Q a) 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.

i.e., 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.

i) Nitrogen fertilizers (N)

Nitrogen fertilizers

are presented in chlorophyll of plants."

Nitrogen fertilizers help in proper photosynthesis process.

ii) **Phosphorus(P) fertilizers**

"Phosphorus is present in protoplasm of plants."

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

iii) **Potassium(K) fertilizers**

"Potassium is mainly present in stomata of plants."

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

of plants.

Qb) 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, diptheria and tetanus

"Antibiotics are produced from parts of bacteria."

Hence, anti-biotics are also produced from bacteria.

Types of Antibiotic

Following are types:

Antibiotics 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 pains and urinary tract pain etc

b) Cephalosporin antibiotic

" Cephalosporin are particular antibiotics "

Cephalosporin particularly used against meaningitis.

c) **Amino glycosidas antibiotic**

"Amino glycosidas are used against serious disease."

Amino glycosidas are used for treatment of serious diseases.

i-e, septicaemia

d) **Fluoroquinolonin antibiotic**

"Fluoroquinolonin are most abundant antibiotic."

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

Q.c) 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

Following are types:

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 rabbella.

e.g., MMR vaccine

b) Inactivated vaccine

"Inactivated vaccines are known as killed 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 diptheria and tetanus.
i-e, BCG vaccine

d) Conjugated vaccine

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

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

Some diseases and their vaccines

Disease	Vaccine
measles and mumps	MMR vaccine
poliomyelitis	polio vaccine
diptheria, tetanus, and cough	DPT vaccine
tuberculosis	BCG vaccine
anthrax	anthrax vaccine

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

Star

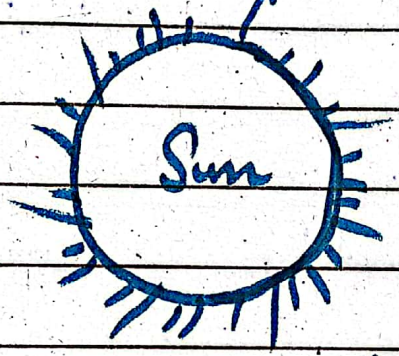
"Star is a shining object."

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 15-00 million °C.

i-e, Sun and pistol

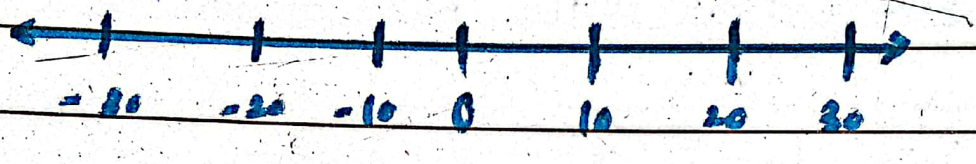


Magnitude of a star

"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 star" and "The positive value represents faintness of a star."



(Stellar Scale)

i-e, the brightest star is Sirius with magnitude of -1.46.

Relation between temperature and colour of a star

"Temperature can be described by known colour."

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 ~~increases~~ decreases, it's temperature increases as energy also increased. Therefore, star look bright with blue colour.

wavelength ↑ ↓ energy

red colour → faint.

wavelength ↓ ↑ energy

blue colour → 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 stremds of glass. These transmit light rays for telecommunication purpose. Therefore, optical fibres are transmitters and receivers of light rays.

Parts of optical fibres

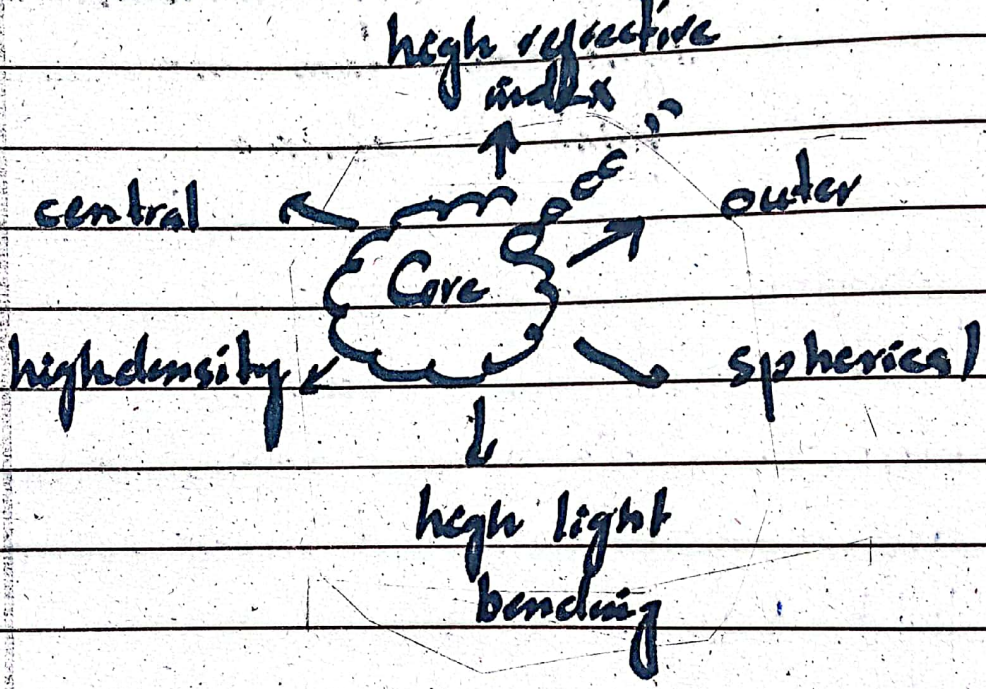
Following are parts:

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.

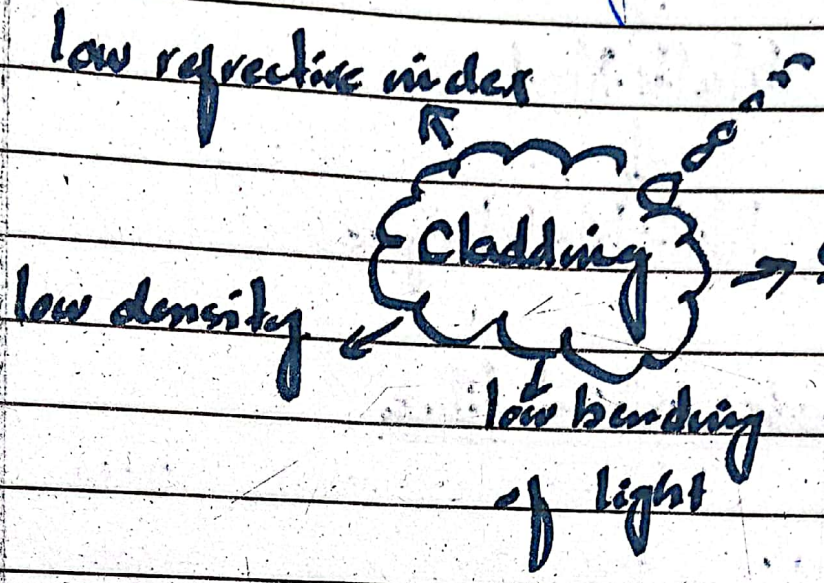


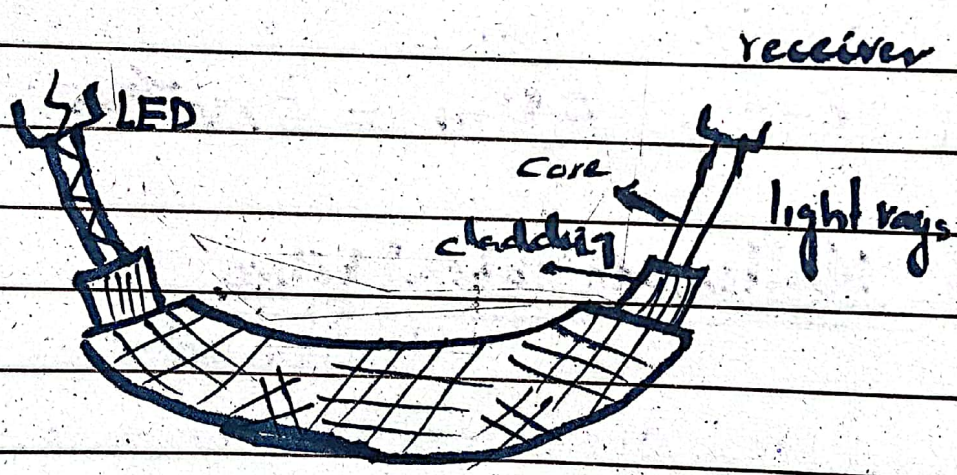
b) Cladding part of optical fibre

"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) Singlemode optical fibre

Singlemode optical fibres are the smallest energy passing fibres.

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

b) Multimode optical fibre

Multimode optical fibres are medium ranging fibres.

i-e, 50 - 100 μm

c) Multimode degree optical fibre

Multimode degree optical fibres are the highest

energetic lobes.
i-e, 1,000 Mm

Qb) Describe GPS. Also describe its working principle.

Answer **Global Positioning System (GPS)**

"GPS is combination of satellites."

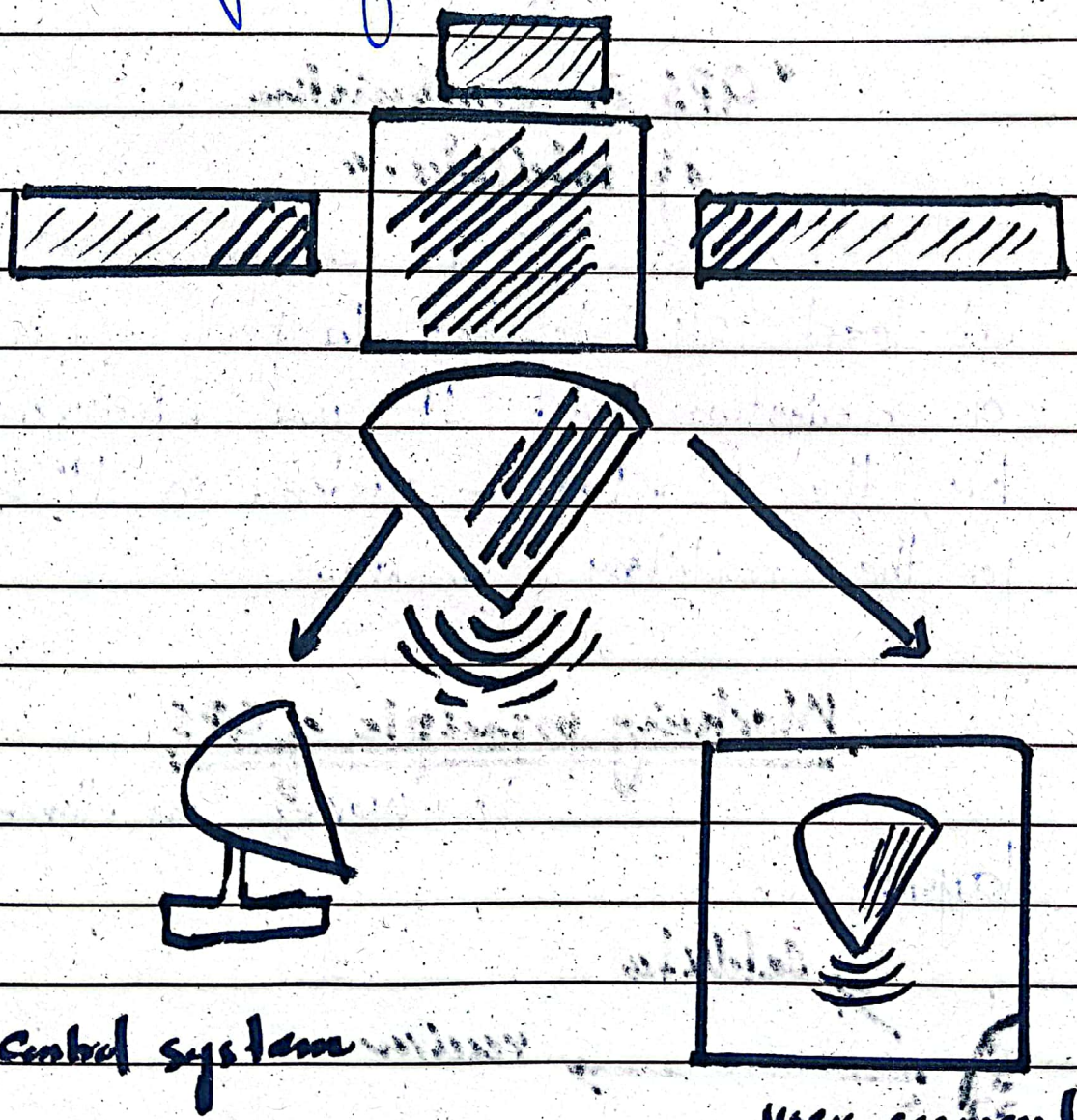
GPS is composed of at least 24 satellites. In fact it is a navigation tool. It was discovered by the US-Defence system in 1973 for the military purpose.

Working principle of GPS

It works in three layers.

- satellites
- receiver
- control system

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.



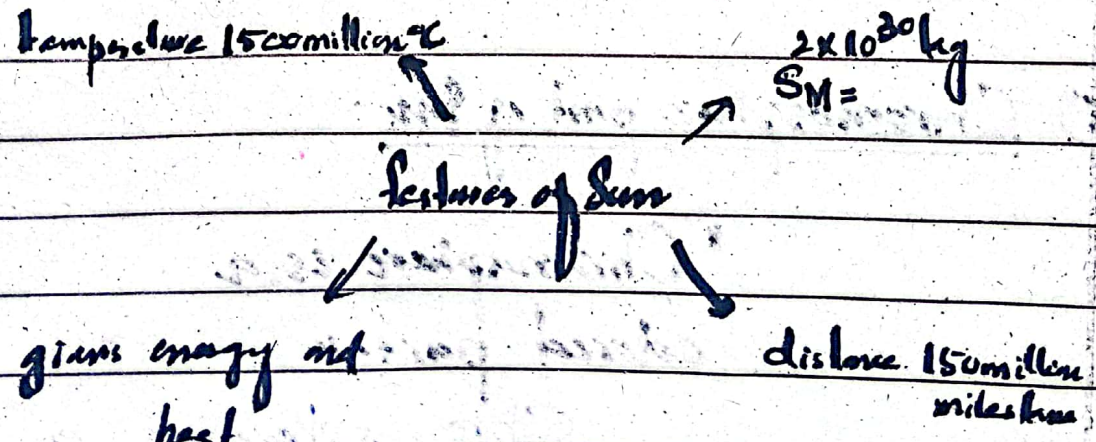
·GPS

Q c) Describe Sun. Also describe its atmosphere.

Answer **Sun**

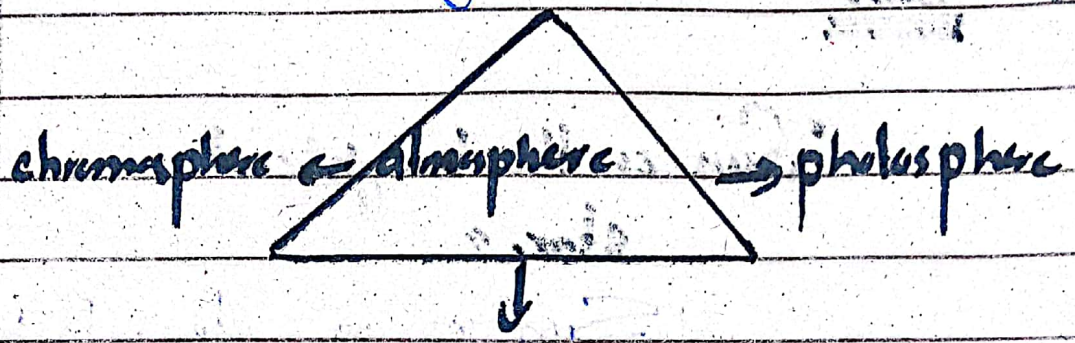
"Sun is the brightest star."

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



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 regim of sun. It is 1st external part of sun.

ii) Chromosphere part of Sun

"Chromosphere is a colored part."

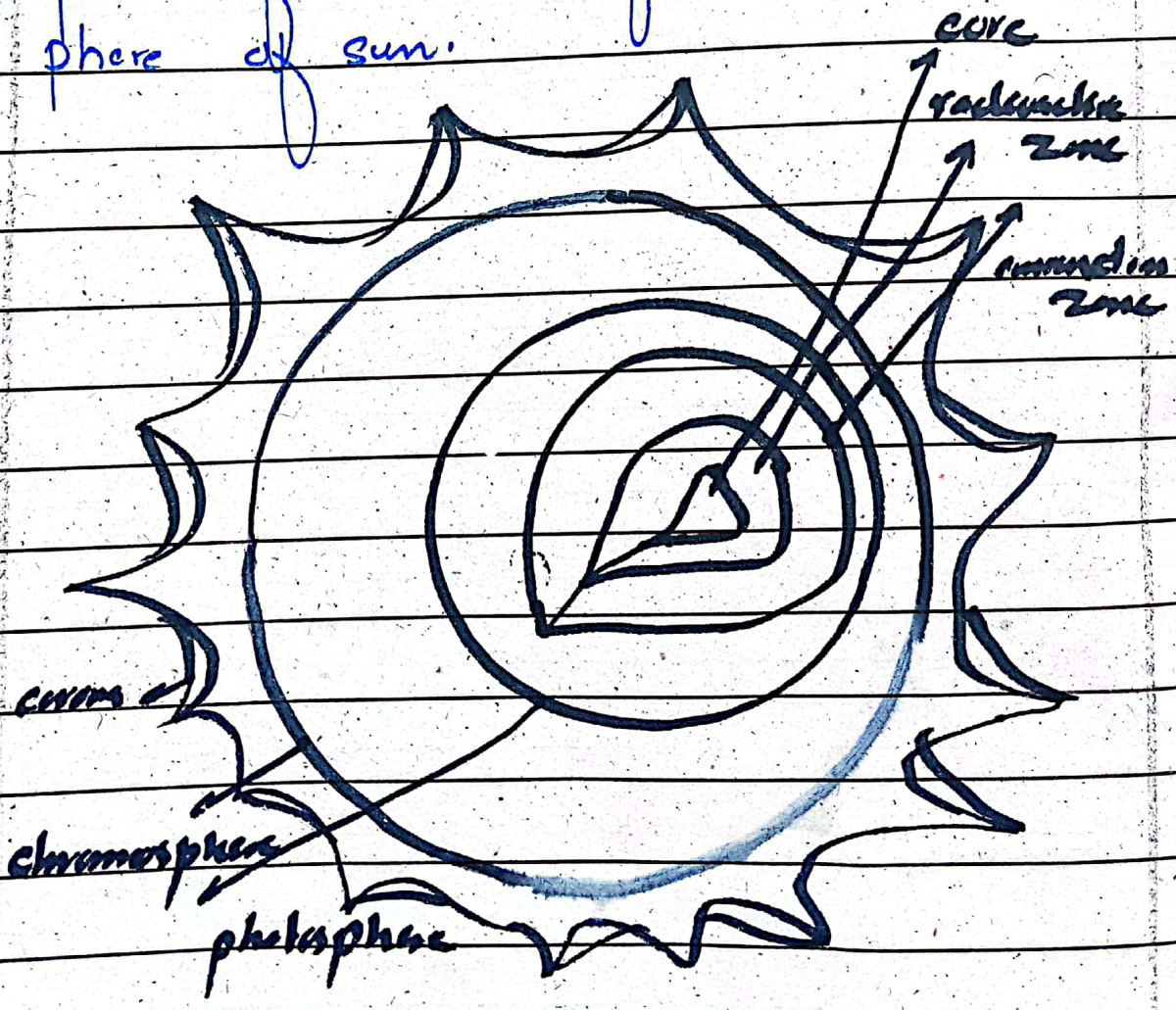
Chromosphere is a dark part of sun. It extends

outward from photosphere region.

iii) **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

Q4) 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 pottassium - (NPK)

Modes of Operations

Two modes of operations are as below:

a) Direct mode of operation

"Direct mode 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 way.
etc, Ca, Mg, $CaCO_3$ etc.