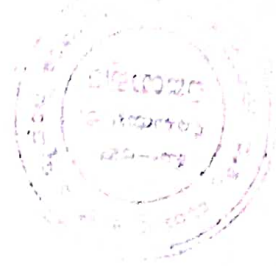


B.L.D.E. Association's

S. B. Arts & K.C.P. Science College,
VIJAYAPUR- 586 103.



ASSIGNMENT

For B.A./ B.Sc.^{VIth} Semester
2022 - 2023

Name of the Student Jayashree. L. Bajantri
Roll No. 296 R.C.U. Seat No. 82028572
Subject Botany (1)

Assignment No.	Date	Marks Assigned	Marks Obtained	Name and Signature of Teacher	Remarks
1	27/07/23	03	03	Manjula. Marpal. Mishra	Good.
2					
3					
4					

Q1 Write a note on light microscope
Credit for the first microscope is usually given to Zacharias Janssen in middleburg holland around the year 1595

The most important scientific tool for a student of biology is the light microscope

The light microscope consists of various components which gather light & redirect the light path so that a magnified image viewed object can be within a short distance

principle of light microscope

In the light microscope, light is produced from either an internal or external light source & passes through the iris diaphragm, a hole variable size which controls the amount of light reaching the specimen

→ The main component of the compound light microscope includes a light source that is focussed at the specimen by a condense lens

→ The slide is held on the stages at go to the path of light which next travel through the specimen

→ The objective lens magnifies the images of the specimen before for light travels through the barrel of the microscope

→ The light finally passes through the eye piece lens and into viewers eye which sends impulses to the brain which in turn interprets the image

* Types of light microscope

- 1) Bright field microscope
- 2) Dark field microscope
- 3) Fluorescent microscope
- 4) Phase contrast microscope

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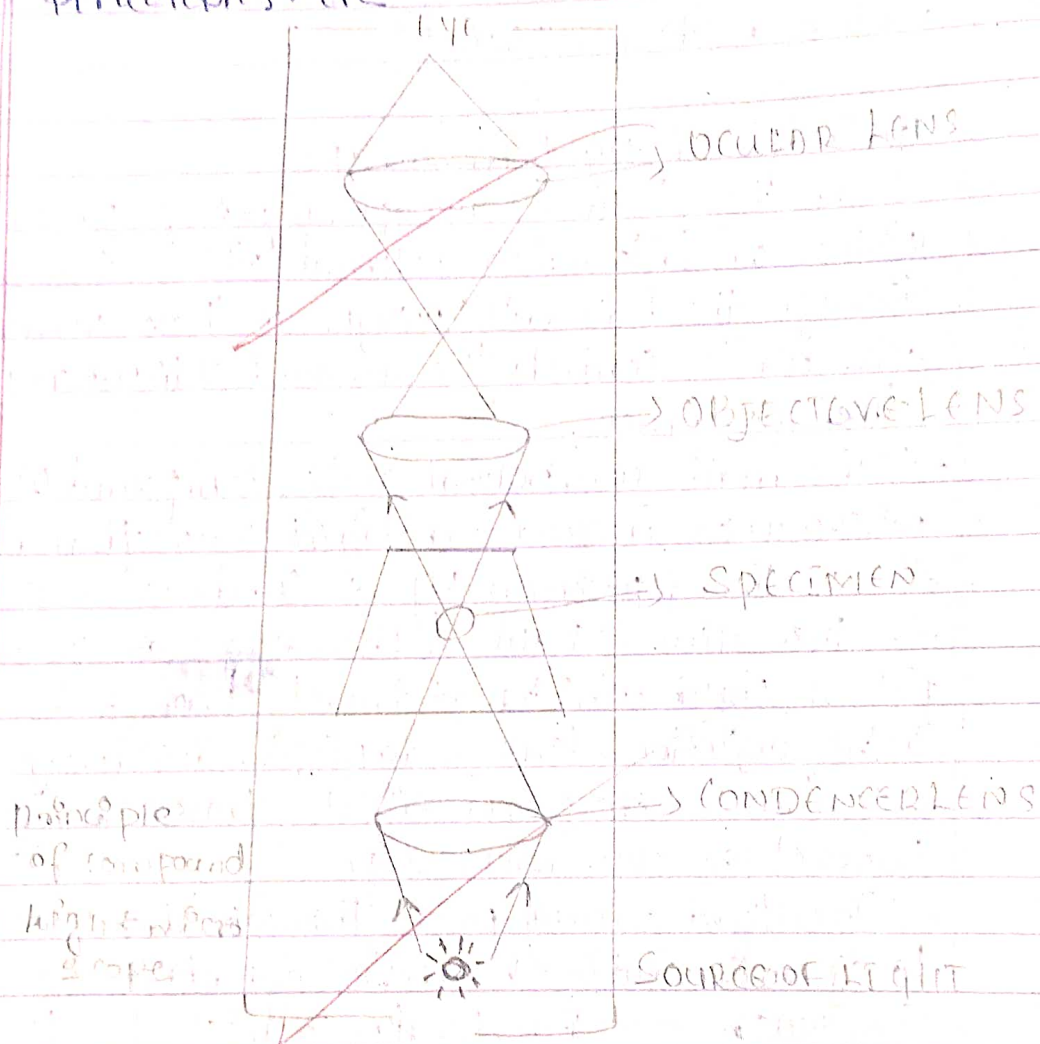
- 1) Bright field microscope
- 2) Dark field microscope
- 3) Fluorescence microscope
- 4) Phase contrast microscope

Applications of light microscopy
Light microscope play an important role in many research laboratories

→ Light microscope are very much an easy to learn hard to master types of equipment

→ Light microscopes are used in forensics to help solve many crimes

→ microscopes provides students with an understanding of real cells and their supporting structures etc



- b) Write a note on fluorescent microscope
a fluorescent microscope is an optical microscope that uses fluorescence & phosphorescence instead of or in addition to reflection & absorption to study the properties of organic or inorganic substance
→ George & Slatkoff was the first to study the mechanism of fluorescence & also coined

The term 1859

types of fluorescence microscope

- 1) Epifluorescence microscope
- confocal microscope
- multiphoton microscope

principle

- The specimen is illuminated with light of a specific wavelength which is observed by the fluorophores causing them to emit light of longer wavelength. The illumination light is separated from the much weaker emitted fluorescence through the use of a spectral emission filter. The emission filter blocks any residual excitation light passes. The dispersed longer emission wavelength to the detector. Thus the microscope forms glowing images of a fluorescently labelled microorganism against a dark background.

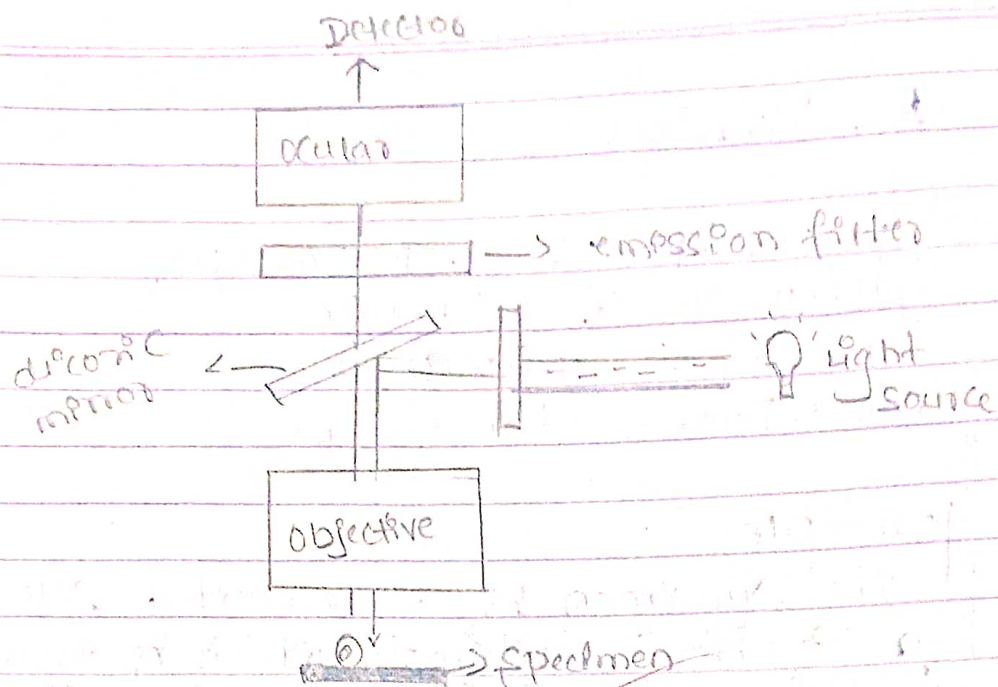
* Applications

In microbiology field

cellular imaging

- to demonstrate the natural occurrence of fluorescent substance in an organism & it helps in the study of cellular behaviour
- working mechanism of fluorescent microscope detector

working mechanism of fluorescent microscope detector



- 2) Explain electron microscope & its types
- Electron microscope is a scientific instrument that uses highly energetic electron to examine objects on a very fine scale which yield the following information.
- 1) Topography
 - 2) Morphology
 - 3) Composition
 - 4) Crystallographic information

Types of electron microscope

- 1) Transmission electron microscope (TEM)
- 2) Scanning electron microscope (SEM)

1) Transmission electron microscope

It was invented by / developed by Ernest Ruska.

→ principles - TEM operate on the same basic principle as the light microscope but uses electron instead of light. Since light microscope is limited by the wavelength of light TEM uses electron as a light source. This much lower wavelength makes it possible to get a resolution a 1000 times better than with a light microscope.

Applications

It is used as a tool for the study of ultra structure of cells.

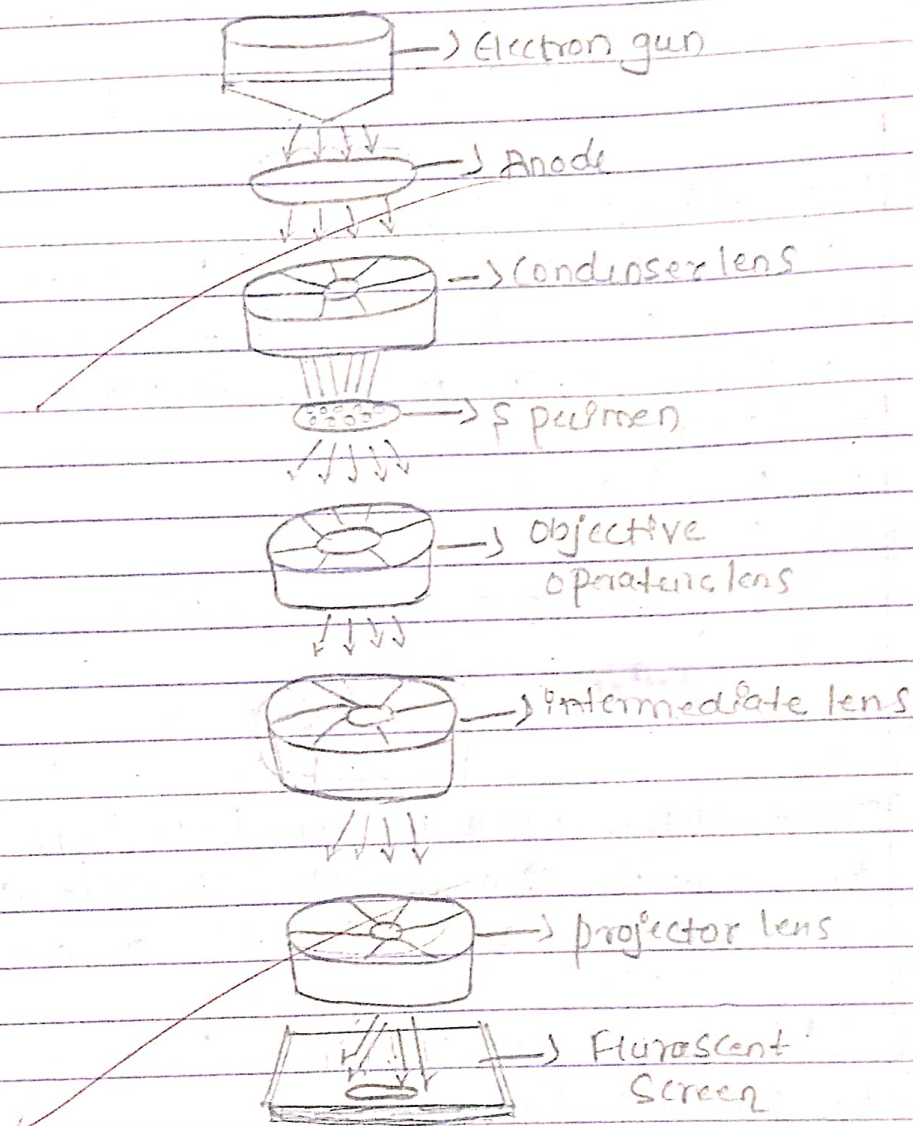
employed in the locations of nucleic acid enzymes

Eq protein in cells & cell organelles

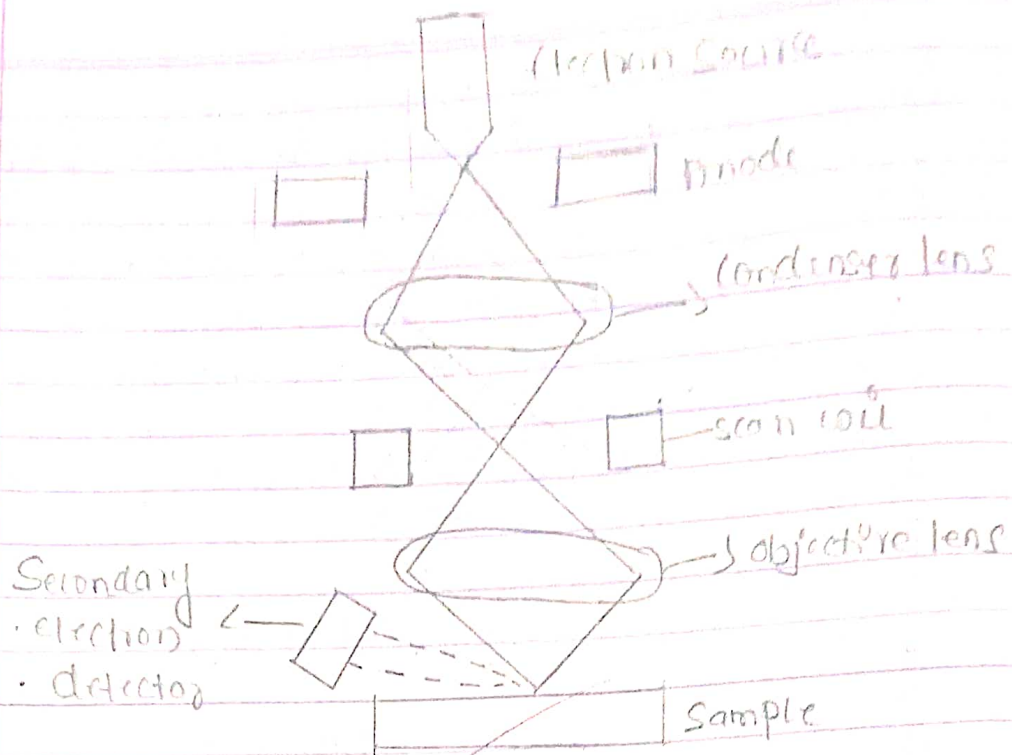
used in cancer cancer research for the cyto

- logical observation of cancer cells

used in the identification of plant & animal viruses



principle:- the basic principle is that a beam of electron is generated by a suitable source typically a tungsten filament or a field emission gun.



① Applications of SEM

- SEM is very useful to view the surface architecture of microscopic creatures like bacteria, atoms, pollen grains, nematodes & others
- Topography
- Morphology
- Composition
- Crystallographic information

Chromatography is a modern technique employed for the separation, isolation, purification & identification of the constituent of a mixture.

Different types of Chromatography

a) Paper Chromatography

- Paper Chromatography is a technique of separation & identification of chemicals by solvent diffusing through strips of filter paper on which a spot containing mixture of components is placed.
- It is mainly used for the separation of amino acids, carbohydrates etc.

02 Column Chromatography

→ Column Chromatography is based on the principle of selective adsorption of various components of a mixture between two phases

1) fixed phase

2) moving phase

03 Thin layer Chromatography (TLC)

It is a particular & special case of adsorption. Chromatography in which a glass strip coated with a thin layer of the adsorbent is used as the stationary fixed phase

04 Gas-Liquid Chromatography

→ In GLC the liquid stationary phase is adsorbed into a solid inert packing or immobilized on the capillary tubing walls

05 HPLC - High-Performance Liquid Chromatography

HPLC is firmly related to a high pressure liquid chromatography is a technique in analytical chemistry used to separate, identify and quantify each component in a mixture

06 Ion-exchange Chromatography

It separates ions & polar molecules based on their affinity to the ion exchanger

07 Molecular Sieve Chromatography

It is a chromatographic method in which molecules in solution are separated by their size & in some cases molecular weight

08 Affinity Chromatography

It is a separation method based on a specific binding interaction between an immobilised liquid.

s) Give an account of Spectrometric
it is the standard and expensive technique
to measure light absorption on the amount of
Chemical in a solution
x It is use of light beam which passes through
the sample

→ principle: - It is a technique to measure light
intensity as a function of wavelength. It does not
by this differentiating the light beam into
a spectrum wavelength detecting the intensity
of displaying the results as graph of the
detector and then on the display device

Applications -

Detection of concentration of substance
x Detection of impurities
Characterization of protein
Detection of functional group
Respiratory gas analysis in hospital
molecular weight determination of compound.
Structure elucidation of organic compound
monitoring dissolving oxygen content

Types of Spectrophotometer.

- ① Single beam of Spectrometer
- ② Double beam of Spectrometer

① Single beam of Spectrometer
operator b/w 325 nm to 1000 nm wavelength
using single beam of light

② Double beam of Spectrometer
operates b/w 185 nm to 1000 nm wavelength
It has two photocells

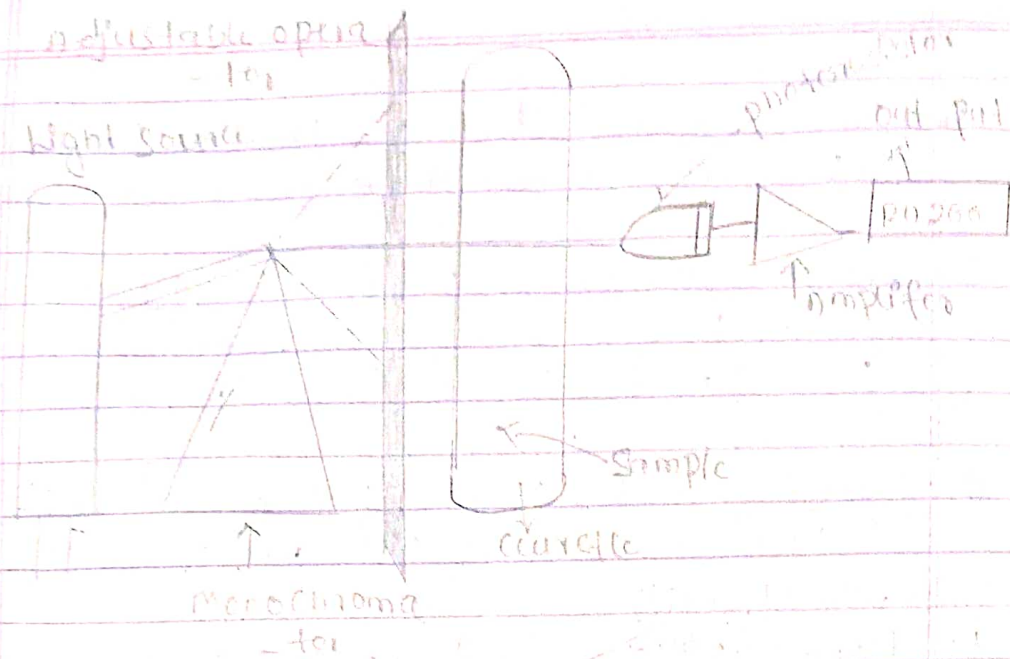
Parts of Spectrophotometer: - There are 7
essential parts of a spectrometer

- ① Light Sources - The most common sources of light used in the spectrophotometer for visible
- ② monochromators - to select the particular wave length prism of diffraction gratuity is used to split the light from the light sources
- ③ sample holder :- test-tube used to hold the coloured solutions they are made up visible wavelength
- ④ Beam splitter it is present only in double Spectro photometer
- ⑤ mirror :- it is also present only double beam Spectrophoto it is used to direct the light from the splitting light from the beam splitter.

Working mechanism :-

when using a spectrophotometer it requires being calibrated first which is done by using the standard solutions of known concentration of the solution of known determined on the solution for this the standard solution are filled in the solution and it place in the holder in the Spectrophotometer that is similar to the colorimeter.

There is a ray of light with a certain wave length that is specific for the is determined towards solutions,



6) Range variation Standard deviation Chi-Square
 Range - Range is the simplest measure of dispersion. It is the difference b/w the value of smallest item and the largest item included in the distribution.

a) Range (R) = largest + value (L) - smallest + value (S)

$$R = L - S$$

b) Chi-Square - (χ^2 -test)

A statistical test to determine if the observed number deviation from those expected or those that number under a particular hypothesis.

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

where

O = observed frequency

E = expected frequency

$\frac{1}{2}$ = 0.5 = Yates correction

a) Chi-Square test - was first used in testing statistical hypothesis by Karl Pearson in the year 1900

c) Standard deviation.

A statistic that measurement the dispersion of a dataset relative to its mean and is calculated as the square of the variance

$$s = \sqrt{\sum_{i=1}^n (x_i - \bar{x})^2 / (n-1)}$$

n = the no. of data points

x_i = each of the values of the data.

$\bar{x}$ = the mean of x_i

d) variations

It is a measure of how spread out the data is around the centre of the data

$$s^2 = \frac{\sum_{i=1}^N (x_i - \bar{x})^2}{N}$$

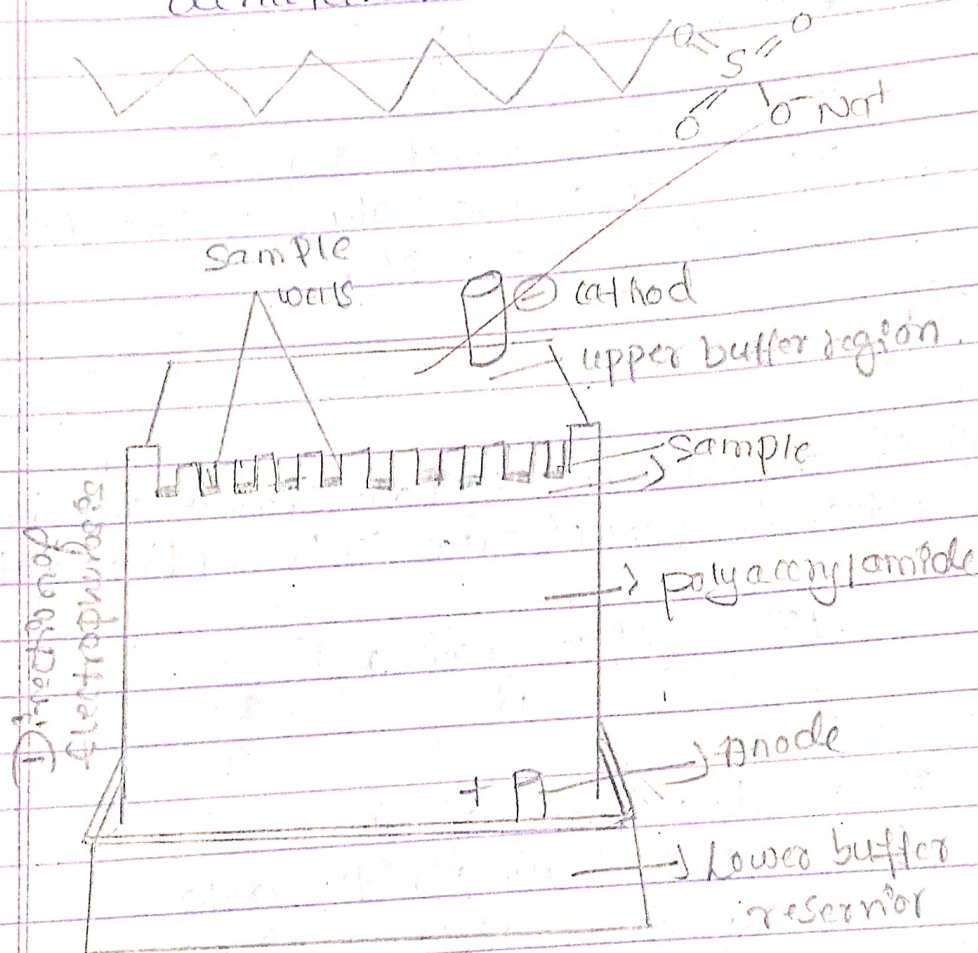
$\bar{x}$ = the mean of x_i

x_i : each values of the data

N : number of data points.

⑦ Write a note on SDS - phase electrophoresis
 Sodium dodecyl sulphate polyacrylamide
 gel electrophoresis (SDS phase)
 It is an analytical technique used to separate
 proteins on their molecular weight

This technique employs discontinuous polyacrylamide gel for support and SDS for denaturation.



Steps of SDS phase

- ① Extraction proteins
- ② Solubilize and denature proteins
- ③ Separate proteins on a gel
- ④ Stain proteins
- ⑤ Analysis and interpret results

Applications of SDS phase

- * It is used to measure the molecular weight of the molecules
- * It is used to estimate the size of the protein
- * Used in peptide mapping
- * It is used to compare the polypeptide composition of different structure
- * used to estimate the purity of protein
- * It is used in western blotting
- * Protein oblique?
- * used in HIV test to separate HIV protein
- * Analyse the size and number polypeptide segments
- * to analyze post-translational modification

Advantages

The technique is stable for separating low molecule weight molecules & it also helps to achieve separating high resolution

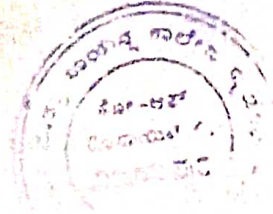
Disadvantages

The uses of SDS - cause denaturation of protein the technique is also expensive

whenever.

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VIJAYAPUR- 586 103.**



ASSIGNMENT

For B.A./ B.Sc.^{IVth}..... Semester
20²² - 20²³

Name of the Student Ruchita Kundargi
Roll No. 123 R.C.U. Seat No. U15KM2LS0135
Subject Botany

Assignment No.	Date	Marks Assigned	Marks Obtained	Name and Signature of Teacher	Remarks
1	22/07/23	05	05	Rannu A. S. Kanne	Good
2					
3					
4					

Discuss the threats of Biodiversity.

There are 5 main threats of Biodiversity.

- (a) Habitat loss
- (b) Overexploitation
- (c) Climate change
- (d) Pollution
- (e) Invasive Species

(a) Habitat loss :- habitat loss includes habitat destruction altering the physical environment such that a species can no longer live there and habitat fragmentation which involves dividing a habitat into discontinuous patches.

(b) Overexploitation :- It involves removing organism at a faster rate, then they can be replenished.
* Ex - Include the poaching of elephants, unsustainable & overcollection of slow-growing plants & fungi.

(c) Climate change :- The release of green house gases like carbon dioxide & methane when burning of fossil fuels gas energy causes climate change.
Not only does climate change involve in increase in average global temperature but it also results in unpredictable weather patterns.

(d) Pollution :- Pollution is the release of harmful chemical or other material into the environment some type of air pollution results in acid deposition and climate change.

(e) Invasive Species :- Invasive species are the those occurring outside of their historical distribution that cause ecological or economic harm.

* Invasive species can over predate or outcompete native species sometimes causing their extinction or extirpation.
Ex:- Asian carp, Zebra mussels

Q2. Expand the term NTFP?

A:- NTFP → Non-Timber forest products
→ NTFP are highly disseminated term internationally and was initially used for a wide variety of different forest product.
→ NTFP products are any products or services other than timber that is produced in forests.
→ They include fruits and nuts, vegetables, fish & medicinal plant, resins, essences and a range of barks and fibres such as bamboo, rattans & a host of palm and grass
→ different users are defined NTFP is depending on their interests & objectives.
→ According to the CTEOR uses an inclusive definition of NTFP = One that even encompasses wood products such as those used for woody carving or fuel.

Q3. Discuss about CBD?

A→ Biodiversity Conservation restoration and management in order to gain long term benefits for current & future generation.

A protecting & managing biodiversity resources is essential in order to maintain equality in an organism to secure them for future generation that they can spend their life in a very healthy way.

Goals of Biodiversity Conservation

- To preserve different variety of species present in the ecosystem.
- For proper flow of the food chain & food web
- To preserve resources like wood, coal etc for the future generation.
- To balance equality in both zoo planktons and phytoplanktons.

Biodiversity & its Conservation methods:

Biodiversity refers to the variability of life on earth. It can be conserved in the following ways.

→ In-situ conservation :- In-situ conservation of Biodiversity is the conservation of species within their natural habitat. In this method, the natural ecosystem is maintained & protected.

→ Ex-situ conservation :- Ex-situ conservation of biodiversity involves the breeding & maintenance of endangered species in artificial ecosystems, such as zoos, nurseries, botanical gardens, gene banks etc. This is less competition for food, water & space among the organism.

Q4 Describe the type of Biodiversity in India?

A:- (1) Species diversity :- Species diversity refers to the variety of species found in particular area.

→ It is biodiversity at the most basic level

→ It includes all the species ranging from plants to different micro-organism.

→ No two individuals of same species are exactly similar for ex- human show a lot of diversity among themselves

(2) Genetic species :- It refers to the variation among the genetic resources of the organisms. Every individual of a particular species different from each other in their genetic constitution.

→ That is why every human looks different from each other

→ Species :- rice, wheat, maize, barley etc.

(3) Habitat diversity :- Habitat diversity explores the variations in ecosystem within a specific area.

→ The variety of distinct habitats found in an ecosystem or biome is referred to as habitat diversity.

- A range of forests, deserts, grassland, Oceans, lakes, reefs & other biological communities made up habitat diversity.
- Different habitats house different varieties of organisms.

Q5. Describe the role of Botanical Garden in conservation.

A:- 1. Aesthetic appeal:- Botanical garden have an aesthetic appeal & attract a large number of visitors for observation of general plant diversity as also the curious plants.

2. Onsite teaching:- Collection of plants is often displayed according to families, genera or habitats & can be used for self-instruction.

3. Integrated research projects:- Botanical garden with living material can support broad based research projects which can integrate information from such diverse field as anatomy, ecology.

4. Conservation:- Botanical garden are now gaining increased importance for their role in conserving rare & endangered species.

5. Seed exchange:- More than 500 botanical gardens across the world operate an informal seed exchange scheme.

Q6. Elaborate the method used in Ex-situ conservation.

A:- 1. National park:- There are small reserves maintained by the government, its boundaries are well demarcated & human activities such as grazing, forestry, habitation & cultivation are prohibited.

2. Wild life sanctuaries:- There are the regions where only wild animals are found, cultivation, collection of woods and other forest products are allowed.

3. Biosphere reserves :- are multi purpose protected area where the wildlife traditional lifestyle of the inhabitant & domesticated plant & animals are protected.

4. Sacred Groves :- are forest fragments of varying sizes, which are commonly protected & which usually have a significant religion content for the protecting community.

Q7. Elaborate the method used in Ex-situ conservation.

A:- 1. Botanical garden :- The existed for growing food, plants, herbs and ornamental for aesthetic, religion & status reasons. The famous hanging garden of Babylon in Mesopotamia is a typical example.

2. Seed Bank :- A seed bank store seed to preserve genetic diversity hence it is type of gene bank. One is to preserve the gene that plant breeds needs to increase yield, diseases resistance, drought tolerance, nutritional quality taste etc.

3. Pollen bank :- Pollen bank are utilized to store pollen in suitable environment for a very long period. pollen are covered by liquid nitrogen named cryopreservation in pollen bank.

4. Culture collections :- culture collections are valuable resources for the sustainable used & microbial diversity & its conservation.

Q8. Write in Brief about Biodiversity transports of India?

A:- 1. The Western Ghats

→ These hills are present along the western edge of Peninsular India.

→ There are more than 600 vascular plants & more than 2500 genes. 200 plants out of there are endemic.

→ The region is also home to around species of birds 140, mammals, 260 reptiles & 175 amphibians.

2 Indo-Burma Region

- It spread over a distance of 2 million square km
- Six species of mammals are discovered in this region
- Freshwater turtle species found in the region & also 1300 species of birds are spotted in the region

3 The Himalays

- Some of the major rivers in the world originated from the Himalays.
- Almost 163 endangered species are there in the region
- This region also home 45 mammals, 50 birds, 12 amphibians, 17 reptiles, 13 invertebrates & 36 plant species
- One such endangered species found here is Relict dragon

4 Sundaland :-

- This region lies in South-east Asia & include Thailand, Singapore, The Nicobar Island represent India
- These islands were declared as the world biosphere reserve in 2013 by United Nations
- These islands have rich terrestrial as well as marine ecosystem.

Q9. What is IUCN? list out the different plant categories IUCN.

A:- IUCN Red list is a critical indicator of the health of the world's biodiversity. Far more health of the world biodiversity more than a list of species & their status.

- Currently there are more than 147,500 species on the IUCN red list with more than 41,000 species treated with extinction, including 41% of amphibians 38% of sharks.

Different plant categories

- Karnataka is situated on the lower west coast & on the western edge of Deccan plateau lying between 12° 27' North latitude & 18° 27' North latitude
- 74° 52' and 78° 32' East longitude which forms the corner of the western peninsular region, India.

Plant extinct

1. Begonia conarana
2. Ceropogia fanstolica
Sedgw.
3. Salacia malabarica
gumbe
4. Rotala ritchiekoehne
5. Strychnos colubina

Possibly / Presumed extinct

- Begoniaceae
Asclepiadaceae
Eriocaulon barba-carpa
Celastaceae
Lythraceae Rose,
Endangered
L. loganiaceae.

Q10 Write a note on concept of endemism with example.

A:- Endemism is the condition of being endemic or restricted in geographical distribution to an area.

→ The area can vary in size and is defined or identified in different ways.

→ Endemism is an ecological classification

→ It is described the range or distribution of a species or group of species.

→ For instance entire families of different species of birds are endemic to the island of Madagascar.

→ The term endemism can be applied to many things including diseases & natural phenomenon.

→ Endemism in these cases refers to the normal or standard level of some measured observation within a specific geographic region.

Q11 Explain in detail about objective & features of forest Conservation Act 1980.

A:- OBJECTIVE

→ The aim of the Forest is to preserve the forest of India by fulfilling the following objectives:

1. Protect the forest along with its flora & fauna & other diverse ecological components while preserving the integrity & territory of the forests.

→ Arrest the loss of Forest biodiversity.

8. South American centre :- It include Brazil, India of Southern climate
Endemic species → papaya, tomato, rubber.

Q16. Give a brief account on phytogeographical regions of India?

Ans- It is also called as Botanical region.

1. Western Himalayas

→ It consist of Kashmir, Himachal Pradesh, part of Punjab.

→ Rainfall → 100 to 200 cm

→ Ex:- wheat, primula.

2. Eastern Himalaya

→ It consist of Sikkim to Assam, Arunachal Pradesh

→ High humidity, & temperature.

→ Eg:- cinnamon, Larix

3. Indus plains

→ It include Punjab, Rajasthan, Delhi, Gujarat

→ Rainfall → less than 70 cm.

→ Ex:- Ziziphus, Jujuba, Mango.

4. Gangetic plains

→ Covers up, Bihar, West Bengal

→ Rainfall → 50 to 150 cm

→ Ex:- wheat, Jowar, Bajra

5. Central India

→ Covers MP, part of Odisha, Gujarat

→ Rain Fall → 100 to 170 cm

→ Ex:- Accacia, Ziziphus.

6. Deccan

→ Include southern peninsular of India, Godavari River.

→ Rainfall → 100 cm

→ Tall forest are common

→ Ex:- Zizuphus, Acacia, Santalum.

7. western coast of Malabar

- covers Gujarat & western Ghats
- This is a region of heavy rainfall
- Rainfall → 400cm
- Ex:- Nilgiri, Bamboo, luxuriant plant.

8. Assam

- covers most of Assam, Naga hills, Manipur
- Heaviest rainfall
- Rainfall → 1000cm
- Ex:- orchids, fern,

9. Andaman & Nicobar

- Includes Andaman, Nicobar, Lakshadweep
- high temperature, humid, annual rain fall.
- Lakshadweep formed 36 lands.
- Ex:- mangrove trees, Calophyllum.

Q17. What are effects of Acid Rain?

A:- → Acid rain damage standing crops & forests.

- It has adverse impact on freshwater life other aquatic life forms, insects etc.

→ Acid rain can cause the ocean pH to fall. This phenomenon is known as ocean acidification.

- Excess NO_2 inputs from the atmosphere in the ocean promote increased growth of marine plants & phytoplankton which may result in more frequent harmful algal blooms & eutrophication.

→ Limestone skeleton in corals is sensitive to decrease in pH level. as calcium carbonate - the core component of the limestone - dissolves in low pH / acidic so/s

- It corrodes structures as well as develop

→ Acid rain cause corrosion of water pipes which further result in leaching of heavy metal such as iron, lead & copper into drinking water.

Q18. Explain the causes & Effect of soil pollution

A:- Causes

1. Industrial & Mining Activities :- large number of industries coming up since the dawn of industrialization without proper waste management system are the biggest contributor for soil pollution.
2. Modern Agriculture practice :- To increase the yield from limited land area, in order to meet the increasing demand of food for increasing population, synthetic chemical pesticides & fertilizers are being used rampantly in last few decades leading to toxicity of the soil.
3. Lack of proper Waste Disposal :- Modern life style in urban and well as rural, produces huge amount of waste management procedures add problem to soil.
4. Radioactive Pollutants :- Radioactive substances from explosions of nuclear testing laboratories, radioactive fallout & industries giving rise to nuclear waste to soil pollution.
5. Biological Agents :- Soil gets a large amount of harmful organisms which constitute a major source of land pollution by biological agents.
6. Acid Rain :- is caused when pollutants present in the air mix up with the rain & fall back on the ground.

Effects

1. Effects on Human Health :- considering how soil is the reason we are able to sustain ourselves the contamination of it has major consequence on our health.
2. Effect on Growth of Plant :- The ecological balance of any system gets affected due to the widespread contamination of soil.

Q20 Write note on National mission on clean Ganga?

A:- World bank approved a five year loan to national mission for clean Ganga worth 200 cr to help stem pollution in Ganga river.

→ First phase :- The project received 4535 cr from World bank as part of first phase of mission till Dec 2022.

→ Second phase :- some of project include spillover projects from first phase of the mission.

→ DBOT Project :- Rs 1209 cr is provided for the ongoing DBOT projects in Buxar, Munger, Begusarai in Bihar.

→ Other Initiatives :- It could include institutional development, improving investment resilience to cope like emergency situation, performance.

→ Based incentives for urban local bodies & community management programmes.

Q21 Explain the process of solid waste management?

A:- Solid waste management mainly refers to the complete process of collecting, treating & disposing of solid waste. In the waste management process, the waste are collected from different sources & are disposed of.

Source of solid wastes

→ Solid domestic garbage.

→ Solid waste material from various industries.

→ Medical waste.

→ Plastics, glass, metals.

Disposal of waste

The process of waste handling & disposal varies in different countries in India.

The process differs acc to the source of solid waste they can be classified as:-

1. Municipal solid waste

2. Hazardous solid waste

Municipal solid waste can further be divided into recycle & hazardous domestic waste. The industry generated waste from chemical factories, medical, from hospitals are considered as hazardous solid waste.

Q22. Give a note on control measure of soil pollution.

A:- A Prevention of soil erosion

1. Conservation till farming or no till farming Traditionally land is ploughed to make a planting surface. This disturbs the soil & make it susceptible to erosion.

2. Contour farming

In this method, crops are planted in rows along contours of gently sloped land.

3. terracing

In this method steep slopes are converted into a series of broad terraces that run across the contour.

B. Way to minimize The soil acidification process,

In this technique trees are planted in long rows along the boundary of cultivated land which block the wind & reduce soil erosion.

C. Remedies to correct salt affected soil.

→ Deep tilling it can improve drainage for soils with high salt levels.

→ Flushing soil & preventing evaporation: Flushing the soil is the process of irrigating the area.

→ chemical remediation: Modifying salty soils with sulphur, lime or calcium can help in removing sodium in the soil.

→ Combination of methods: A combination approach can be more effective.

Q23. Write a note on vegetation of the western Ghats?

A:- The western Ghats also known as the Sahyadri hills, are well known for their rich.

- The range is called Sahyadri in northern Maharashtra & Sahya parvatham in Kerala.
- The northern portion of the narrow coastal plain between the western Ghats & Arabian Sea is known as the Konkan coast.
- The central portion called Konara is the southern part of the Konkan coast.
- The foothill region east of the Ghats in Maharashtra is known as Deccan while the eastern foothill of central Karnataka state is known as Malnad.
- It is recognized as a UNESCO World Heritage Site.
- It is one of the 8th hotspots of biological diversity in the world due to high level of biological diversity & endemism.

Q24. Mention the principle of Ecology?

- A:-
- Evolution organisms ecological system into hierarchies.
 - Individual organisms combine into population combine into higher taxa like genera & phyla.
 - The sun is the ultimate source of energy for ecosystem.
 - Life runs on the carbon-rich sugar produced by photosynthesis.
 - Organisms are chemical machines that run on energy.
 - The supply of chemical elements & sugar needed for fuel assembly into organisms limit abundance & diversity of life.
 - Chemical nutrients cycle repeatedly while energy flows through an ecosystem.
 - Organisms interact with each other in ways that influence their abundance.
 - Ecosystems are organized into webs of interactions.
 - Human populations have an outside role in competing with, preying upon & helping other organisms.
 - Ecosystems provide essential services to human populations.

Q25. What is humidity? Describe the types of humidity?
 A:- The amount of water vapour present in the air.
 It is measure of dampness in the air.

TYPES OF HUMIDITY

1. Absolute humidity :- Refers to the amount of water vapour present in cubic m of air under the given condition.

→ It is an independent.

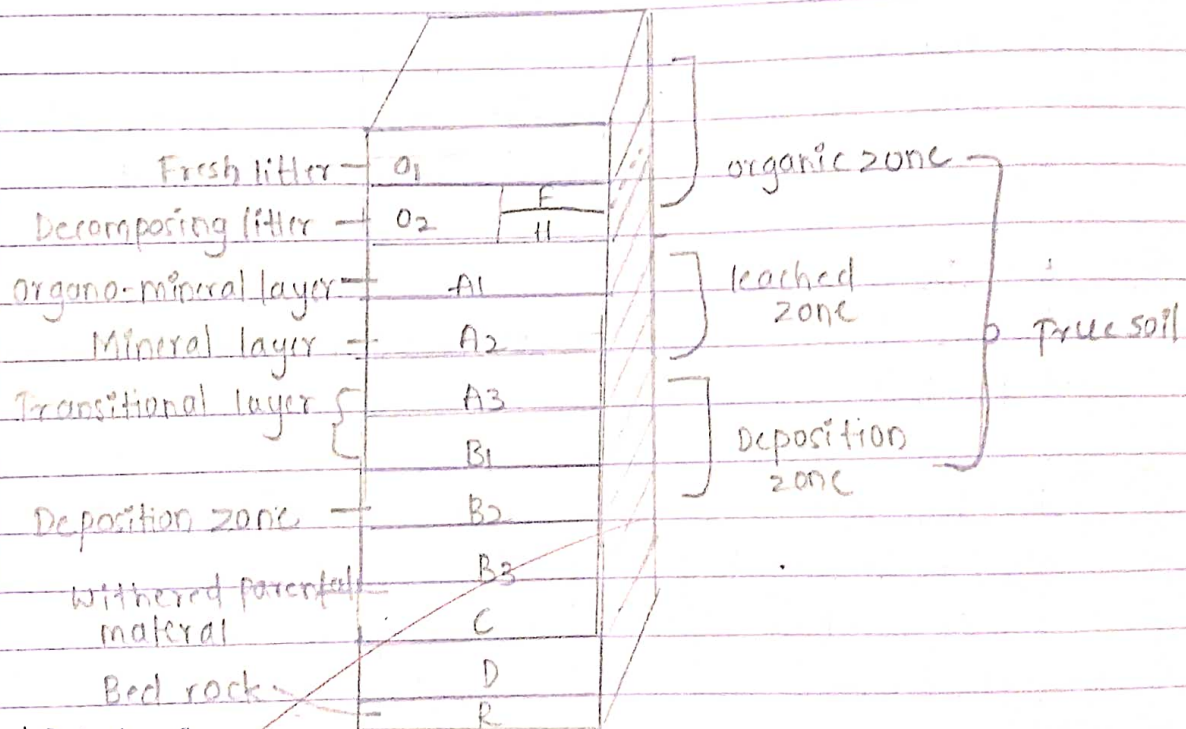
2. Relative humidity :- The amount of water vapour present in air expressed as % of the amount needed for saturation at same temp & pressure.

→ It is an independent.

3. Specific Humidity :- The amount of water vapour contained in amount air.

Q26 Draw & Explain neat labelled diagram of soil profile?

A:-



① 'O' horizon

→ It is previously called as A₀, A₀₀.

→ It is also called as litter-zone.

→ It is very rich in fungi, Bacteria.

→ This zone consist fresh or partial decomposed organic matter.

② 'A' - horizon

→ Also called as top soil

→ It include A_1 & A_2 , A_3

A_1 → It is dark coloured

→ Zone of humus.

A_2 → It is light coloured

→ less of humus.

A_3 → Transitional to subjacent B-horizon

③ B' - horizon

→ It is deep coloured

→ It is rich in clay.

B horizon divided 3.

B_1 , B_2 , & B_3

→ B_2 is zone of maximum precipitation of transported material.

④ 'C' horizon

→ This zone is usually thick & contain large mass of weathered mineral material.

⑤ 'D' - horizon

→ In this horizon rock are in active weathering

→ It between C & R.

⑥ 'R' - horizon

→ lowermost layer of soil

→ It contain parental rock from the layer of soil are derived.

Q27. Describe roots of types of epiphytes?

A:- There are 3 types of root in epiphytes.

① Absorbing roots

② clinging roots

③ Aerial roots

Q36 Describe ecological levels of organisms.

A:- 1. Individual And species :- organism is an individual living being that has ability to act or function independently.

Species are group of living organism consist of individual capable of Exchanging genes or interbreeding.

2. Population :- Is a community of interbreeding organism occupying a defined area during specific time. Population growth rate can be positive due to birth or immigration or negative due to death or emigration.

3. Community :- Community in most instances named after the dominant plant form.

Ex:- Grassland community is dominated by grass through it may contain herb, trees etc.

4. Ecosystem :- An Ecosystem is a community of organism interacting with each other & with their environment such that energy is exchanged & cycle level process such as the cycling of elements emerge.

5. Biome :- It is large naturally occurring community of flora & fauna occupying a major habitat.

Ex:- Rainforest biome.

6. Biosphere :- The biosphere includes all living organisms on earth together with the dead organic matter produced by them.

~~Harman~~
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