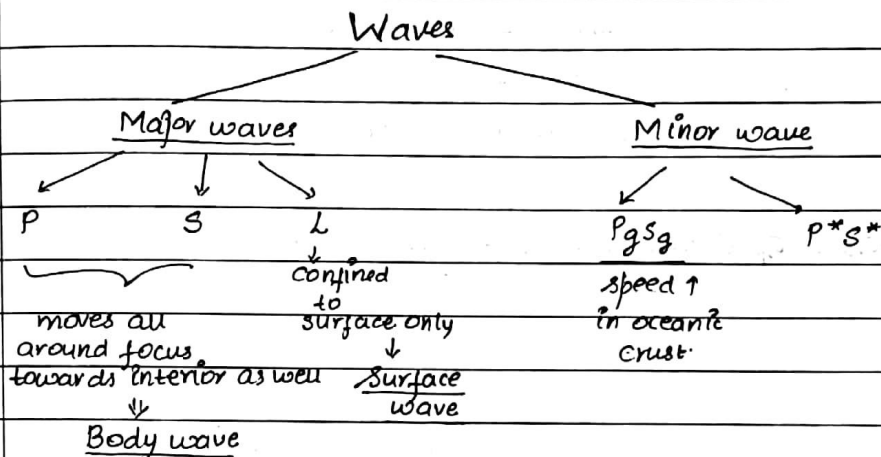
Magnitude is measured by - Richter scale

Intensity - Modified mercalli scale

Magnitude - power Intensity - Effect / output
 (Nature of foci, dist., location - factors)

If 2 diff. earthquake have same magnitude and same intensity, then they may have diff. foci.

Destruction - depends on popⁿ
 (anthropology)



Prop. of waves:

① Speed → $\propto$ Density of the medium.

P → max. / highest speed
 (first one to be recorded - Primary wave)

S → Second highest speed
 Secondary wave

L → product of P and S
 longest wavelength and lowest speed

② Medium: requirement to move

Must have resistance

Solid, liquid and gases → P can pass through all states but with varying speed.

S → medium - rigidity
 can pass only through solid

L - similar to P

③ Particle of motion within wave :-

P $\Rightarrow$ to and fro / up down

Longitudinal wave

Similar to sound wave

S $\Rightarrow$ perpendicular to direction of propagation of wave

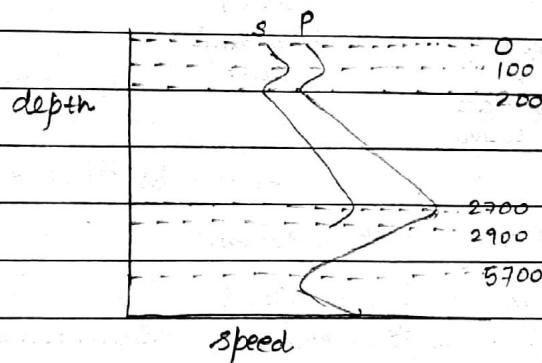
transverse wave

Similar to light wave

L $\Rightarrow$ combination of both

most destructive of all

The response of earth interior to the waves :-



based on
seismography

First 100 km - speed of both waves increases $\Rightarrow$ Lithosphere

100-200 km - speed of both waves decreases $\Rightarrow$ Asthenosphere

200-2700 km - speed continuously increases $\Rightarrow$ Mesosphere

2700-2900 - decreases

at 2900 kms - S stops, does not go deeper } $\Rightarrow$ Barosphere

at 5700 kms - speed of P again increases

