



Qa) Define fertilizer. Also describe its types.

Answer Fertilizer

* Fertilizers are chemical substances help in growth of crops.

Fertilizers are chemical nutrients of plants. In fact fertilizers are essential for plants. Fertilizers increase productivity by improving nature of the soil. Therefore, fertilizers are chemical nutrients.

Types of fertilizers

Two important types are as below:

a) Organic fertilizers

"Organic fertilizers are natural fertilizers."

Organic fertilizers are natural fertilizers. These are produced from animal and plant wastes.

e.g., animal manure and agriculture wastes

b) Inorganic fertilizers

"Inorganic fertilizers are chemical nutrients mainly nitrogen, phosphorus, and potassium"

Inorganic fertilizers are chemicals. These are man-made fertilizers. These are mainly in the form of NPK fertilizers.

c) Nitrogen fertilizers (N)

Nitrogen fertilizers

are present in chlorophyll
of plants."

Nitrogen fertilizers
help in proper photosynthesis process.

(ii) Phosphorus (P) fertilizers

Phosphorus is present
in protoplasm
of plants."

4
5
Phosphorus is present
in protoplasm. Phosphorus helps
in growth of roots.

(iii) Potassium (K) fertilizers

"Potassium is mainly
present in stems
of plants."

Potassium helps in
opening and closing of stomata.
It helps in complete growth

of plants.

Q b) Describe antibiotic and its types.

Answer Antibiotic

"Antibiotics are small compound used during treatment of diseases caused by prokaryotes."

Antibiotics are chemical substances. These are used in treating bacterial diseases. i.e., diphtheria and tetanus.

"Antibiotics are produced from parts of bacteria."

Hence, antibiotics are also produced from bacteria.

Types of Antibiotic

Following are types:

Antibiotic types

↓
Penicillin

↓
Cephalosporin

↓
Aminoglycosides

↓
Fluoroquinolones

a) Penicillin antibiotic

"Penicillins are widely used antibiotics."

Penicillins are produced from fungus. These are widely used penicillin.

e.g., skin rashes, chest pain, and urinary tract pain etc.

b) Cephalosporin antibiotic

"Cephalosporins are particular antibiotics"

Cephalosporin particularly
used against meningitis.

c) Amino glycosides antibiotic

"Amino glycosides are
used against serious
diseases."

Amino glycosides are
used for treatment of serious diseases.

i.e., septicæmia

d) Fluoroquinolone antibiotic

Fluoroquinolone are
most abundant antibiotics.

Fluoroquinolone are
abundant in nature. These are
also called spectrum antibiotic.

Qc) Describe vaccine. Also describe its types. Draw some diseases and its vaccines chart.

Vaccine

"Vaccine is a dead or inactive form of organisms."

Vaccine is a dead or inactive form of organisms. It is used to provide immunity to body against injury or certain diseases.

"Vaccines are produced from bacteria, as well as, fungus."

Therefore, vaccines are immunity providing substances.

Types of vaccines

types:

Following are

Vaccine types

↓
Attenuated

↓
Inactivated

↓
~~Toxoid~~

↓
Conjugated

a) Attenuated vaccines

" Attenuated vaccine
is a type of weakened
vaccine."

Attenuated vaccine also known
as weakened form. These are
used against measles, mumps,
and rabies.

e.g., MMR vaccine

b) Inactivated vaccine

"Inactivated vaccines
are known as killing
vaccines."

These are used against
poliomyelitis.
i.e., polio vaccine

c) Toxoid vaccine

"Toxoid vaccines are
produced from bacterial
parts in inactivated
form."

Toxoid vaccines are
used against bacterial diseases
including diphtheria and tetanus.
i.e., BCG vaccine

d) Conjugated vaccine

"Conjugated vaccines
are produced from
bacterial parts
along with proteins."

Conjugated vaccines are mixture of bacteria and protein parts.
 e.g., Haemophilus type B.

Some diseases and their vaccines

(4.5)

Disease	Vaccine
measles and mumps	MMR vaccine
polio myelitis	polio vaccine
diphtheria, tetanus and cough	DPT vaccine
tuberculosis	BCG vaccine
anthrax	anthrax vaccine

Q.1) Describe magnitude of a star.
 Also describe relation between temperature and colour of a star

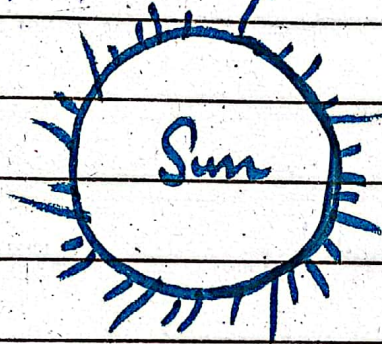
Star

"Star is a shining object."

Star is a bright object.
It has own light. It produces heat
and energy.

~~"Star is a very
hot object."~~

Star has the highest temperature
about 1500 million $^{\circ}\text{C}$.
e.g., Sun and pistol



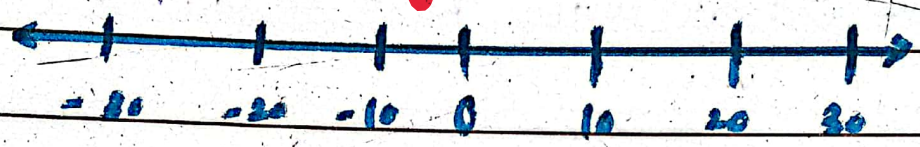
Magnitude of a star

"Magnitude of a star
describes brightness
of a star."

Magnitude represents
brightness of a star. It is
described on a Stellar scale
ranging from +30 to -30.

"The more the negative the bright the stars and

The positive value represents faintness of a star."



(Stellar Scale)

$\epsilon - \epsilon$, the brightest star is Sirius with magnitude of -1.46 .

Relation between temperature and colour of a star

"Temperature can be described by knowing colour of

Temperature and colour of a star can be described by

relative measures. A star with longer wavelength has least temperature as energy is less. Therefore, star colour is red and it is faint. Moreover, when wavelength ^{decreases} increases, its temperature increases as energy also increased. Therefore, star look bright with blue colour.

wavelength \uparrow energy \downarrow

red colour \rightarrow faint

wavelength \downarrow energy \uparrow

blue colour \rightarrow bright

Therefore, temperature and colour of a star can be relatively determined.

Qa) Define optical fibre. Also describe its types and its parts.

Answer

Optical Fibre

"Optical fibres are strands of glass that transmit light rays from one point to other."

Optical fibres are strands of glass. These transmit light rays for telecommunication purpose. Therefore, optical fibres are transmitters and receivers of light rays.

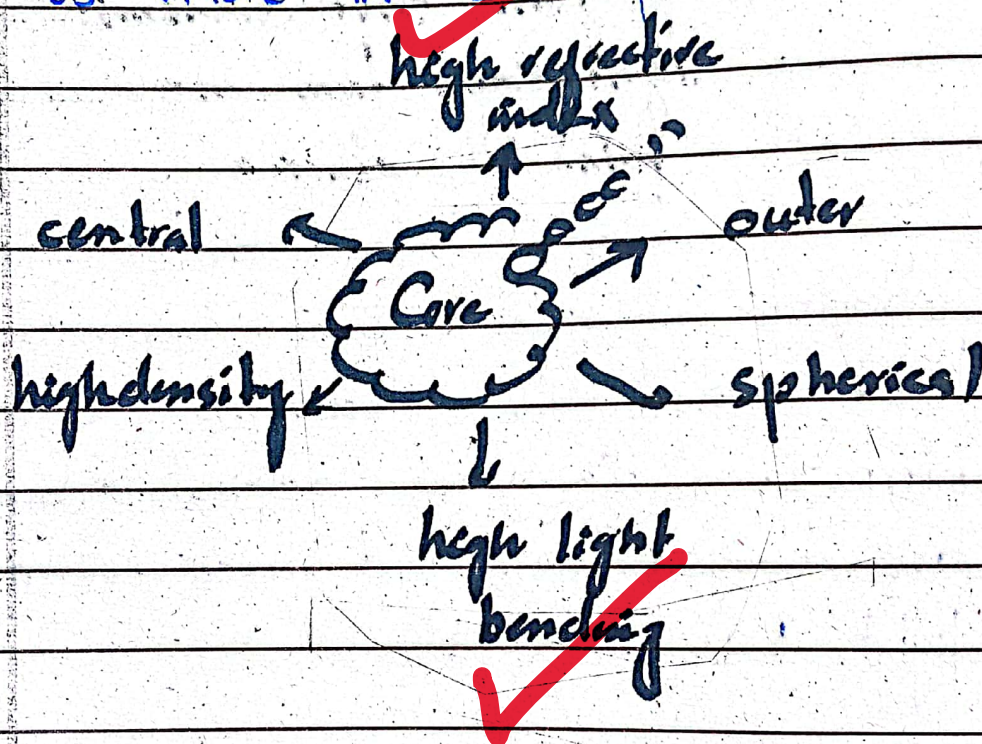
Parts of optical fibres

Following are parts:

a) Core of optical fibre

"Core is a spherical

and central part of optical fibre. Core is outer, central, and spherical part. It has high density and has high refractive index. Moreover, light bending is more in core part.

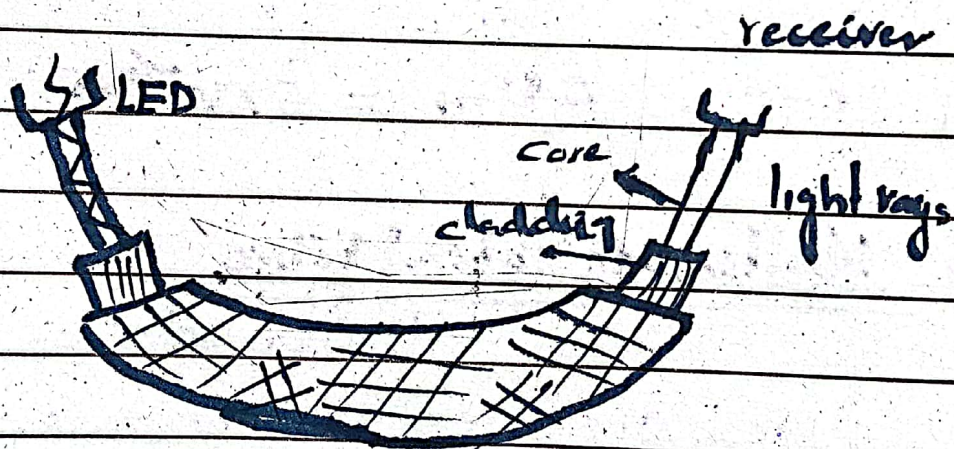
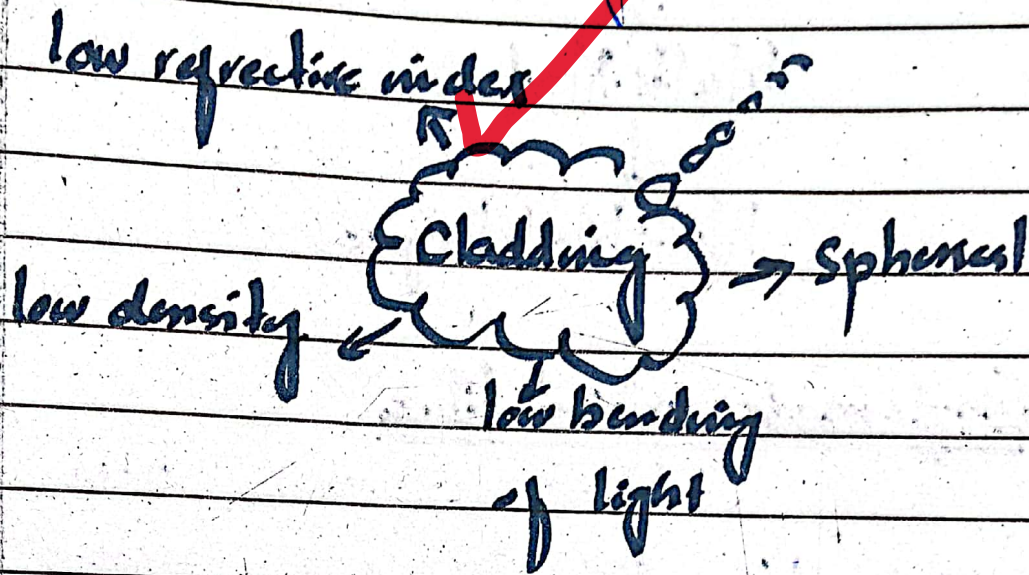


b) Cladding part of optical fibre

Cladding is a spherical cover over core.

Cladding is spherical over core. It has low

density and low refractive index. Moreover, bending of light is low at cladding.



• Optical Fibre

Types of optical fibre

Following are

types:

Types

↓
Single Mode

↓
~~Multi Mode~~

↓
Multi Mode Degree

a) Single mode optical fibre

Single mode optical fibres are the smallest energy passing fibres.

i.e., $5 \mu\text{m} = 5 \times 10^{-6} \text{m}$

b) Multimode optical fibre

Multimode optical fibres are medium ranging fibres.

i.e., $50 - 100 \mu\text{m}$

c) Multimode degree optical fibre

Multimode degree optical fibres are the highest

energetic waves:

i.e., 1,000 Mm

Qb) Describe GPS. Also describe its working principle.

Answer Global Positioning System (GPS)

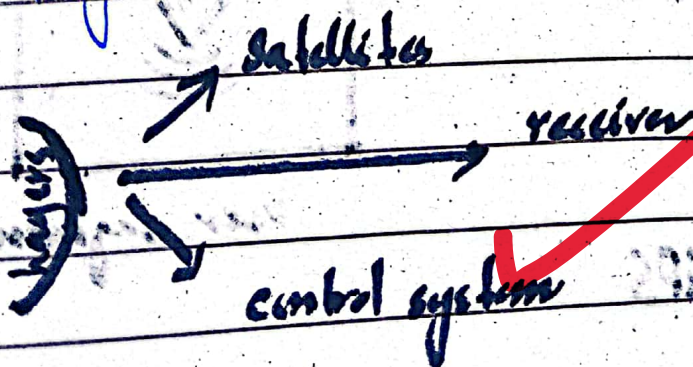
"GPS is combination of satellites."

GPS is composed of at least 24 satellites. In fact, it is a navigation tool. It was discovered by the US - Defence system in 1973 for the military purpose.

Working principle of GPS

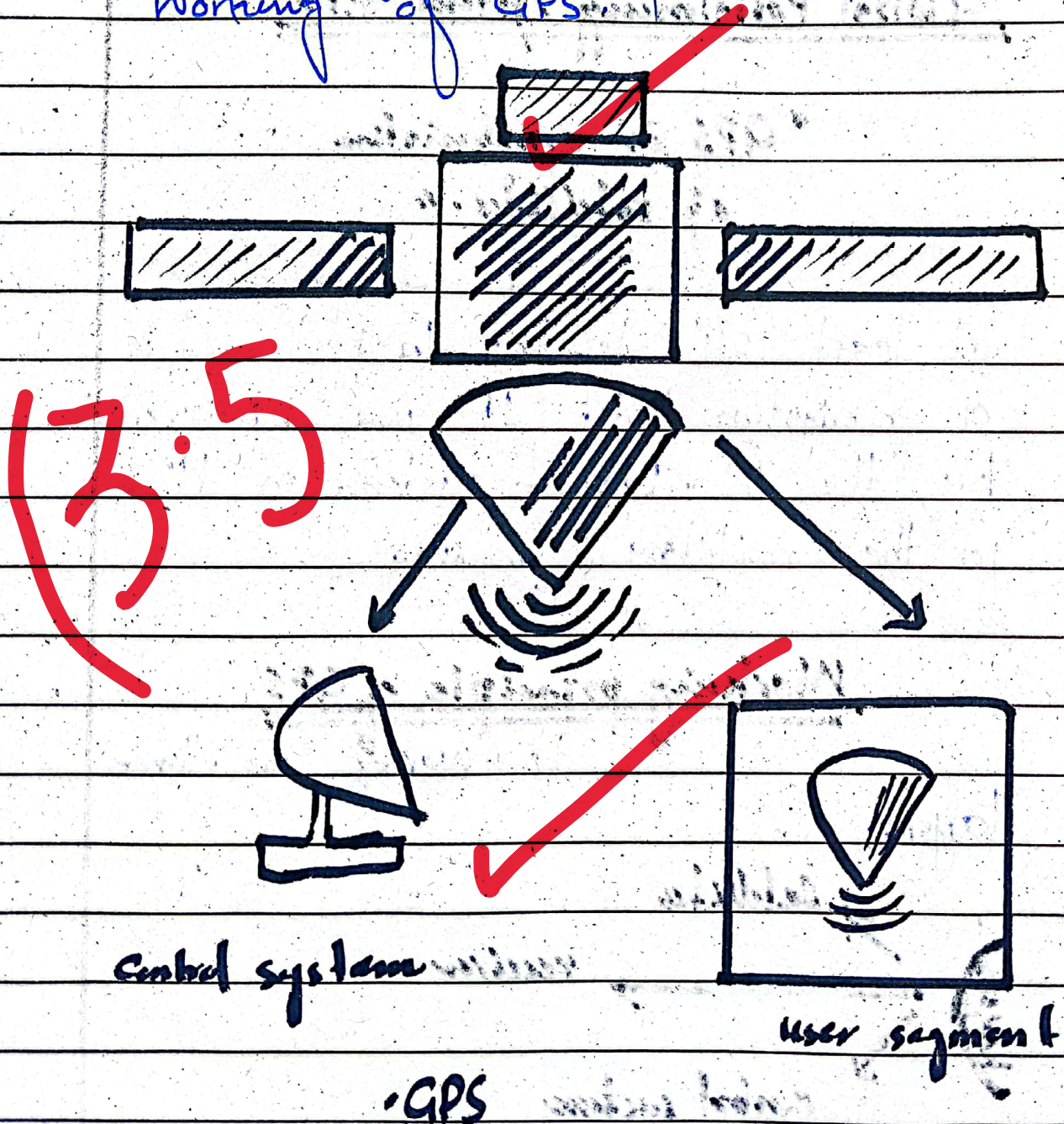
It works in three

layers:





Satellites are sending rays to determine particular information. This information is forwarded to receivers. Later, receivers send information to control system. In fact, control system helps in proper working of GPS.



GPS

Qc) Describe Sun. Also describe its atmosphere.

Answer Sun

"Sun is the brightest star."

Sun is a star. In fact, sun is a bright star. It produces light and energy. It is the hottest object and has temperature about 1500 million $^{\circ}\text{C}$. Mass of sun is 2×10^{30} kg and its distance from the earth is 150 million miles km. Thus, Sun is the largest and hottest star.

temperature 1500 million $^{\circ}\text{C}$

2×10^{30} kg
SM =

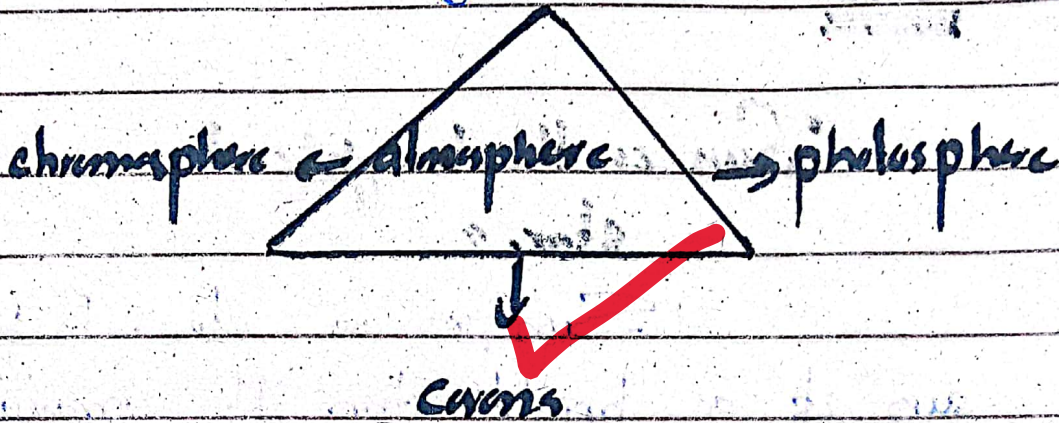
features of Sun

gives energy and heat

distance 150 million miles km

Atmosphere of Sun

Atmosphere of sun is composed of three layers.



i) Photosphere part of Sun

"Photosphere is the lightest region."

Photosphere is a light region of sun. It is first external part of sun.

ii) Chromosphere part of Sun

"Chromosphere is a colored part."

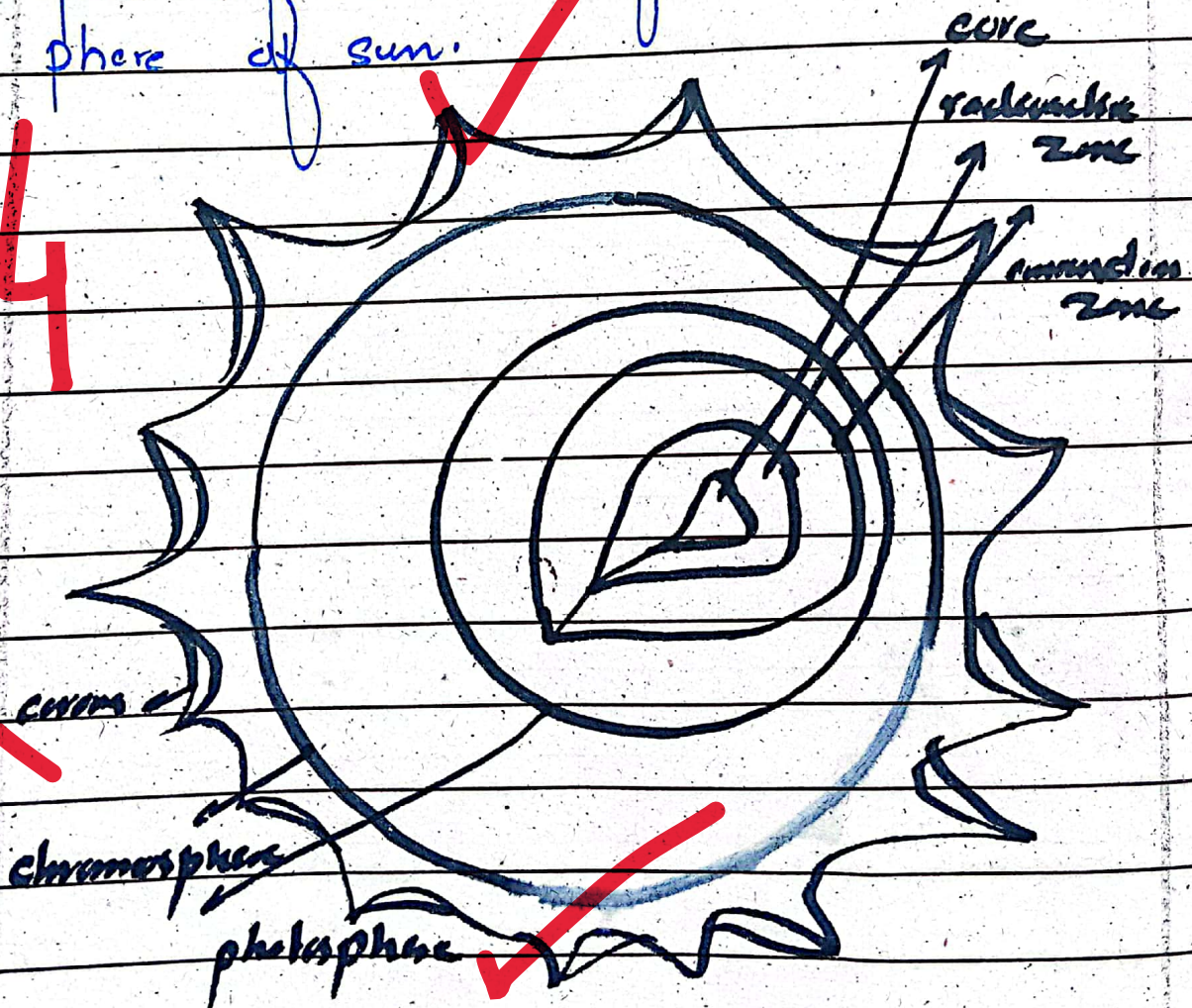
Chromosphere is a dark part of sun. It extends

outward from photosphere region.

(ii) Corona of Sun

"Corona is also known as solar wind."

Corona is the outer most part of Sun. It is the hottest part of Sun. In fact, it is atmosphere of sun.



• Structure of Sun

Qd) What do you know about fertilizer?
Also describe modes of operating fertilizers.

Fertilizers

"Fertilizers are chemical substances used to increase productivity."

Fertilizers are chemical substances. These are used to improve soil nature. Moreover, fertilizers are essential for plants growth.

i.e., nitrogen, phosphorus, and potassium - (NPK)

Modes of Operations

Two modes of operations are as below:

a) Direct mode of operation

"Direct modes provides

fertilizers directly by plants."

In direct mode of operation, fertilizers are directly given to plants by plants.
i.e., nitrate, ammonium etc

b) Indirect mode of operation

"Indirect mode provides indirect chemicals."

In indirect mode, fertilizers are chemically provided by indirect ways.

e.g., Ca , Mg , CaCO_3 etc