



# UP-PCS

UPPSC Combined State/  
Upper Subordinate Service Exam

**VOLUME-III**

**INDIAN AND WORLD GEOGRAPHY**



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# PHYSICAL GEOGRAPHY

Geography

Real

Social

## Economie

↳ planning etc.

( Pluto was excluded,

Diagram illustrating the order of planets from the Sun (SUN) outwards:

- SUN
- (Mercury) → M
- (Venus) → V
- (Earth) → E
- (Mars) → M
- Asteroid belt (40,000)
- Jupiter → J
- Saturn → S
- Uranus → U
- Neptune → N
- Kuiper belt
- "TNO" (Trans-Neptunian Objects)

J (UK)

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 - <sup>when</sup> pressure is released, expansion happens  
(i.e. it swells)

↓  
Old star, dead stars

↓  
↳ White dwarf

↳ Neutrinor / Pulsars

↳ Black hole (densest)

Intense in  
gravitational  
force

energy  
increases  
↓

Star eater

Origin

Red giant

Dead stars

Explosions in stars (Accidental death)  
of stars.

only upper part  
have experienced  
Explosion

Partial

Nova.

hydrogen over the  
surface has been  
converted to He.

complete

Entire hydrogen  
exploded

Super  
Nova.



- Q 1) After the stage of Super Novae, a star will be called red giant.  
 2) After the stage of Novae, a star may be called white dwarf, neutrino.

Ans. Both statements are false.

ORIGIN :- Nebulae

↓  
huge clouds of gases

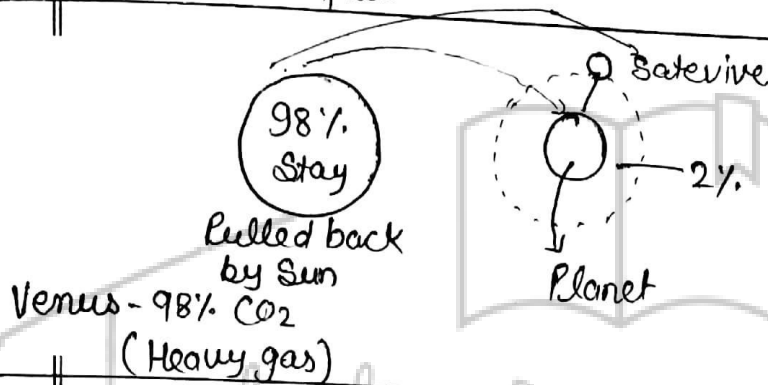
aphelion - far from sun

perihelion - close to sun.

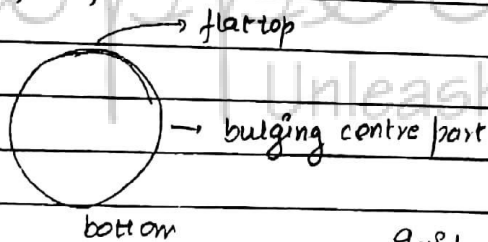
Interparticle collision  
in Nebulae.

motion

generation  
of heat



05/08 Shape of Earth :-



Geoid

(because of rotation)

Grid 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

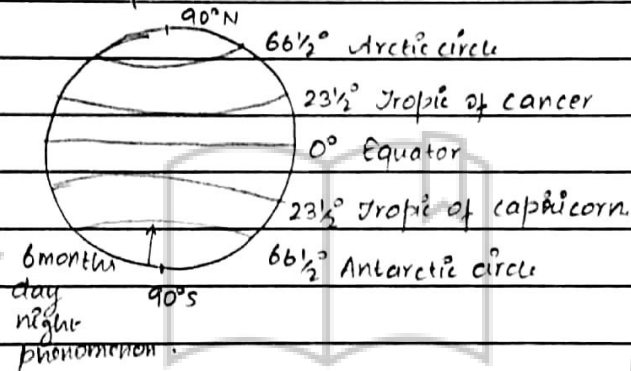
Total longitudes = 360

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

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

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

Latitude -  $0^\circ \rightarrow$  Equator



Movements of Earth :-

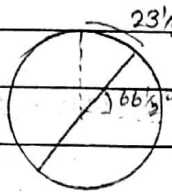
- ① Galactic movement
- ② Rotation
- ③ Revolution

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



$23\frac{1}{2}^\circ$  from normal.

$66\frac{1}{2}^\circ$  from plane / orbital plane of earth.

Impact :  $\odot$  day and night  
 $\odot$  position of time

$\odot$  Time of a place.

$\odot$  Coriolis force

$\odot$  Tides.

alternate rise and fall in ocean

Duration = 24 hrs.

rotation of

( speed of  $\wedge$  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  $60^\circ$  latitude, it is exactly half of equator and at  $75^\circ$  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 :

fomer's law

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.

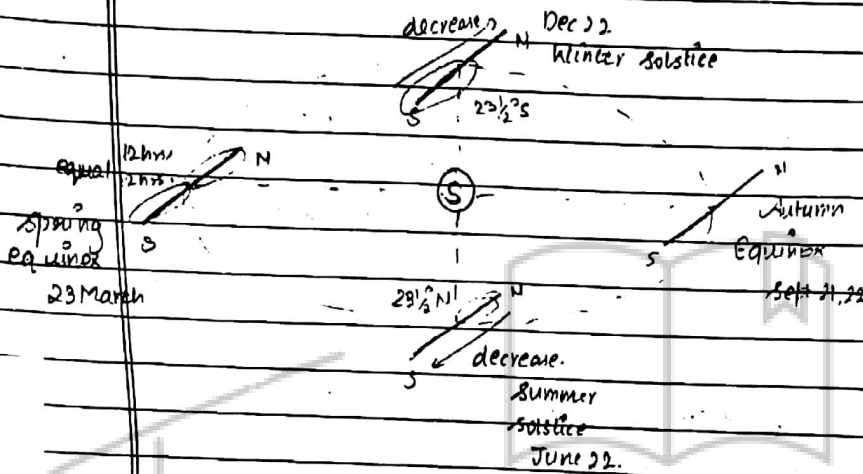
Speed -  $29 \text{ km/s}$

= 365 days and 6 hrs.

+ 24 hrs = 366 days - Leap year.

Impact :-

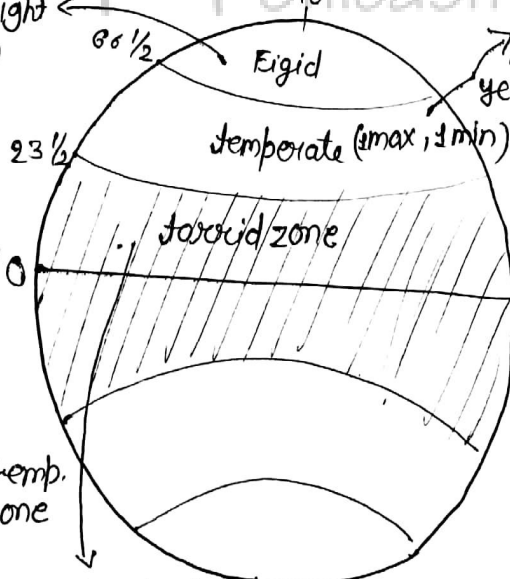
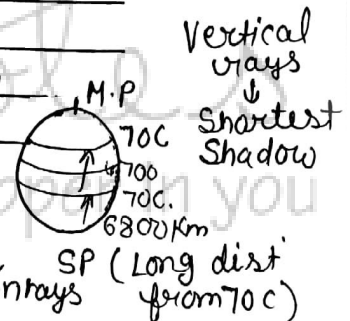
- Duration of Sunshine - length of day and night decreases from pole to pole.



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 month day night phenomenon



MODERN CLASSIFICATION :-

- Eq. belt -  $10^{\circ}\text{N}$  to  $10^{\circ}\text{S}$   
 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 -  $65^{\circ}\text{N}$  -  $90^{\circ}\text{N}$

Insulation - temp. based zone

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

## Time Zone :-

3 types of time :-

- Local time Rotation - 24 hrs. -  $360^\circ$
- 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.

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

$$\div 15$$

$$\frac{x + x^\circ}{2}$$

(3) Find out exact time

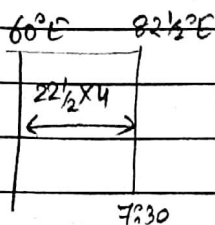
Add → eastward

Subtract → westward

$$6:56 \quad 7:00 \quad 7:04$$

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  $60^\circ \text{E}$  longitude?

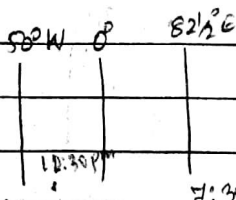


$$22\frac{1}{2} \times 4 = 90 \text{ mins.}$$

→ Subtract

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

Q If it is 7:30 am in India, find out time at  $50^\circ \text{W}$  longitude?



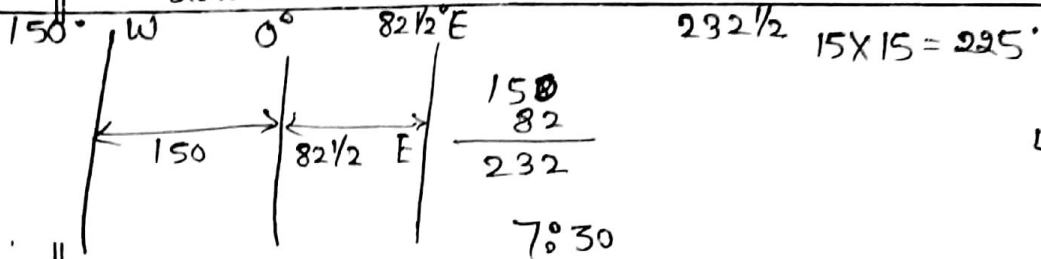
$$132\frac{1}{2}$$

$$15 \times 9 = 135$$

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

10:40 pm

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



4 Hours  
Previous day

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

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 (8400 kms)

our reach - 12 kms

↓  
Indirect Sources

### Indirect Sources :-

→ <sup>Physical</sup> Conditions of earth interiors.

↳ Density, pressure and temperature

↳ Volcanoes

→ The study of meteoroids

→ Seismology: Earthquake waves (study)

Avg. Increase =  $1^{\circ}\text{C} / 32 \text{ mtr}$   
in temp.

↓  
2000°C  
(temp. of core)

100-200km → Zone

The temp. is exceptionally high

↓  
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

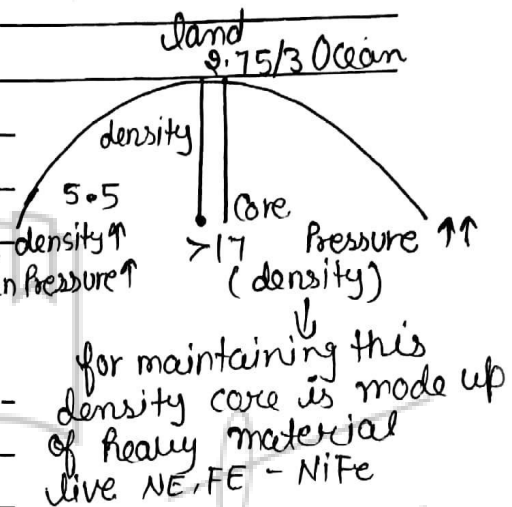
↓  
fire ball

↓  
temp ↑

Meteorites - For source / explanation of core

← meteoroids

← density



Pressure ↑

↓  
Melting pt ↑

but not higher than core.

Comets - head/coma

tail

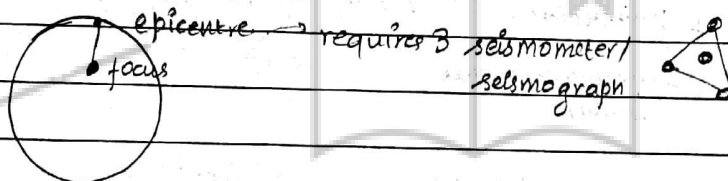
Earthquake :- displacement of rocks

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 <sup>depth</sup> density :-

Shallow focii < 60 km

Intermediate focii 60 - 300 kms

Deep focii > 300 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

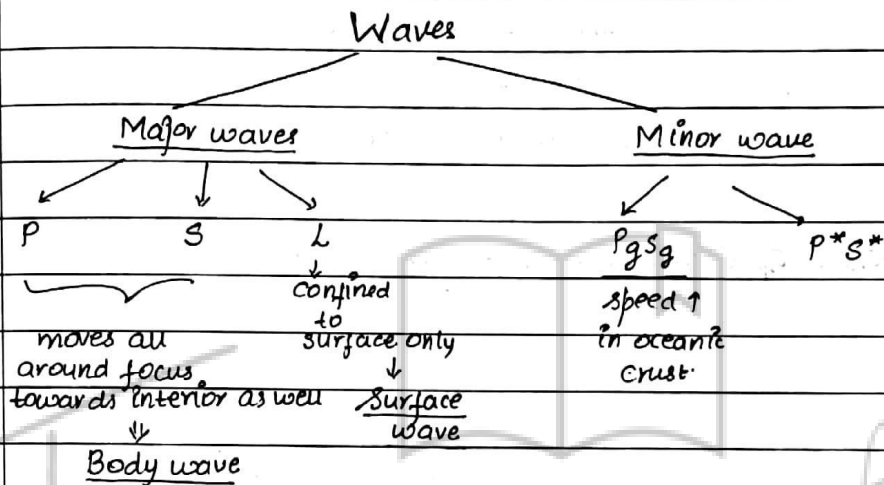
Intensity - Modified mercalli scale



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 pop<sup>n</sup>  
 (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

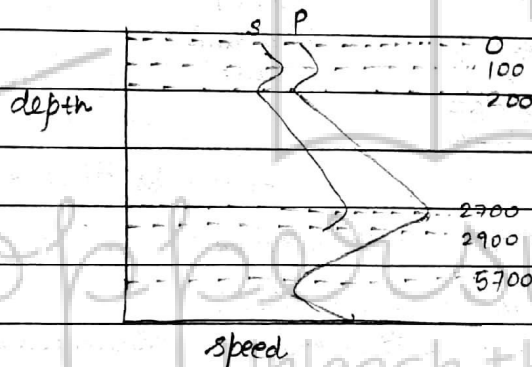
transverse wave

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

